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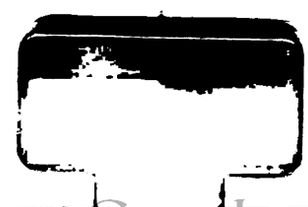
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MOTOR WORLD for DEALERS, JOBBERS AND GARAGEMEN

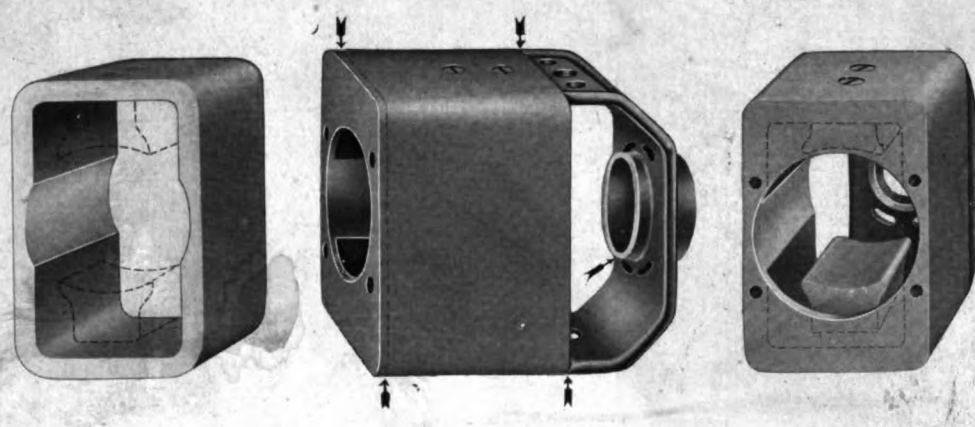
Volume XLVIII
No. 1

New York, July 5, 1916

Ten cents a copy
Two dollars a year

GRAY & DAVIS

STARTING
LIGHTING
IGNITION



QUALITY STRENGTH ACCURACY

AS the Light House, *founded on a rock*, throws its distant beam in calm or storm, so Gray & Davis starting and lighting units, *built fundamentally right*, give uninterrupted service.

QUALITY. The frames are formed from flat bars of soft high grade dynamo steel. The ends are electrically welded together.

STRENGTH. The commutator end bracket is formed into channel section of tough steel for *added* strength. The frame and brackets are then fashioned into one piece by electric welding, thus permitting dis-assembling of units without disturbing bearing alignment.

ACCURACY. The units are so designed that all work operations are easily made accurate. The frames, bored in one operation, bring field poles and bearings into absolutely true alignment and give perfect magnetic balance which affords smooth, continuous operation.

This is why Gray & Davis units consume so little of the engine's power.

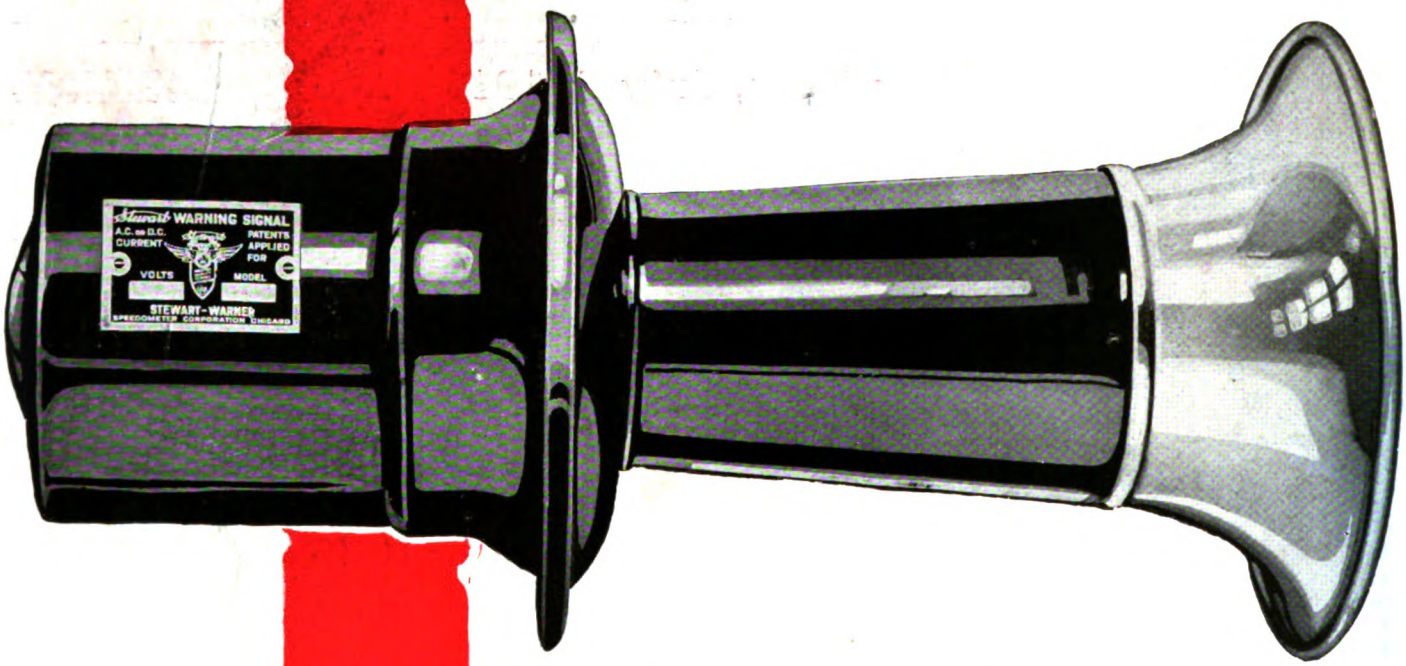
Every instrument is *the same!* Every instrument is *right!*

GRAY & DAVIS, Inc., Boston, Mass.

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Stewart $6

Motor Driven Warning Signal



Some Orders—

Last week we took an order for 10,000 Stewart Warning Signals.

Only a couple of weeks ago we took another order for 40,000.

Several days ago we received one for 8,000.

And so it goes.

The Stewart Warning Signal is the recognized standard signal of the industry.

It has the quality and the "staying powers."

It's the fastest selling signal in America.

"No car is better than its accessories"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

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. For Dealers, Jobbers and Garagemen. (Weekly). Vol.
. to 12. Ill. 4to, wr, N. Y. July 5 to Sept. 20, 1916.



me unlimited co-operation and service, and I believe that it has the best car on the market as to quality, appearance and price.

After having been satisfactorily associated with this company for eight years, I am confident that my connection with it safeguards my investment and efforts for years to come.

A. A. Burdett.

Seneca Garage, Hornell, N. Y.

A COMPARISON of the methods of cooperation afforded by Studebaker and other manufacturers serving in the same field invariably leads to the adoption of the Studebaker line.

That is, of course, secondary to determining the quality of the car itself and its reputation for performance and long life.

Studebaker's reputation as a sound and reliable business organization is more than half a century old,—all the evidence of permanence and stability one could ask for. As for its line of motor cars, Studebakers in daily use all over the world serve as concrete examples of success in building a car that gives greater value, dollar for dollar, than any other motor car worthy of the name.

We'd like to send some facts if you'll write for them.

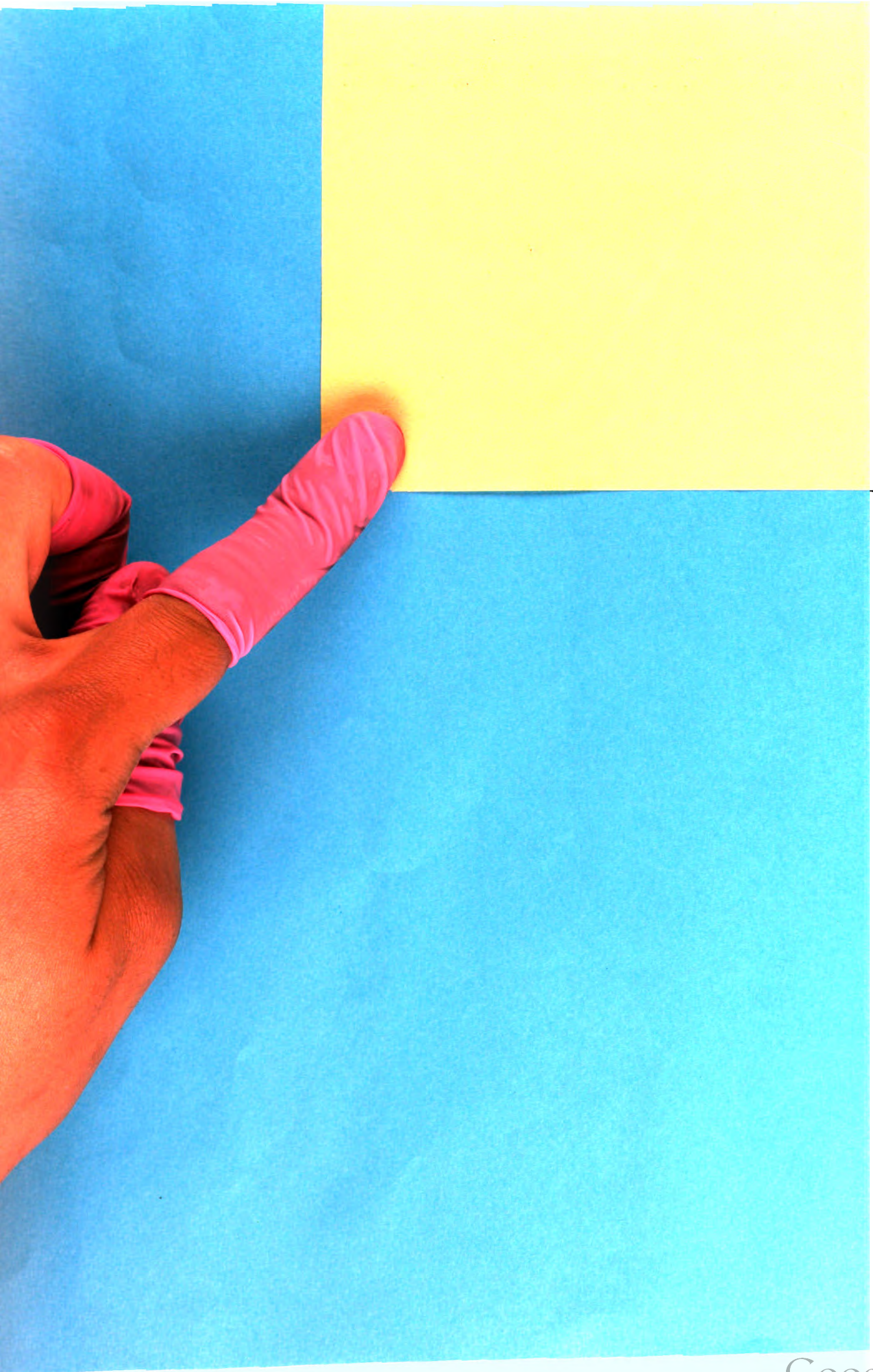
Studebaker

STUDEBAKER

South Bend, Ind. Detroit, Mich. Walkerville, Ont.

Address all correspondence to Detroit

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Why I am a Studebaker Dealer!

Until three years ago I hadn't realized what an asset I had in the Studebaker agency. At that time I took on another popular and well-advertised car selling at about the same price. In a very short time I began to realize the difference in the business methods of the two concerns. Studebaker has always given me unlimited co-operation and service, and I believe that it has the best car on the market as to quality, appearance and price.

After having been satisfactorily associated with this company for eight years, I am confident that my connection with it safeguards my investment and efforts for years to come.

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Studebaker

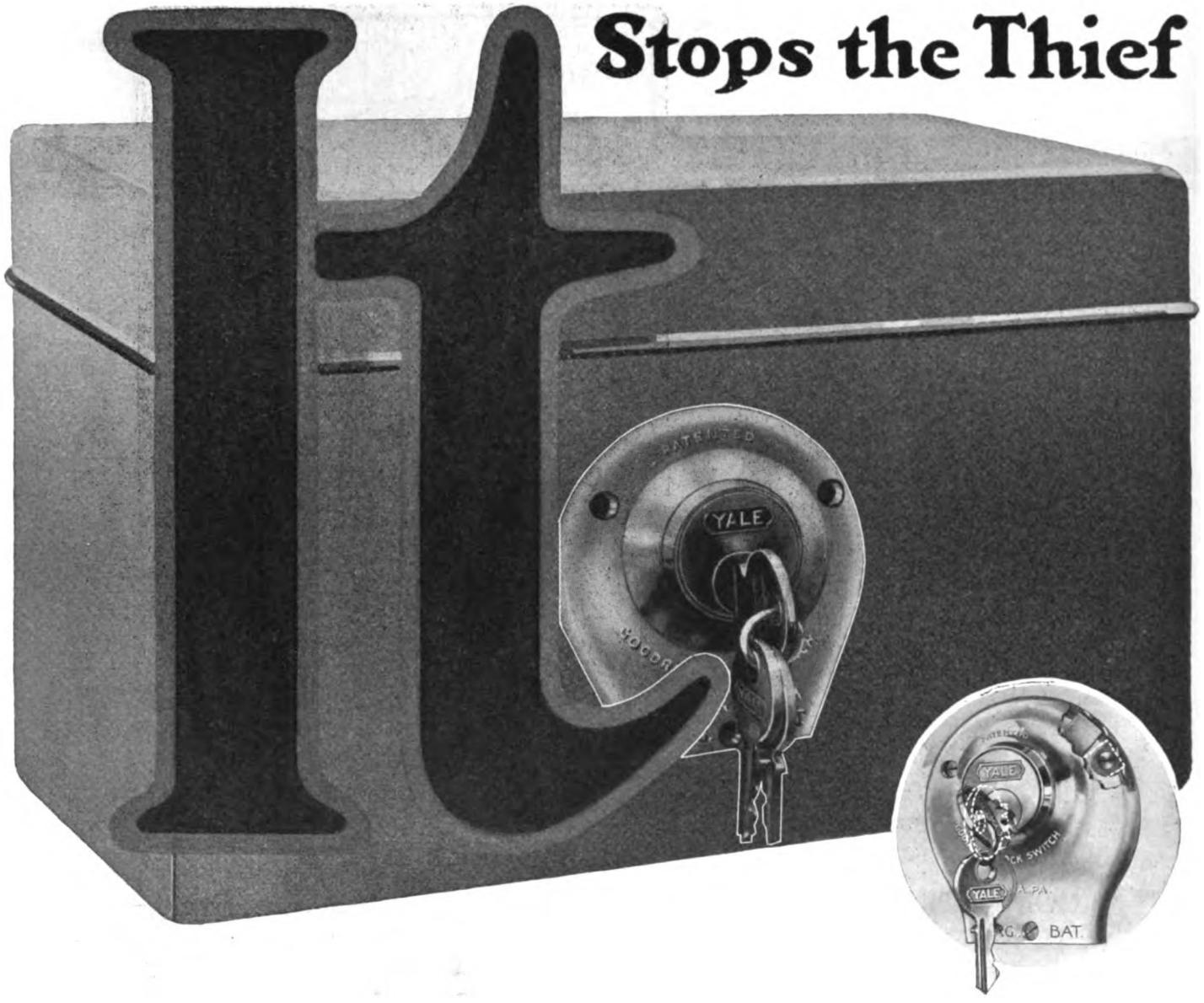
STUDEBAKER

South Bend, Ind. Detroit, Mich. Walkerville, Ont.

Address all correspondence to Detroit

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It Stops the Thief



GOODRICH AUTO SWITCH WITH YALE LOCK FOR FORDS

FORMERLY B. M. FORD SWITCH LOCK

Price
$3.25
Canadian Price $3.75

IT takes the place of the regular Ford ignition switch—its screws fit the screw holes already in the metal coil box.

IT is a Yale Lock which none but the right key can operate.

IT is a switch which when locked in the "off" position cannot be taken off, because the screws which fasten the lock to the coil box are concealed—covered—*protected by a metal shutter.* See diagram illustration above.

IT is a lock that is a switch, a switch that cannot be removed—lock and all. The Yale Key is the switch key.

IT gives perfect, positive protection. It stops the thief.

ASK YOUR DEALER

GOODRICH ACCESSORY ASSOCIATION

PHILADELPHIA Widener Building **PENNA.**

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

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Editorial Contents

Do You Advertise Instalment Payments?.....6-8
Motor World has asked this question of several hundred dealers in the $1,000-$1,500 class and the answers they give are interesting. Read them.

Gas-Engine Men Talk Farm Tractors.....9-12
Merchandising methods, standardized ratings and the ideal engine all are discussed.

King Eight Does 10,850 Miles.....13-14
Motor is not stopped for two weeks in test on Sheepshead Bay Speedway.

Standard Names for Car Parts.....19-22
The Society of Automobile Engineers through its Standards Committee has suggested a list of names that will eliminate confusion.

Studebaker Service Policies.....35-38
Every Studebaker employee is at home in any Studebaker service station because of the arrangement of stock.

White Walls Improve Efficiency..... 15

A Standard Service Warranty..... 40

Are You a Wise Spender?..... 17
Reilly says not all dealers are.

Repairshop Short-Cuts.....26-27

Simplified System..... 16

Scientific Garage Construction.....24-25

Editorial Observation..... 30

Retail News.....32-34

Most Pumps Measure Short..... 39
So says the U. S. Bureau of Standards and tells why. What to watch.

News Section.....42-46

Coming Events..... 46

Advertisers' Index on pages 122-123

"NORMA"
(PATENTED)
BALL BEARINGS

"NORMA"

Are Your Electrical Accessories "NORMA" Equipped?

You like to know that the equipment of your car is in every detail in line with the best practice in the automobile world.

THE NORMA COMPANY OF AMERICA
1790 BROADWAY —— NEW YORK
BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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The Greatest Value On the Face of the Earth

31½ H.P.

Overland

TRADE MARK REG.

Model 75 B

Five Passenger Touring

$635

- 4 cylinder en bloc motor 3⅜" bore x 5" stroke
- 104-inch wheelbase
- 4-inch tires, non-skid
- Cantilever rear springs
- Streamline body
- Electric starter
- Electric lights
- Magnetic speedometer
- Complete equipment

Roadster $620

f. o. b. Toledo

The new series Model 75 B has *more* power, *more* style, *more* room, *more* comfort and is *more* complete than any other car for the price in the world.

Think of a car at this price having a motor that will develop fifty miles an hour!

Think of a car at this price that gets twenty to twenty-five miles on a gallon of gas!

Can you beat it?

There is not another make of car on the market under $800 that can equal its performance. Order early.

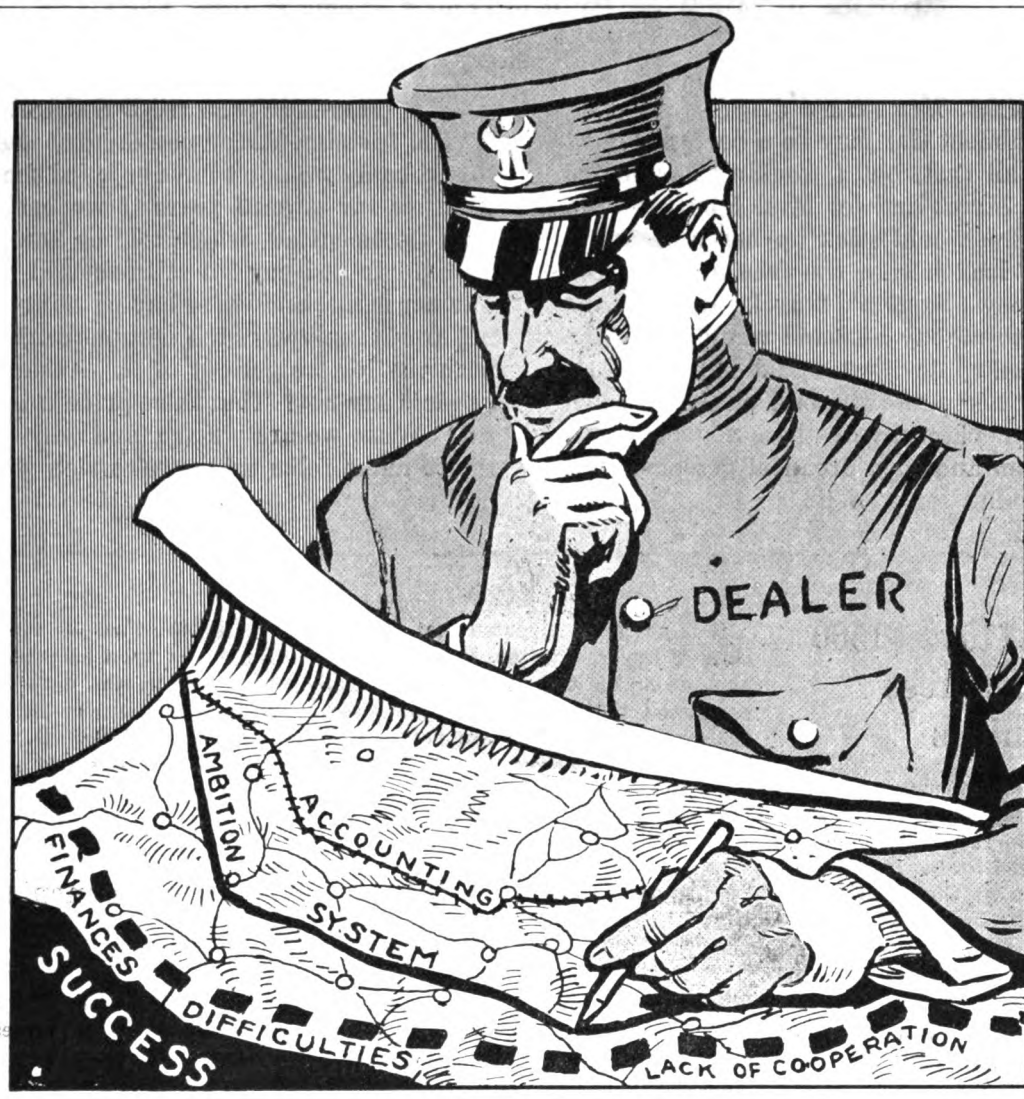
The Willys-Overland Company, Toledo, Ohio

"Made in U. S. A."

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII | New York, U. S. A., Wednesday, July 5, 1916 | No. 1



PLAN!

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Is Mrs. Smythe Ashamed

to Ride in an

Instalment Payment Car?

Is the prospect ashamed to be seen riding in a car which the public knows can be bought on the Instalment Plan?

Does the advertising of the Instalment Plan cheapen the car that is so sold?

Aside from whether the plan is good or bad, is it wise to advertise it?

MRS. SMYTHE'S CASE

THE Instalment Car may be a perfectly good car and all that, but I wouldn't dare drive down Main Street and let Mrs. Montague see me in it. She would stick up her nose and I never could look her in the face again. And maybe the news wouldn't travel. By the time it got back to me my husband would be on the verge of bankruptcy, we would have a mortgage on our home and the best circles in town would have us classed with these nouveau riche steel mill men and such dreadful persons. The idea! I couldn't think of it!

MRS. NEWLYWED'S CASE

THE Instalment Car is a dandy. John and I probably wouldn't have enjoyed the pleasure of a car for several years if we had not seen the Instalment ad, which told us how we could have a car and pay for it in several payments. The car is fine and we're having no trouble paying for it; anyway, the trouble can't compare with the joy we get out of it. Ashamed of it? I should say not! That false pride is all tommy-rot! What we are we are, and why should we try to make folks think we're rich when we're not?

Dealers in $1000-$1500 Class Express Opinions

ON the time-payment question Motor World sent letters to a selected list of dealers representing every section of the United States and representing cars in the $1,000-$1,500 class. A number of questions were asked in an effort to get a representative opinion on this new factor in the industry. Among the questions was this:

"Are you advertising the time-payment plan? If not, why not?"

The responses were interesting. Quite a number stated that they are advertising the time-payment plan and have encountered no disastrous results.

Others stated that they are not advertising, because it cheapens the car and drives off desirable trade if the time-payment plan is flaunted in the face of the public.

Others asserted that the advertising of time payments tends to check cash business and is undesirable from that standpoint.

It is not to be disputed that a certain class of buyers does not look with favor upon an article that is known as a time-payment article; on the other hand, there are many buyers who are not actuated by such proud motives and who buy from the value standpoint alone.

Also, the class of population served by the dealer must be taken into consideration. While the dealers who have expressed opinions on this question are in the $1,000-$1,500 class, the dealers in the $500-$700 class might not encounter the pride element. Here follow the opinions:

These Dealers Say Advertising Time Payments Tends to Cheapen the Car and Offends Buyers

Cash buyers do not want to buy cars that are advertised on time.—Browning Auto & Supply Co., Salt Lake City, Utah.

Do not believe it best to advertise, because our customers would object.—E. S. Curtice, Meridian, Miss.

We do not think it profitable to advertise. Those who want time are a bit proud and do not want it said that they ride in a car obtained on borrowed cash.—Briscoe Motor Sales Co., Jackson, Mich.

Don't think prospects buying cars want it advertised.—Gardner Auto Co., Gardner, Mass.

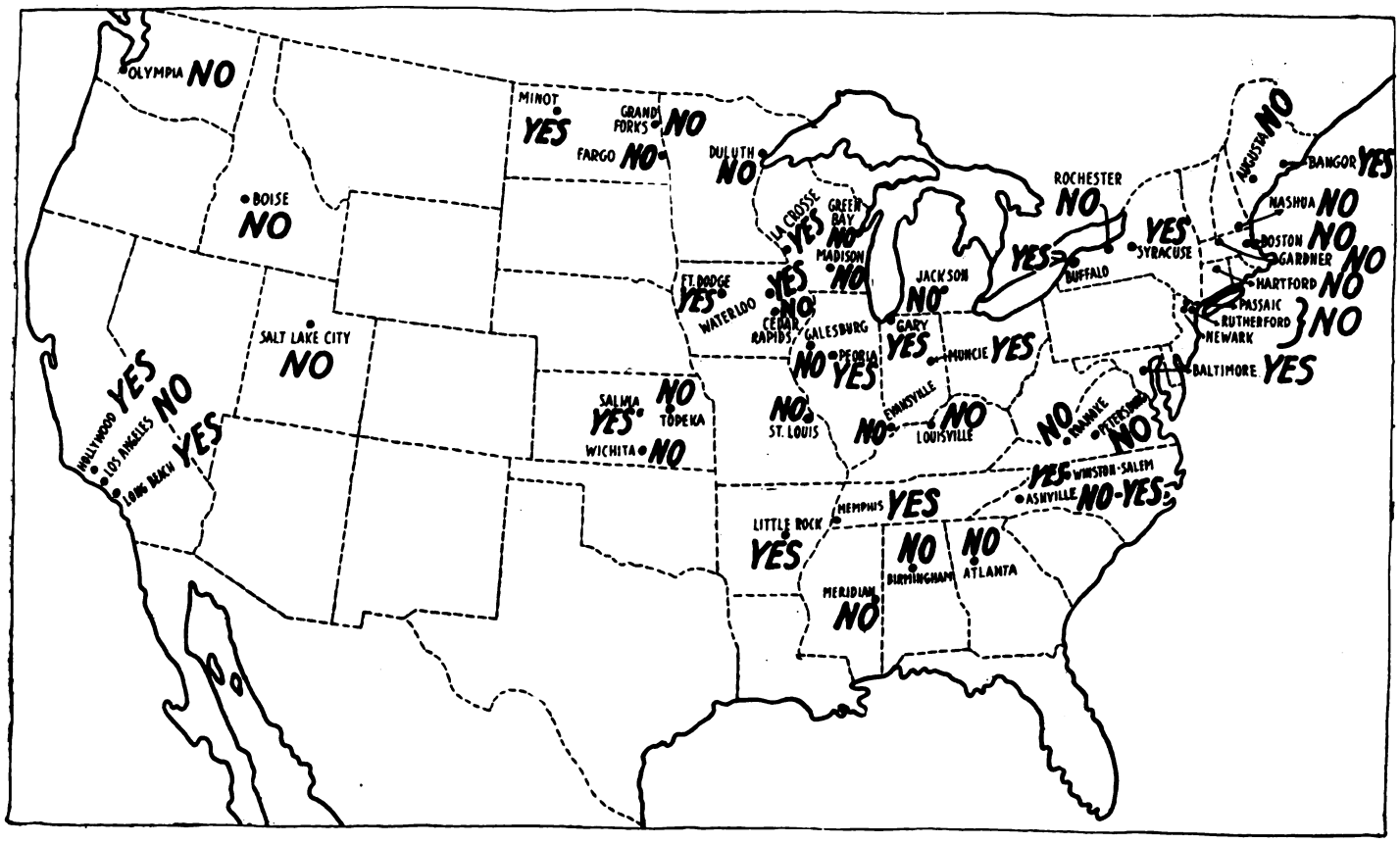
It cheapens the article sold.—Bannock Motor Sales Co., Boise, Idaho.

It cheapens the car to advertise time payments.—W. H. Imes & Co., Topeka, Kan.

People do not care to have it known that the cars they drive are sold on time and we handle our own paper and do not wish to increase the time sales.—Overland-Madison Co., Madison, Wis.

If we find a man anxious to purchase a car, and if he doesn't have the full amount and it makes it easier for him to pay part by a note, we take the note, but we do not advertise this plan, for the great majority of our customers are persons who have cash ready.—West Side Garage, Green Bay, Wis.

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DO YOU ADVERTISE TIME PAYMENTS? The map shows the location of 32 dealers who say No and 18 who say Yes.

Yes! We Advertise the Plan, Say 18 Dealers

At first we were not favorably inclined to the advertising plan, as we believed that a good many people would feel toward it the same as you or I would feel going into a furniture or clothing store that sold on the instalment plan; but we have not experienced any bad effect from this source.—Overland Syracuse Co., Syracuse, N. Y.

Yes.—Waterloo-Overland Co., Waterloo, Iowa.

Yes.—Minot Auto Co., Minot, N. D.

Yes.—We favor the plan.—Ollinger Auto Co., Salina, Kan.

Yes. — Cummings - Rutherford Motor Car Co., Peoria, Ill.

Yes.—Mission Garage, Long Beach, Cal.

Not yet; but intend to advertise from this time on.—Memphis-Overland Co., Memphis, Tenn.

The monthly-payment ads bring in a large class of people who cannot make the first payment nor the following payments, and most of them are undesirable. The farm business is on 90, 180 and 365 days basis and their credit is good and they usually are prompt.—Walnut Auto Co., Muncie, Ind.

Yes.—Eugene Polk, Little Rock, Ark.

Yes.—Overland-Fort Dodge Co., Fort Dodge, Iowa.

Yes.—Overland Buffalo Co., Buffalo, N. Y.

In the winter.—S. L. Crosby Co., Bangor, Me.

Yes.—Hollywood Auto Garage, Hollywood, Cal.

Yes.—The Auto Repair Co., Winston-Salem, N. C.

Yes.—Motor Car Co., Baltimore, Md.

Yes.—O. K. Auto Supply & Transit Co., Asheville, N. C.

Yes.—Fifth Avenue Garage, Gary, Ind.

Yes.—Rybold-Weihaupt Auto Co., La Crosse, Wis.

And This Man Says Time Sales Increase the Service Cost and Tend to Decrease Cash Business

Motor cars have always been sold on time and probably will always be. However, I do not believe that the various time-payment plans as advertised and offered by certain credit concerns will assist us to any extent. There are a great many objections to these propositions.

In the first place, we want to get all cash for the cars if possible. This advertising of time payments has kept us from getting all cash for several cars, because if the purchasers had not seen advertisements of this they would have gone to their bank and given their notes and gotten the money and paid cash for their cars. This would have relieved us of the responsibility.

Another objection; the terms of payment do not suit many purchasers. For instance, a purchaser who cannot afford to pay $85 a month and pay for the operating expense of his car. In other words, a man who has only $450 in bank with which to buy a car, as a rule does not make enough income to put better than $100 a month into an automobile. As a rule, when we do sell cars on time payments we have to make much smaller monthly notes than $85; as a rule, $50 per month is as much as such purchasers can afford to pay and operate their cars at the same time.

Another very serious objection is the question of service; that is, free service. We find that we have about twice as much free service to give on cars sold on time as we do on cash sale cars. We find that we have to give free service on cars until the payments are all made. This does not sound reasonable, but you can

What Do YOU Think?

On this important factor in the motor car business your opinion will be welcomed. It is something on which an expression of dealers' opinions will be valuable to all.

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see how human nature works in this as in all cases where credit is concerned. For instance, you probably have been in a dealer's when a customer came in with some such exhaust as this: "My note is due to-day and I was going to pay it, but that d—— car is working so rotten that I am not going to pay one red cent more on it until it is made right, and so forth."

I find about ten objections to the time payments against one for it. If the purchaser can pay for his cars on time, why cannot the dealer get cars in the same manner?

Why do many manufacturers advertise time payments to owners and ship their cars to their dealers with a sight draft attached to the bill of lading?

Certain manufacturers make as high as 60 per cent dividends, some more; but whoever heard of a retail dealer making any such enormous profit?

If a purchaser has any credit he can take his notes to his local bank and get them discounted, and at a more reasonable rate of interest than charged by these credit corporations. I think that this time-payment plan will eventually work great harm to the dealers who practice it to any extent.

The dealer needs all of the money that he can get to handle the cars until sold, and if he has to indorse paper to the extent of one-quarter of his yearly business, or even less, he is in a bad plight indeed. I am very sorry that this proposition has been opened up on such a large scale and so highly advertised. I can see nothing in it but more trouble for the dealers.—The Model Garage, Roanoke, Va.

Advertising Time Payments Is Not Favored by These Dealers for a Number of Reasons

We do not believe it good for the reputation of the dealer to advertise time sales. It encourages too many poor buyers.—Overland Motor Co., Wichita, Kan.

We do not believe in the present-day "payment proposition." If the purchaser is worth selling, we handle his selling ourselves, as we have been doing for 8 years. A good salesman and a less intelligent prospective purchaser mixed with eight notes, a bonding company and an automobile, doesn't look just right to sign our name with.—Judd Seacord & Son, Galesburg, Ill.

No. I believe in borrowing money in my own town.—Ladd Automobile Co., Augusta, Me.

No. It is not good to encourage it.—Olympia Garage, Olympia, Wash.

No Necessity for Advertising

No. We do not use the factory plan, but do sell on time, not asking any bonus or premium. Everyone here sells on time, so there is no necessity for advertising it.—Greer-Robbins Co., Los Angeles.

No. Am not in favor of the general use of the time-payment plan.—Seneca Motor Car Co., Rochester, N. Y.

No.—Indian Head Garage, Nashua, N. H.

No. Don't believe in it.—Connell & McKone Co., Boston.

No. Everybody knows it.—Birmingham Auto Co., Birmingham, Ala.

No, sir. Because it will lead to the ruination of a business.—Bergen Auto Co., Passaic, N. J.

No. We do not sell cars on the time-payment plan.—Paddock-Zusi Motor Car Co., Newark, N. J.

No. Because it is absolutely against our business methods.—Bergan Auto Co., Rutherford, N. J.

We are doing business for cash only.—Chalmers Auto Agency, Hartford, Conn.

This we have never done and we do not propose to unless there comes a condition other than what prevails at the present time with the car we sell. From the very start of this time-payment plan we were not in sympathy with it in the least. We believe it only induces some dealers to take a greater risk than ever in selling cars, and the company handling the paper takes no chance. If a man who has a good rating wants to buy a car, we can always go to our home bank and take care of a time dealer very nicely, and as late as to-day we are in receipt of a letter from our manufacturer which convinces us more strongly than ever that the time-payment plan is bad practice.—Lyons Auto Co., Grand Forks, N. D.

Should Hold Until the Last

No. We prefer to have the salesman place the plan before the customer as a special inducement to buy. The customer receiving accommodation on payment seldom asks for concessions, whereas if the plan were advertised he would look on the time-payment plan the same as he would on the car equipment.—Overland Southern Automobile Co., Atlanta, Ga.

No.—Overland Sales Co., Jackson, Mich.

We believe it is especially true in this section of the country that people are urged into contracting obligations which they should not and often cannot meet. This has been proven to us on several instances.—Asheville Garage Co., Asheville, N. C.

Not necessary.—More Bros., Fargo, N. D.

All our cars are sold for cash. In exceptional instances part of the purchase price may be deferred. Each case is handled individually, according to the circumstances affecting it.—Park Automobile Co., St. Louis.

We are not advertising this time-payment plan.—Overland Louisville Co., Louisville, Ky.

Because it will hurt the cash trade.—Bennighof-Nolan Co., Evansville, Ind.

Will Hurt the Cash Business

Because I believe it will hurt the business, as the dealer who lays too much stress on time sales would probably lose considerable cash business.—George B. Carter, Petersburg, Va.

We have sold no cars on this plan and will not do so unless we are compelled to do so by competition, as we do not believe in the plan. It seems to the writer that it is a case of poor salesmanship or lack of sticktoitiveness when a salesman cannot settle for his car when delivered, either in cash or a bankable note. The average purchaser of a car in Iowa is, as a rule, more than willing to make a settlement on delivery.—Elson-Minnick Co., Inc., Cedar Rapids, Iowa.

Get enough time sales now without advertising too much.—Mutual Auto Co., Duluth.

Should Leave It to Dealer

We do not use the time-payment plan nor advertise for time sales. We have been taking notes for automobiles for 8 years where they suited us, with no fixed amount down. Every deal or sale is just what we agree upon with the purchaser and no two are alike. We have looked over the time-payment plan and would consider it a dangerous proposition. No good business man or firm could afford to indorse Tom, Dick and Harry's note. It looks as if the scheme would put the dealers in debt. It would be better for the business in the long run if they would advocate cash sales and leave the time part of the sale to the dealer and his customer.—The Overland Co., Topeka, Kan.

Is It Easier to Sell Cars on Time?

Half a hundred dealers give the answer next week in Motor World

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Gas Engine Men Talk Farm Tractors

Merchandising Methods, Possibility of Standard Ratings and Requirements of Tractor Engines Principal Topics

CHICAGO, June 29—Tractor and gas engine men are as much exercised over the present and prospective fuel situation as are the motor car makers, if the purports of the papers and discussions at the ninth annual meeting of the National Gas Engine Association is any criterion. The convention of the N. G. E. A., which closed to-day after a 3-day session at Hotel Sherman, was featured by a number of papers and discussions on tractors, and another series on various ramifications of the fuel problem. Other papers of interest, from the manufacturing standpoint, included scientific management of factories, uniform methods of figuring costs, ignition selections, reducing shop cost, and an address by Dr. Frank R. Rutter, assistant chief, Bureau of Foreign and Domestic Commerce, on the internal combustion engine in foreign trade.

Affiliate with S. A. E.?

Affiliation of the National Gas Engine Association with the Society of Automobile Engineers was informally broached at the business meeting yesterday, while John T. R. Bell, engineering representative of the Norma Co. of America, and a member of both societies, in the informal discussion pointed out that the standards committee of the Gas Engine Association has been working in very close touch with the standards committee of the S. A. E. and has adopted wherever possible the standards already in force among the motor car manufacturers, and also that two other associations in allied industries, the marine engineers and the aeronautic engineers, have asked to become affiliated with the Society of Automobile Engineers.

Inasmuch as complete plans for the co-operation of these societies have not been worked out as yet, it was decided to defer action for the time being. Comment in general was favorable.

The standards committee adopted standard specifications for a number of features of stationary gas engines, and it was notable that recommendations were, insofar as possible, to follow the present standards of the Society of Automobile Engineers. The association formally adopted a standard guarantee for gas engines, warranting them to be free from defects in materials and guaranteeing replacement of parts proving defective in material for a period of 1 year and to develop rated horsepower and rated speed in factory testing room. This does not include ignition or other accessories, which are guaranteed by their manufacturers.

At the election of officers the president, secretary and treasurer were reelected, as were most of the vice-presidents and executive committee. C. E. Bement of the Novo Engine Co., Lansing, Mich., is president; H. R. Brate is secretary, and Otto M. Knoblock, treasurer.

The former low price of gasoline is a thing of the past, is the belief of E. E. Grant, secretary of the Independent Oil Men's Association of Chicago, who, in an address entitled the "Fuel Problem as it Pertains to the Internal Combustion Engine," discussed the present factors which have caused the rise in the price of gasoline and the probability of the future. He stated that it was his belief that the average price of the future would be from 15 to 25 cents, and did not anticipate that the cost to the consumer would be very much less than 15 cents or very much higher than 25, at least for several years. He confirmed the general impression among gasoline users that the demands for motor fuel has become enormous; that quite frequently the quantity of fuel is increased by adulteration. He made a plea for co-operation between oil men and engine makers and proposed an association of gas engines, motor car, marine, aviation engineers and the oil men; experts who could work together for the solution of a proper fuel.

Crude Oil Up 700 per Cent

He brought out the point that during the last 2 years the increase in the price of crude oil had been 700 per cent, and in addition to that it often was necessary to pay premiums over the market price. He figured that the consumption of gasoline for 1916 would be 1,934,000,000 gal., but stated that much progress in increasing the yield had been made within the past year and that at present 2 per cent of the gasoline is made from natural gas. The gasoline from this source has a low boiling point of 65 to 85 deg. Fahr. and a high boiling point of 300 deg. Fahr.

He mentioned the fact that a process of pressure distillation for increasing the yield from crude was patented by a Dr. Parker as early as 1907, this antedating both the Rittman and the Burton process patent. He emphasized the need of the development of engines to use low-grade distillates, and stated that when the troubles with Mexico are over that country will be able to supply sufficient crude for the entire world—this, however, is not rich in gasoline.

Mexican Oil American Controlled

Seventy-five per cent of the oil industry in Mexico at the present time is owned and controlled by American capital. Mr. Hall also confirmed the general impression as to the decrease in Baume gravity of motor fuel during the past 2 years. He stated that not long ago gasoline of 76 deg. Baume was common. Now it is not over 58 deg., and sometimes as low as 50. Within the next 2 years it will be mostly 50 deg. Baume. He said that gasoline users are gradually coming to kerosene and that before long we may expect to be using kerosene. He believes that within 5 years engines would be so designed and distillation process so refined that of the crude oil 75 per cent will be used as fuel and the remaining 25 per cent as lubricant.

In the discussion Mr. Hall was asked, since the profit of 3 cents between the cost of manufacture and selling price is reasonable, the profit between 3 cents for the manufacture of kerosene and the sale price of 10½ cents is exorbitant. Hall said it was impossible to figure it that way and that was one of the points that was engaging the Federal Trade Commission at the present moment. That it is competition that set the price of crude and set the price of the finished product. There was no discussion on the paper on carburetion presented by E. E. Dean, chief engineer Byron, Kingston Co.

In the discussion of E. W. Roberts's paper on liquid fuels present and future, the fact was brought out, in England there has been considerable experimenting with the use of pulverized coal, and in Germany with naphthalene—no one, however, recalled the fiasco of a few years ago with Zoline, which was supposed to be chiefly naphthalene and water. The statement was made that it would not be surprising in a few years to see gas engines using coal as fuel. In confirming this, Knowles stated that his company has been experimenting with coal in solution in water, that it could be pulverized so fine that it partakes of the nature of defloculated graphite and can be atomized and ejected into a

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burner just the same as fuel oil, and that subtracting the heat necessary to dispose of the water there would be left 13,000 B.t.u. per pound of heat from the coal The chief difficulty with its use in internal combustion engines would be the ashes that would accumulate and must be thrown out.

Tractors Cannot Be Sold by Mail

There Must Be a Man on the Spot to Educate the Farmer and Handle Service

MAIL-ORDER practices and direct-from-factory selling methods in the merchandising of tractors cannot prove successful, said W. A. Horthy of the International Harvester Co., Chicago, in a paper entitled "Design and Evolution of Modern Gas Tractors," read before the National Gas Engine Association.

These methods cannot succeed, he said, because it is necessary that there be a local representative who cannot only sell the tractor, but who can be tractor expert and instruct the farmer in the use of the machine and in its care and repair as well.

Another point upon which he lays particular emphasis is the necessity for the dealer being a counseler to the farmer. He must be able to tell the farmer what kind of tractor to buy and how powerful a machine he will need. He said, in part:

Larger concerns distribute their tractors through their regular selling agencies. Besides these the logical distributer is the farm implement dealer. Mail-order house practices and direct-from-factory selling methods to supply the market cannot prove efficacious, since it is very necessary to have a local trade representative acting simultaneously as tractor expert, at this early stage in the tractor industry, when so much scepticism and prejudice are encountered and when the instructing and enlightening of the farmer in the use of applied mechanical power is one and the same with the spreading of the gospel of civilization.

Dealers Are Hesitant

Irrespective of the amount of commission attributed, there is a hesitancy on the part of dealers to accept agencies, even for reputable tractors, on account of newly inaugurated selling methods on full cash basis. The dealer ought to consider that every tractor customer is a prospect for other farm implements necessitated or suggested by the application of mechanical power.

A very important phase in a selling organization's policy should be to recommend the type and size of tractor which, to the best of its belief, based upon wide field experience and reports from various territories, is most suitable to perform its daily task. It is equally important to sell only such implements which are consistent with the type of tractor and its power output, and with geographical conditions. We all know the farmer's pet tendency to overload power machinery—the natural outgrowth of the necessity to perform a certain work in just a certain lapse of time. Hence, conservatism in our guaranteed power estimate is good policy.

We found that the very secret of success lies in the following up of all complaints and suggestions sent in from the field to the factory. Upon these reports, based upon the practical experiences of farmers, dealers, salesmen and tractor experts, the designer can safely build and in many instances they are worth far more even than extensive shop experimenting.

Purely as a manufacturing proposition the small tractor, with its initially low cost, great flexibility and present-day popularity, seemingly offers the greatest possibilities. But let us not forget that this sudden and amazing popularity may be only psychological, owing to the fact that this light-weight tractor gave the first sign of permanent success after many years of failure with larger tractors. It is easier to build and sell a small tractor than a large one, notwithstanding there are thousands of farms where they will not even consider the small tractor for their purposes and where they are looking for the large modern high-power tractor.

In the earlier part of the last decade, at the beginning of the gas tractor industry, nothing but four-wheelers were imaginable. With the demand for light-weight small tractors the three-wheel truck grew just as popular, having no decided advantage or drawback compared with the four-wheel chassis.

94 Makers of Tractors

There are to-day in the United States ninety-four manufacturers making 135 different style tractors. Of these, there are seventy-five four-wheelers, forty-four three-wheelers and seventeen models of endless tracklayers, two-wheelers and four-wheel drive tractors. Among the very latest modern light tractors of less than 10 drawbar horsepower rating, 70 per cent are three-wheelers.

We are making no marked progress in the development of four-wheel drive tractors in this country, although much experimenting is done abroad with rather good success. It seems as if the high price and unusual construction do not sufficiently balance the guaranteed advantages over two-wheel drive tractors.

Then, again, manufacturers, and customers as well, are tired of experimenting. They are to-day after the positive, and though nobody will deny that the drawbar efficiency on four-wheel drives may surpass 70 per cent, at the same time we confess that there are problems to be worked out in connection with this model where the question of single or double differential, sliding universal joints or endless chain drive and like contrivances are still in their experimental stage.

As soon as the universal success of tractors gives manufacturers sufficient confidence and lifts the ban of uncertainty from the market, the resumption of this highly efficient type of tractor by those who had most success on other type tractors will surely follow.

Must Rate Tractors on Pounds Pulled

This Is Only Method That Gives Farmer a Tangible Figure for Comparison

THERE is only one logical way to rate a farm tractor as to its ability to perform work. That way is in pounds pull. If tractors were rated in this way, says Raymond Olney, M.E., editor of Power Farming & Gas Power, in a paper entitled "A Standard Drawbar Rating for Farm Gas Tractors," read before the convention of the National Gas Engine Association, the farmer then would have something tangible to work with.

The one great need of the tractor industry and of the farmers who purchase tractors, he says, is a standard method of rating tractors. The horsepower rating is illusive and easily misunderstood by the farmer, whose knowledge of mechanics is limited and who cannot understand the real difference between animal power and mechanical power. Olney strongly urges that the method of rating tractors in pounds-pull be adopted as the standard method. He says in part:

The motor rating should be in terms of horsepower; I believe all engineers are agreed on that point. But the drawbar rating is another matter.

The term "horsepower" is one that is easily misunderstood by the average farmer, especially so when it is applied to drawbar power. His knowledge of mechanics being limited, he ordinarily thinks of a tractor rated at so many drawbar horsepower as the equal in pulling ability of that number of horses, which, of course, is not true.

The greatest objection, as I see it, to the present method of rating is that it gives the prospective purchaser no understandable means of comparing at once the actual pulling ability of the different makes and sizes of tractors.

There is a tendency at the present time to rate the pulling capacity of tractors according to the number of plows they will haul under average soil conditions, say, a two-, three- or four-plow machine. But this method is equally as unsatisfactory as the one now in use, for the reason that the term "average soil conditions" means something different for different kinds of soil. The draft of plows not only varies widely in different kinds of soil, but in the same soils under different conditions.

I am convinced that the only logical method of rating the pulling ability of tractors is in pounds. Tractor engineers have already discussed this subject to some extent, and this method seems to be gaining some support.

Provided the manufacturers adopt the plan that is being worked out by Director Page [of the U. S. Dept. of Agriculture] and his assistants, it is my opinion that the U. S. D. A. rating should include a motor as well as a drawbar rating. A Prony brake test should be made on the motor to obtain data for determining the torque and brake horse-

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power at various speeds. The torque curve of any motor will indicate the normal or critical speed of the motor, or the speed at which the motor produces the greatest torque. The brake horsepower rating should be given on the basis of the torque produced at this speed.

The basis for the drawbar rating should be the pounds pull exerted in an actual pulling test. The drawbar test should be made with the motor running at its critical speed and with the tractor traveling at its best working speed as fixed by the gear ratio. Whether or not it would be advisable to provide expensive apparatus, similar to that used for testing locomotives, or a plank roadway that would give an absolute standard surface, is a question that merits considerable further discussion than the scope of this paper will permit, as well as some experimentation.

Personally, I am of the opinion that, for all practical purposes, it would be sufficient to have tests for establishing drawbar ratings made on hard, level ground, such as a good, dragged dirt road, where slippage for most tractors would be practically negligible. The necessary data could be obtained by means of a recording traction dynamometer such as the one developed and perfected by the Hyatt Roller Bearing Co., with which the majority of tractor manufacturers are already familiar.

While draft tests conducted on a dirt road would show a higher drawbar pull than a tractor would be capable of delivering in a sod, stubble or plowed field, it would be a much less difficult problem to secure standard conditions of footing there than in a field where ground conditions may be extremely variable.

A method of indicating a tractor's rating, that has already been suggested, is by means of a double figure, as is the present practice, but to use pounds-pull instead of the drawbar horsepower; as 1500-20 instead of 10-20, or 2000-25 in place of 12-25, the first figure in the combination representing the pounds-pull and the second the brake horsepower. With this rating should also be included the tractive speed at which the machine will operate best under load.

What Is a Good Tractor Engine

McVicker Lays Down Requirements That Tractor Makers Must Live up to for Success

A SUCCESSFUL tractor engine must have the following qualifications, regardless of its type, according to W. J. McVicker, general manager of the McVicker Engineering Co., Minneapolis, who set them forth in a paper entitled "Tractor Engines," read before the National Gas Engine Association:

(1) *It must be so constructed that it can develop its maximum horsepower continuously without self destruction. The element of limited overload must be eliminated because it cannot be controlled.*

(2) *It must start and operate without undue loss of time and must do a season's work with ordinary care and without the services of an expert. Instructions advising that the user must spend considerable time each day in doing expert work in order to keep it going must be discarded from the instruction books, because time is too valuable during that period and such advice will be ignored.*

(3) *It must develop its rated power economically and operate successfully with the kinds of fuel common in the locality where it is to be used.*

Slow-Speed Types First

The first gas engines used on tractors were of the slow-speed, stationary type, but as soon as the light-weight, high-speed automobile engine was developed to where it was accepted as a success, it was incorporated in a new type of tractor. We then had the slow-speed stationary type of tractor engine and the high-speed automobile type. Neither of these types was universally accepted by the manufacturers. The result was that several modifications of each have been brought out, and also that some designs in the two-cycle marine engine have been developed for tractor work.

Among the different types of engines that have been applied to tractors are as follows:

Single-cylinder horizontal, two-cylinder opposed, four-cylinder opposed, six-cylinder vertical, two-cylinder twin, four-cylinder parallel, four-cylinder vertical.

Single Cylinder the Simplest

The horizontal single-cylinder type has the advantage of being simple in construction and operation. It can be constructed so as to be very accessible. The parts are few in number and therefore are easier to take care of and less expensive to repair. The simple type of single-cylinder ignition can be used. It does not require any gas manifold, therefore a simple type of carbureter can be used, easily adapted to the use of low grades of fuel. Its disadvantages are that it is heavy in weight for the power developed, it cannot be well balanced mechanically, and, on account of its low impulse frequencies and long stroke, it requires extra heavy flywheels to keep the speed regulation within the required limits, and it is difficult to devise satisfactory transmission for its tractor work.

The two-cylinder twin is somewhat lighter for its power than the single-cylinder, and, like the single-cylinder, can be made so that the connecting-rods and other moving parts are quite accessible. In ordinary sizes the cylinder can be cast en bloc, which simplifies and cheapens the construction. One carbureter can be situated close to and in the same relation to both cylinders so that the gas distribution is simplified, which makes it more easily adapted to the use of low-grade fuels.

The disadvantages are that it is impossible to get both a good mechanical and a good power balance. If the crank pins are concentric, it is practically impossible to counterbalance so as to reduce the vibration. If the crank pins are at 180 deg., the power balance is distributed so as to give an even torque and an uneven suction on the carbureter, which later is very undesirable, especially when using low grades of fuel. It is also difficult to devise a suitable transmission and keep the proper width with the weight properly distributed in the tractor.

The four-cylinder parallel can be made very accessible. Its center of gravity is low, and by reason of its high and even impulse frequencies, gives a very good torque and power balance. It is well balanced mechanically, so that it sets up but little vibration. Among the undesirable features are its extra width and the difficulty encountered in providing a satisfactory dust-proof transmission within the required limits of width for a practical tractor. The multiple cylinder gas manifold and carbureter make the use of low grades of fuel much more difficult.

The two-cylinder opposed has a good power and mechanical balance. It is a desirable shape for certain classes of tractors and is cheap to build for the power developed. On account of its long manifold it is hard to carburate, especially with low-grade fuels. In some cases two carbureters have been used, but this adds complications, so that there is but little advantage. Owing to the rotary motion of the crank and connecting-rods the lubrication of the cylinders at different speeds becomes a difficult matter and it is also a difficult matter to provide adjustable crankshaft bearings.

The four-cylinder opposed has the advantage of being very compact, has a good torque and is well balanced. It is light in weight and cheap to manufacture and can be made readily accessible. It has the same difficulties of carburetion and lubrication as the two-cylinder opposed, and it is hard to construct a satisfactory adjustable main bearing for the crankshaft.

The four-cylinder vertical, which is one of the most popular types, is well balanced mechanically, especially with reference to horizontal movements. It is easy to lubricate and one in which the splash system can be used most satisfactorily. The most serious objection to this type of engine for tractor work is that the bearings are not accessible and the pistons are hard to remove for cleaning and inspection.

Two-Cycle Possibilities

The two-cycle engine has some very desirable features. It gives twice the number of impulses per cylinder as the four-cycle for the same speed, which makes it easy to balance and gives a very even torque. So far, this type has not been developed generally to the point where its reliability and fuel consumption are satisfactory for tractor work.

The two-cylinder opposed is used most extensively on two-plow tractors, and the four-cylinder on all larger sizes, with the exception of a few six-cylinders on the extra large types. The principal reason for this is that the four-cylinder suitable for a tractor of two plows will have a rather small cylinder of approximately 3¾ x 5 and must be run at a fairly high speed of approximately 1200 r.p.m. to give proper efficiency. The two-cylinder opposed, of about the same power, will have cylinders of approximately 5¼ x 7 and will run at a speed of approximately 675 r.p.m. Inasmuch as speeds of 1000 r.p.m. or over have been considered undesirable, it has made the slower speeds of two-cylinder opposed more popular for the small-size machine. For tractors of more than two plows the one- and two-cylinder motors are large and heavy, and for this and other reasons are not so desirable

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as the other types. The four-cylinder engine with a bore of 4½ or over and a speed of 900 r.p.m. or less is very satisfactory for tractors of more than two plows.

There has been considerable discussion with reference to the merits of a vertical and a horizontal type of engine for tractor use. Some of the objections have been made to the horizontal type on the theory that the pistons, due to their weight, would rapidly wear the lower part of the cylinder, so that it would soon become elliptic, but the pressure due to the weight of the pistons is so small compared to the angular pressure from the connecting-rods that it is hardly worth considering.

Another theory is that the horizontal valves will soon wear the lower sides of their stems and guides, so that they will not properly seat, but if the spring and operating mechanism are properly designed the weight of the valve will have no effect on its wearing; in fact, either the horizontal or vertical valves will rapidly wear their stems and burn out seats if the springs and lifters are not properly designed.

There is also some question as to whether the valve in the head motor has any advantage over the other types, such as the L and T heads. There appears to be no question but that the valve in the head type, due to its more symmetrical combustion chamber and relatively less waterjacket, is the more efficient when the valves are properly adjusted, but as the valve mechanism is more complicated and more liable to get out of adjustment, that fact offsets its other advantages, so that in practice there is but little difference in their efficiencies.

The poppet valve with a conical seat is more generally used for four-cycle tractor engines at the present time, but there is a possibility of the sleeve valve, such as the Knight, being developed for this class of work. The advantage of the sleeve valve is that it will give approximately 25 per cent more power than the poppet valve and practically eliminate carbon trouble. The engine with these valves also shows a high efficiency, due to spherical shaped combustion chamber and to the perfect action of the valves.

Lubrication Is Important

One matter of great importance in tractor engines is the lubrication. Successful lubrication depends upon the proper kind of oil being used and adequate methods for supplying it to the bearings. The method of lubrication commonly used is the splash system, in which the oil is carried in the crankcase and distributed to the bearings by means of the connecting-rods dipping into troughs, which are kept filled by a small pump. This system is satisfactory when using gasoline or high grades of distillate as fuels, but does not work so well for the lower grades of distillate and kerosene.

The objection to this system is that the oil, after being used for some time, becomes fouled with dirt and residue from the cylinders and soon heats up to where it loses its viscosity and other lubricating qualities. With engines using heavy fuels, such as kerosene or low grades of distillate, there is a residue which works past the pistons into the crankcase, which seriously interfere with the lubrication if allowed to mix with the oil. For engines using these fuels it is desirable to use a system in which a definite amount of fresh oil is delivered to the cylinders and bearings by a multiple force-feed lubricator; in fact, this is undoubtedly the best system for all gas engines if it can be installed without too much complication.

Another matter of importance in the construction of heavy duty engines is the bearings, and more especially those of the connecting-rods. It is usually an easy matter in designing an engine to provide as much bearing surface in the main bearing as necessary, but it is more difficult with the connecting-rods. The weight of the rotating and reciprocating parts, owing to inertia at high speed, must be kept down as low as possible, and the weight and size of the whole engine must also be kept at a minimum.

Inasmuch as the weight of the connecting rods increases very rapidly with both the diameter and length of their bearings, and as the weight of the whole engine also increases in proportion to the length of all the bearings, it requires considerable skill in designing an engine to get the proper bearing surface without detrimental weight.

The method of transmitting the power of the engine to the tractor has more or less effect on the bearings and must be taken into consideration in determining the size of the different crank bearings. The best construction is one in which the transmission mechanism is separated from and independent of the crank shaft and is connected with it by a flexible clutch so that none of the transmission load is carried by the crank shaft bearings and vice-versa.

Most Serviceable Bearing

The most serviceable type of bearing is one in which the walls of the bearing housing are first tinned and the bearing metal cast in place so that it forms a metallic contact. The objection to this bearing, however, is that it is hard to replace. The best type of replaceable bearing is the one which a bronze shell is made to fit the bearing housing and then lined with a suitable bearing metal.

A very practical construction, especially for connecting rod bearings, is one in which the bearing housings are machined to receive a replaceable bearing and then lined with a bearing metal cast in place. The advantage of this construction is that it gives the service of the cast lining and in case it is necessary to make an emergency repair, the lining may easily be removed and the shell bearing substituted.

Engines for tractor use should have a very conservative power rating so that they can actually develop their rated hp. under unfavorable conditions. One of the most confusing things at the present time is the understanding of tractor horsepower. Tractor horsepower is determined by multiplying the drawbar pull by the speed and reducing the product to standard horsepower of 33,000 foot-pounds.

For instance, a tractor that will pull a 2250 pounds at a speed of 2 miles per hour is rated 15 horsepower and is capable of hauling four 14-in. plows, under favorable conditions, whereas ten horses could do the same work under the same conditions. This tractor would have an engine rated between 25 horsepower and 30 horsepower. Now the user cannot understand why he has to buy a 30-horsepower engine to do the work of ten horses, and as yet no one has offered a satisfactory explanation.

The Government has recently been considering the matter and it is possible that it will provide some means of testing the different tractors and advising how they should be rated. However, the matter should be cleared up for the benefit of the manufacturers as well as for the users, by establishing a new standard that cannot be confused with animal horsepower.

Motor World Guide

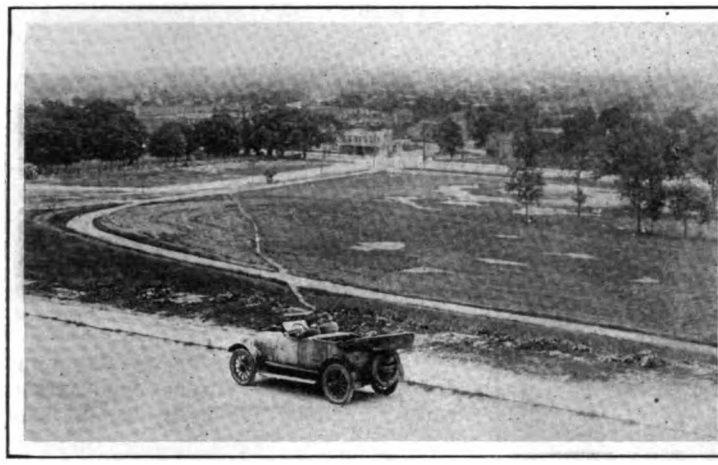
THIS condensed tabulation of the principal specifications of pleasure cars on the American market appears in Motor World once every month; it is in the last issue of each month. Each month it is revised up to date. It will appear in the July 26 issue of Motor World.

This Is an Inexpensive, Attractive Window for a Garage

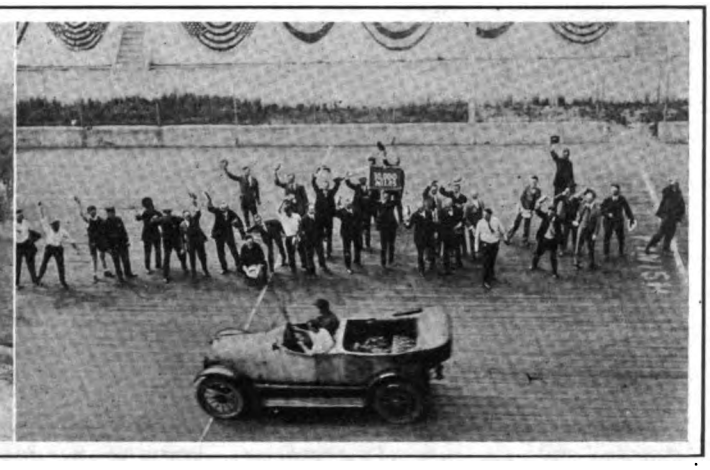


This display was staged by C. A. Miller of the Firestone Tire & Rubber Co., Detroit branch in the garage of Deutsch Bros., Detroit. The only expense was for crepe paper, the flags and card being supplied by the Firestone company

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When the Police Games interfered with the Speedway Test, the King Eight was run out on the roads through heavy traffic and in the country



When 10,000 miles had been covered, as much as an owner ordinarily would drive in two years, there was rejoicing, but the test was not stopped

Running for Two Weeks, King Eight Makes 10,850 Miles

Circles Sheepshead Bay Speedway Most of Time at 32 m.p.h. Without a Motor Stop—Finish With 200 Miles on Roads

SHEEPSHEAD BAY, June 29—Just a little after noon to-day the King eight-cylinder car, which has been undergoing a non-motor-stop test for the last 2 weeks, rolled across the finishing line of the board track here, having covered practically 11,000 miles without a falter in its power plant.

The object of the test, which started at noon on June 15, was to demonstrate the stability of the King eight-cylinder motor and to approach a condition of actual service by concentrating the running and operation of 2 years' car service into 2 weeks of test work. To accomplish this the car maintained an average of over 32 miles an hour, including the stops to take on gasoline, oil and other supplies. Excluding the stops, the speed was 34.31 miles per hour. The engine ran 24 hr. a day and was not stopped from the moment the test started until it was switched off by F. E. Edwards, technical representative of the American Automobile Association, before the New York King salesroom late this afternoon.

The test was methodically arranged and carried out from start to finish. It was under direct sanction and supervision of A. A. A. officials, who worked in shifts of 8 hr. observing the running of the car and noting, on the score sheet, the time of each lap around the 2-mile track. The drivers worked in shifts of 5 hr., with a 10-hr. rest period, and with the driver rode a mechanic, giving a full passenger load in the front seat, while in the rear a bag of sand weighing 500 lb. was carried to represent the full passenger load in the tonneau.

The entire 10,850 miles was run upon the speedway except 200 miles, which were made upon the roads of Long Island between the speedway and the Motor Parkway, and on the Motor Parkway itself, up and down the 40-mile stretch from Jericho Turnpike to Lake Ronkonkoma. No attempt was made to speed the car excessively, but the average was held consistently throughout the run. The car probably made its fastest time when put on the Motor Parkway, as it traveled at times close to 50 m.p.h. over the rolling country traversed by the parkway. Even at this speed, however, due to interruptions to and from the parkway, the average speed while off the board track dropped to about 26 m.p.h., showing the impossibility of maintaining a high average over the open roads.



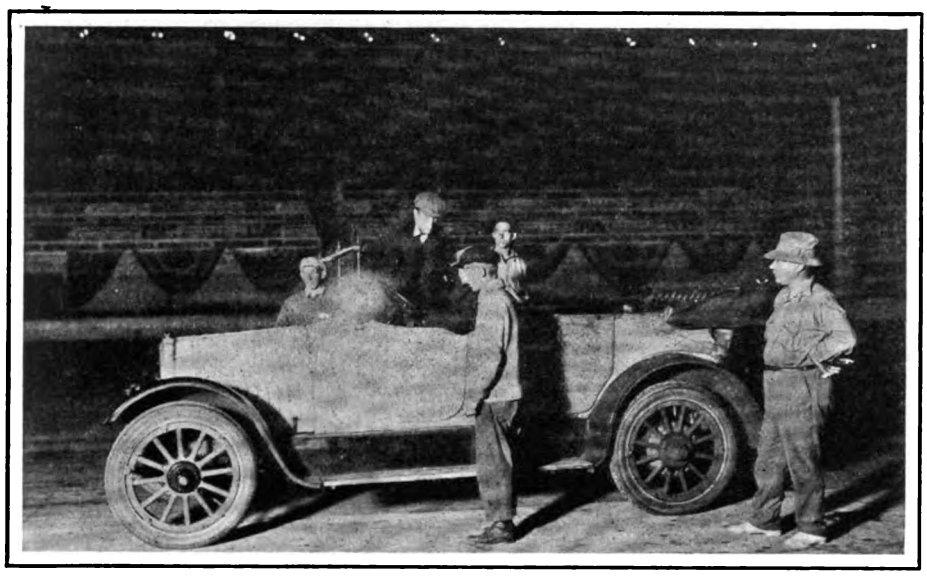
This is the car as it appeared during the test

As a service test of the car, the King company makes the point that this shows shows actual performance as well as it possibly can be shown in a test, because the distance covered by the car is equal to about 2 years of normal driving and the speed is not very far in excess of that often demanded by the car owner. The King car which made the test was certified by the King company and by A. A. A.



So that no one who saw the car on the roads might be in ignorance of the test great banners were displayed on both sides of the car

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The motor ran 24 hours a day and was not stopped during the entire two weeks. This picture, as well as the one at the right, which shows the camp of the mechanics, was taken at night

officials to be a strictly stock job throughout, even including the details of equipment.

This is a Model E car, with an eight-cylinder 3 x 5 motor, having an S. A. E. rating of 28.8 hp. and a piston displacement of 282.7 cu. in. The motor is a product of the King plant and follows conventional eight-cylinder practice, with the cylinders cast in blocks of four at 45 deg. The valves are on the inside of the V and are operated from a chain-driven camshaft. Cooling circulation is by thermo-syphon, lubrication is by pressure and ignition by single Atwater Kent battery system.

Gasoline is fed by the Carter system to a Ball carbureter. Starting and lighting is by Ward Leonard. The drive is taken through a plate clutch through a three-speed unit plant gearset through a floating American rear axle. The gear ratio used on the test car was a standard 4.25 to 1 and the tires 34 x 4 Firestones, plain tread front and non-skid rear. The only fitting on the car which does not coincide with stock practice was an additional speedometer, which was installed as a double check on distance. The official distance readings, however, were not taken from the speedometer, but measured by the laps made on the speedway. While on the road during Saturday, June 24, while the speedway was occupied by the New York police in their field games, the distance was taken from the speedometers, corrected by a coefficient determined from a comparison of the readings and the known distance traveled on the 2-mile track.

During the course of the run the car made 160 stops. On sixty-nine of these, changes of either driver or mechanic were made. Besides stops for supplies and changes of drivers, the other causes for stops were as follows: Testing electrolyte of battery on several occasions,

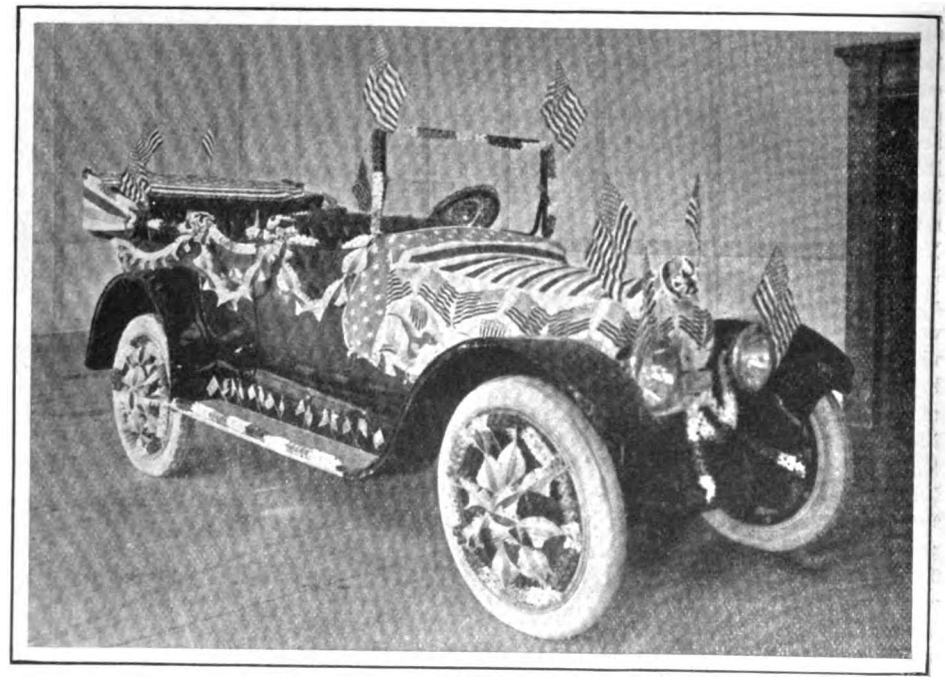
SPECIFICATIONS OF THE KING MODEL E CAR

Price	$1,350
Make of Motor	King
Number of cylinders	Eight
Shape	V
Bore	3
Stroke	5
S. A. E. horsepower	28.8
Ignition	Atwater Kent
Carbureter	Ball
Engine starter	Ward Leonard
Gasoline feed	Carter
Clutch	Plate
Gearset	Selective, three-speed
Wheelbase	120 in.
Tires	34 x 4
Speedometer	Stewart
Make of axle	American

replacing bulbs, oiling universals, oiling speedometer drive, tightening grease cups, tightening fan belt, cleaning gas line, taping leak in gas pipe, tire changes, renewing motor oil, splicing horn wire terminal, steering gear adjustment, and at important distances, such as 10,000 miles, the car was stopped for photographs. Throughout the run no adjustments or mechanical work was done that could not be accomplished by the ordinary owner, this being one of the objects of the test.

The weather conditions were very severe during many parts of the run. In one instance the fog was so thick that the driver could hardly stay on the track and had to reduce his speed to about 15 m.p.h. There were several thunder storms during the course of the run, three or four of which amounted to practically cloudbursts and also 2 or 3 days of steady, misty rain. About half the time the weather was bright and fair.

One of the features of the run was the oil economy. The car averaged 1172.7 miles to a gallon of oil, in spite of the speed, which was considerably in excess of average driving, with the added factor that the motor did not stop running for an instant after the test was started.



This car was decorated by the Cadillac Automobile Co., St. Louis, for Flag Day at a very small expense for crepe tissue and flags. Decoration of this kind are excellent for other National holidays such as Decoration day and Fourth of July, too

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White Walls Promote Efficiency

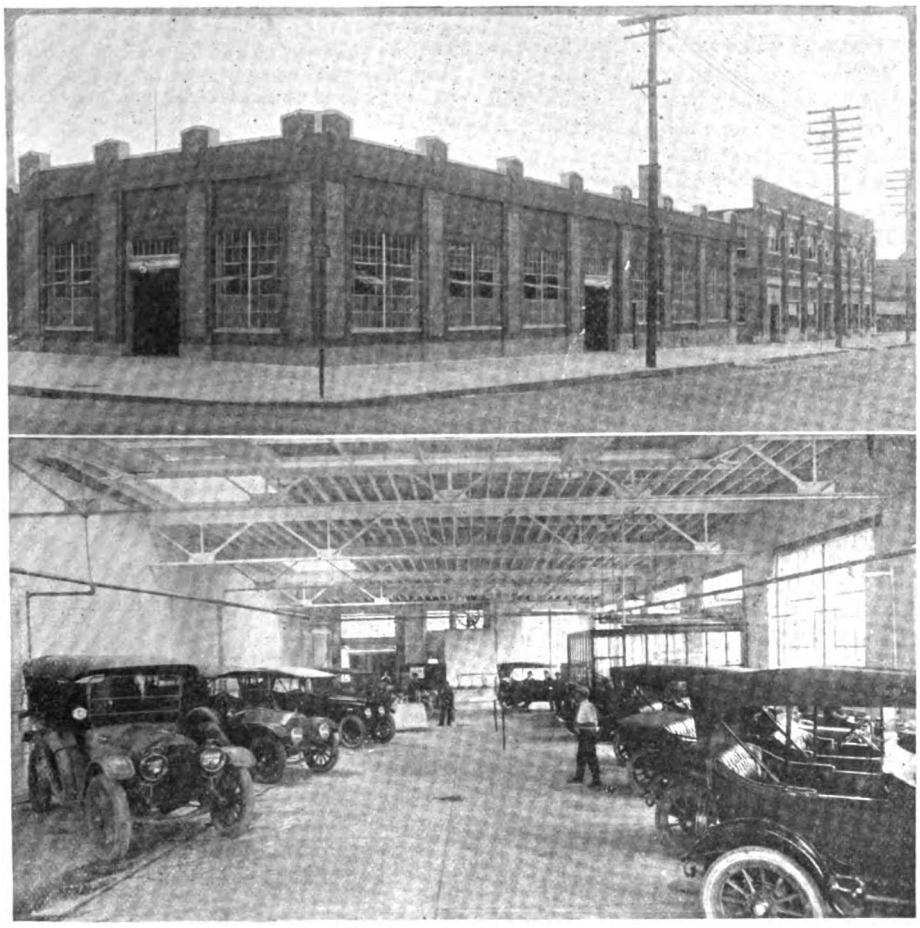


Broadway front of the block-long Botterill building in Denver, home of the Pierce-Arrow, the Hudson and the Dodge

A CONVINCING illustration of the practicability of white walls and ceiling to emphasize the value of repairshop cleanliness is furnished by the quick-service station just recently built in Denver by Tom Botterill, Pierce-Arrow and Hudson distributer for Colorado, Wyoming and Utah, and Dodge dealer for Denver.

The new $12,000 building is so arranged and equipped that it gives the workmen a sense of pride and pleasure in keeping the place clean. In turn, this attitude makes for an added feeling of responsibility to do a high quality of work in keeping with the surroundings. The whole effect is an impression of the dignity and dependableness which are recognized as vital factors in a successful business institution.

Large and convenient windows fitted with the Detroit Steel Products Co.'s Fenestra sash make for excellent lighting and needed ventilation. Both these features are aided by spacious skylights, while the lighting is conserved and intensified by the white walls and ceiling. All cross-beams and water and steam pipes are painted white, and the only break in the solid white of the whole interior is the natural wood finish of the small partition separating an office for handling shop records, repair parts, accessories, etc.



Above—Another view of the Botterill building with the quick service department in the foreground and the salesroom in the background
Below—Inside the building everything is white, ceiling, walls, pipes, fixtures and even the floors

The one entrance and two exits are equipped with the Richmond Safety Gate Co.'s horizontal trolley doors, which save time and trouble and add their part to the purpose of quick work and a general smoothness and systematic handling of things. A time-clock record is kept of every piece of work, to guard against mistakes, confusion and complaints regarding delays, charges, etc.

Gasoline and oil pumps, steam-heating, air-filling connections all along the walls, sanitary wash-basins and toilet, a basement storage room for carload lots of oil, and a wagon-height elevator for convenient unloading of oil in barrels are other features of up-to-dateness in this new service station.

"The workmen are enthusiastic about the white interior and other features which we believed would prove of more than ordinary value," says Botterill, "and they back up their words of praise and appreciation in a substantial way by making a special effort to keep the place looking neat and clean. Their spirit of pride in their workshop is indeed gratifying. As an evidence of how the heads of this concern value businesslike cleanliness in every department, we employ a special janitor just for this building alone; and it looks as if he is coming to make neatness a hobby and a profession, instead of merely a matter of duty to hold his job."

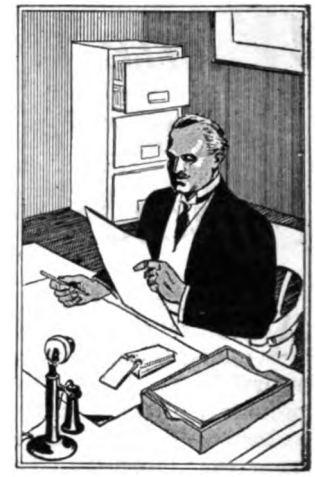
The new shop is 50 x 125 ft., and is one story in height. The foundations were put in to carry three stories, however, as a matter of foresight for a likelihood of needed enlargement.

With this new building the Botterill establishment is now a full block long, extending the entire distance from Broadway to Lincoln Street along the south side of Thirteenth Avenue. It is recognized as one of the largest and best equipped motor car sales and service concerns in the Rocky Mountain region, if not in the entire West.

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Accounting and Business Systems



System and Gasoline Letters

Editor Motor World:

This company was certainly like the Mexican Government — not knowing where it stood in its financial matters or otherwise—before it installed the Motor World Simplified System of Accounting under the leadership of Mr. J. O. Davies, the accountant.

We are glad to state at this writing that results of this system have opened our eyes and showed us the leaks and profits of the separate departments as conducted in any up-to-date garage.

We would appreciate receiving anything more that you may devise as a helpful product to benefit the garageman and dealer.—Mott Haven Garage Co., Fred J. Hinners, New York.

P. S. What do you think of the enclosed letters as an inducement for customers to buy in the garage at which they are storing their cars?

The Letters

No. 1

Dear Sir:

This month our Government has mobilized its armies for defense and is encouraging the enlisting of recruits. This company, like the Government, has mobilized, but we are looking for recruits to fall into the ranks and purchase their gasoline, oils, tires, tubes and accessories from us.

This we ask, for our records still show that some of our customers are not doing their duty toward us. We therefore quote outside prices for comparison with ours.

No. 2

Dear Sir:

"Preparedness" is the watchword of the Universe. So is it with the MOTT HAVEN GARAGE. Is it with you? Are you prepared to receive our thanks for your patronage in the past? If not, WHY not?

Our source of income is so divided that we ought to be prepared to meet our heavy expenses and at the same time to derive a just profit, which, we think, we are entitled to. We are deprived of the above by some of our customers purchasing on the outside their gasoline, oils, tires, tubes and accessories.

"Preparing" to receive your patronage in future, we are,

Yours very truly,

ANSWER—Thank you for your commendatory remarks about our system. We are glad indeed to learn that it has been of benefit to you.

Your letters to your customers are very good, but do you not think that after reading them the customer will still say: Why should I buy my gasoline in a garage when I can get it cheaper elsewhere?

If it is the case that in your garage your storage is sold at a rate which does not give a good profit, and if you feel that you must have the full trade of the car owner in order to make any profit on his business, do you not think that you might have gone a little further into detail on this question, even so far as to quote figures as to what the service costs you and what you get from it? Do you not think a few figures of this kind would be very convincing and show the car owner the reason for the request you have made?

For Better Business

Editor MOTOR WORLD:

Some few months ago you published an account of your Simplified System of Accounting. I saw only the first lesson, or explanation, but it looked very good to me.

I am around considerably, calling on garage proprietors and automobile dealers and am trying to get them to install some little system where possible and I would like a sample of your forms and price of the complete outfit so that I may take the matter up with the people I call on and, if they are so inclined, help them install same and get started as they should.

Any information along these lines will be appreciated. A. A. McCORMICK, Detroit, Mich.

Some Book Agent!

QUESTION—We are about to install the Motor World System and with it we are using a return order in the shop which has a requisition with it. This requisition we are also using as a sales slip.

For instance, a customer purchases 5 gal. of gas and wishes it charged. We make the charge, and if the customer wishes we give him a copy. The original charge goes to the office, where the bookkeeper makes the proper entries in your system.

We have explained to you how we are using this requisition for the reason that we would like to know if we are meeting all the requirements of the law.

A sales book agent called here this morning and because we didn't fall in with his ideas he got rather nasty and told us that we might hear from Albany and that we were liable to a $50 fine. With your wide experience you doubtless can put us wise if we are on the wrong track.

We appreciate the many favors extended to us by Motor World and believe that through this publication the garagemen finally will be able to run things in a more business-like manner.—C. A. Chamberlain, Chamberlain's Garage, Skaneateles, N. Y.

ANSWER—If a requisition slip gives you satisfaction as a sales slip, it is sufficient; if a plain, ordinary piece of paper gives you satisfaction as a sales slip, that is sufficient also. The only essential is that you have some form or other that enables you to keep your records straight.

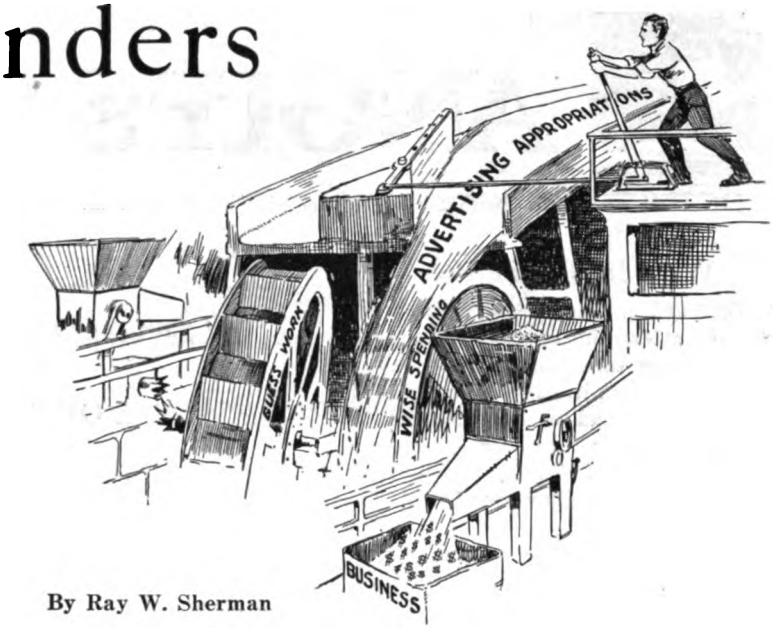
As to the law on this subject, we never heard of any such thing. A book agent is likely to tell you almost anything.

As to your hearing from Albany and being subjected to a $50 fine, we believe that this is a threat without any foundation whatever, because we never heard of any law that required a garageman to use any kind of a system. If there were a law requiring garagemen to use system, there are thousands that we know of that would be in jail at the present time.

The next time this book agent comes along give him the laugh and tell him to "tie it outside."

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Wise Spenders



By Ray W. Sherman

REILLY, proprietor of C. J. Reilly, Inc., had just returned to Callawassa from the ad men's convention in Philadelphia and was all settled at his desk, ready to sell more Sennett cars than ever.

"Wonder what the boss'll spring now," sotto-voced Tommy Trumbull, the junior salesman, to Charley McGrain, the senior, for Tommy lived, loved and worried in the belief that Reilly's principal object in life was cooking up new jobs for the salesmen. It wasn't long coming.

"Tommy," said Reilly, "will you find out what we have been spending for advertising and where we have been spending it?"

"Newspaper?"

"Everything!"

Finding Out What

Tommy dug around for a while and finally produced the desired data—so much for form letters; so much for booklets, literature and printing; so much for newspapers, and so on.

Reilly studied the figures.

"Got a new plan?" queried Tommy.

"Not yet; but I'm going to have one," asserted Reilly.

"You see," he continued, "one of the fellows at this convention set me thinking. He said the average business man ceases to be a business man when he buys advertising. He said business men buy advertising because they believe they ought to advertise, and that they don't pay attention to what they're buying and don't buy to get the greatest results from their money."

"Is——" began Tommy.

Unwise Spending

"I believe he's right!" Reilly proceeded. "I don't believe we have been spending our advertising money as wisely as we should. I don't believe we have been using the care in our advertising expenditure that we use when we buy supplies for the shop or material for use in the office. We're fussy enough and particular when it comes to those things, with which we are very familiar; but when it comes to advertising we fall down.

"Now, take our newspaper advertising. We have been running the same ads and the same space at about the same price in the three papers, two evening and one morning. But we never went into an analysis of what we are getting for our money. It stands to reason that there must be a difference. Undoubtedly two of these papers would do just as well as three if we go into the matter.

"If one of the evening papers is more a workingman's paper than a business man's paper, we are not getting full results from our expenditure in the former paper. We might better take our money out of one and put it all in the other.

More Results—Same Expense

"One of the fellows at this convention said that when he took hold of a certain advertising proposition he found eighth- and quarter-page ads running in about twenty papers. He couldn't get any more money appropriated, so he threw out half the papers and doubled his space in the rest. He got 100 per cent more results and everybody thought he was spending twice as much money.

"He said one branch manager wrote in and congratulated him for beginning to use a certain paper, whereas the company had been using that paper for 14 years—but in very small space only.

"And then there's our circularizing, our literature and our form letters. We have always tried to make these things high-grade, but on some of our late efforts the matching up of the addresses has been so poor that it is obvious that they are form letters.

"I don't think a letter that tries to get by as not a form letter but which is a form letter is productive of results. And there are darned few form letters that can't be recognized. I don't know but what I'm in favor of discontinuing form letters entirely and concentrating on high-grade printed matter exclusively.

Check Up Results

"We ought to check up the returns on our form letters and our literature, and find where we're getting results. If we are getting no results we ought to know it and quit throwing our money away."

"But don't we get general results?" pleaded Tommy.

"General results are being pushed into the bush-wah class, Tommy, according to one of these ad men. He said the business man ought to get this general results idea out of his system and begin to look for a few specific results. This means that we must study our effort and its return, and find out what we're getting for the money we spend.

"From our newspaper advertising we can't always trace a specific result, but we can get somewhere near it. And we most assuredly can keep ourselves from spending money in publications that are of no more value to us than a Sunday-school paper or the Police Gazette.

Wasted Billboard Money

"Bogardus, who handles the Colt, spent a lot of money this season for billboards, and every one of his boards is stuck in a row with a lot of other boards where it is not easily read by the man who is skimming along in a car. His expenditure would have been far more valuable if the boards had been set up by themselves somewhere where there was not a lot of other signs to distract attention.

"Some of these moving picture men get slide ads from the motor car dealers and some of these movie shows don't draw three prospective car owners a year. That's a plain waste of money. And there are all sorts of advertising schemes that aren't worth the powder to blow them up.

The Wheel That Grinds

"The big point, Tommy, is that every time we contemplate spending a cent for advertising we should scan the proposition just as closely as though we were buying chamois for the shop or neckties for ourselves.

"And just because we have always sent out form letters in a certain way, or because a certain thing has been done by everyone, is no reason we should continue to do it if it isn't profitable. From now on we're going to watch this current of advertising out-go and send it over the water-wheel that grinds out the greatest grist of returns."

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ANGLES OF THE LAW



By George F. Kaiser

Who Is To Blame

RECENTLY a dealer here in New York after attempting to sell a car to a man for some time finally succeeded in interesting him in it. The man looked it over carefully, had several demonstrations, brought his wife to see it, and even practically came to an agreement with the dealer as to an allowance for his old car.

Another demonstration was arranged, and finally the man asked that he be allowed to drive the car. Without any hesitation, and hoping that this would be the final step to the sale, the dealer assented and gave up the wheel to his prospective buyer. The customer had hardly become seated behind the wheel when a passing pedestrian was struck and injured.

Of course, someone had to be sued for the injuries. The customer was a salaried man, with no property to speak of. The dealer had an established business. Suit was brought against the dealer.

As to the responsibility, he asks: "Should not the injured party have sued the customer, as he was driving the car at the time of the accident?"

I do not know of any decided case where the facts are exactly similar to what they are in this one, but my opinion is that the dealer will have to pay the damages sooner or later.

When the case goes to court and it is shown that the dealer was demonstrating the car with a view to selling it, and the prospective buyer was trying it out as a part of the demonstration, the jury will reason something like this:

"The car belonged to the dealer—he wanted to sell it—if he did not demonstrate it successfully he could not sell it—if the accident had occurred while the dealer was driving, the dealer would have been responsible—then he is just as responsible if the accident occurs while the customer is driving, as the purpose of allowing the customer to drive was to consummate the sale and benefit the dealer."

Whether or not the insurance company which insured the dealer will adopt this view is another matter, however, and if the case comes to a trial the decision will undoubtedly be well worth reading.

Dealer Must Pay Freight on Parts

A question frequently asked is, who must pay the freight charges on defective parts replaced by the factory?

Tell Us Your Troubles

Dealers will note that their contract, almost without exception, provides that these parts will be furnished f.o.b. the railroad nearest to the factory. When a provision of this kind is contained in the contract the freight charges must be paid by the dealer.

Hold the Money

Editor Motor World:

I have had a motor car on dead storage for nearly 2 years. The man who stored it with me is now in England. When the storage had not been paid for over 1 year I served notice of sale by mail on the person storing it. I was notified by his father that he had a bill of sale of the car to secure a lien. The car was sold at auction, as prescribed by law on such matters. I also served a copy of the notice on the father holding the bill of sale. The car brought a sum in excess of my charges. The father now makes claim for this excess. Am I safe in paying it to him, with the son having a reputation for going to the courts on every occasion?—Charles C. Tough, New York.

You might ask him to give you a bond to indemnify you in the event that the son should make a claim for the surplus.

If you hold the money until the father compels you to pay it over to him by some legal process you will likewise be safe.

If you have any doubt in the matter do not turn over the money until you have legal authority or are directed to do so.

Lien Comes First

Editor Motor World:

Can a lien be put on a car not in our possession for repair bill and accessories, part of the bill being a year old? If so, will the lien stop the owner from using the car until the bill is paid? What would be the outcome if there is a mortgage on the car?—Varysburg Garage, Varysburg, N. Y.

Under the present New York lien law a dealer has a lien on a car only while it is in his possession. A bill was introduced at the last session of the Legislature which would have allowed a car to be retaken by a garageman or repairman, even though it had passed out of his possession, if his bill were unpaid. Unfortunately, the bill failed to pass and the dealers will not have that right until some future time when the present lien law is amended or repealed and a new one is put through.

If a dealer has a car in his possession he can hold it and prevent the owner from using it until his bill is paid. If he once allows it to go out of his possession, however, he cannot hold it for the old bill if it should ever be brought back again for repairs, but can only hold it as security for the current bill.

Even if a car were mortgaged the dealer has a right to hold it. The lien comes first—the mortgage next.

When You Have a Fire

From time to time cases come to my attention where dealers suffer loss by fire or are sued for injuries caused by negligence and lose all the benefits of their insurance merely because they fail to give the notice to the insurance companies that the policies require they must give immediately on the happening of a fire or accident.

As soon as a fire occurs or an accident occurs, take out your insurance policies and read them very carefully. Find out how soon notice must be given to the insurance company and to which of its representatives it must be given—and then GIVE THAT NOTICE. If you do this, you will get the indemnity you are paying for. If you do not do it, the company will not reimburse you and the money you have paid as a premium is simply wasted.

Corporation Is Responsible

In the event that demonstrating cars are registered by a corporation, actions for damages for injuries resulting from negligence are naturally brought against the corporation and **not** against the individual. This of itself often saves considerably more than the cost of incorporating.

When cars are used for livery work the question as to who is liable for damages is answered by ascertaining who controls the driver. If the driver is subject to the person hiring the car, that person is liable. If the person hiring the car rides in it as he would in a taxicab or on a street car, the owner is responsible.

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A Standard Name for Every Part of a Car

TO eliminate confusion and the loss of time and money by dealers, garagemen, supply houses and car manufacturers, has been the purpose of the Standards Committee of the Society of Automobile Engineers in thus standardizing the names applied to all the parts of a motor car.

Heretofore, garagemen and dealers ordering parts from a car manufacturer may have used one term whereas the car manufacturer used another. The result was that much correspondence was needed before the manufacturer knew exactly what the dealer wanted. Again, sometimes a wrong part was shipped because of misunderstanding. This meant delay, dissatisfied customers and increased expense.

Now, however, much of this trouble will be wiped out. There should no longer be any confusion regarding the proper name for a particular part of a car. The Standards Committee has recommended these names for general adoption by the motor car trade. Such action rests with the S. A. E., which will formally vote on the question by mail.

DIVISION I—CYLINDERS

Group
1—Cylinders.
2—Crankcase.
3—Crankshaft.
4—Starting-crank.
5—Connecting-rods.
6—Pistons.

DIVISION II—VALVES

1—Camshaft.
2—Valves.

DIVISION III—COOLING SYSTEM

1—Fan.
2—Radiator.
3—Pump.
4—Pipes and Hose.

DIVISION IV—FUEL SYSTEM

1—Carbureter and Inlet Pipe.
2—Carbureter Control.
3—Carbureter Air Heater.
4—Fuel Tank.
5—Fuel Pipes and Feed System.

DIVISION V—EXHAUST SYSTEM

1—Exhaust Manifold.
2—Exhaust Pipe and Muffler.

DIVISION VI—LUBRICATION SYSTEM

1—Oil Pan or Reservoir.
2—Oil Pump
3—Oil Pipes, Strainers, Gages.

DIVISION VII—IGNITION

1—Spark-plugs, Cables and Switches.
2—Ignition Distributor.
3—Magneto.
4—Ignition Control.

DIVISION VIII—STARTING AND LIGHTING EQUIPMENT

1—Generator.
2—Starting Motor.
3—Wiring.
4—Battery.

DIVISION IX—MISCELLANEOUS ELECTRICAL EQUIPMENT

1—Lamps and Wiring.
2—Switches and Instruments.
3—Horn.
4—Miscellaneous.

DIVISION X—CLUTCH

1—Clutching Parts:
Cone Clutch.
Disk Clutch.
Plate Clutch.
2—Releasing Parts.

DIVISION XI—TRANSMISSION

1—Transmission.
2—Shifting Mechanism.
3—Control.
4—Propeller-shaft.

DIVISION XII—REAR AXLE

1—Housing.
2—Torque Arm and Radius-rod.
3—Drive Pinion.
4—Differential.
5—Axle Shafts.

DIVISION XIII—BRAKES

1—Outer Brake.
2—Inner Brake.
3—Pedal (or outer) Brake Control.
4—Hand (or inner) Brake Control.

DIVISION XIV—FRONT AXLE AND STEERING

1—Axle Center.
2—Steering-knuckles.
3—Steering-rods.
4—Steering-gear.

DIVISION XV—WHEELS

1—Front Wheels.
2—Rear Wheels.

DIVISION XVI—FRAME AND SPRINGS

1—Frame.
2—Frame Brackets and Sockets.
3—Front Springs.
4—Rear Springs.

DIVISION XVII—HOOD, FENDERS AND SHIELDS

1—Hood.
2—Engine Shield.
3—Fenders and Running-boards.
4—Windshield.

DIVISION XVIII—BODY

1—Floor-boards and Dash.
2—Body.
3—Upholstering.
4—Top.

DIVISION XIX—ACCESSORIES

1—Speedometer.
2—Tire-pump.

General

Where terms "front" and "rear" are used, "front" should always be toward the front end of the car. These terms are sometimes confused in regard to parts that are mounted on the dash. The front side of the dash is always that next the engine.

Where parts are numbered, No. 1 should be toward the front of the car. For instance, No. 1 cylinder is the one nearest the radiator (in conventional construction).

"Right" and "left" are to the right- and left-hands when sitting in one of the seats of the car.

Studs, screws and bolts shall take names from parts they serve to hold in place, although they are assembled with other parts. For example, the cylinder stud is permanently screwed into crankcase but holds the cylinder in place.

The name "engine" should be used rather than "motor" to avoid confusion with electric motors and to secure a lower freight rate.

DIVISION I—CYLINDERS

Group 1—Cylinders.
Cylinder:
L-head cylinder (valves on one side of cylinder).
T-head cylinder (valves on opposite sides of cylinder).
I-head cylinder (valves in cylinder head).
F-head cylinder (one valve in head, other on side directly operated).
(Cast in block, not cast en bloc.)
(Cylinders of V-type engines should be numbered 1R, 1L, 2R, etc.)
Inlet-valve cap.
Exhaust-valve cap.
Valve-cap gasket.
Cylinder-head.
Cylinder-head gasket.
Cylinder-head plug.
Water-jacket top cover.
Water-jacket top cover gasket.
Water-jacket side (or front or rear) cover.
Valve-spring cover.
Valve-spring-cover gasket.
Valve-spring-cover stud.
Valve-stem guide.
Priming-cup.

Group 2—Crankcase:
Crankcase.
Barrel-type crankcase.
Split-type crankcase (split horizontally, at or near center line of crankshaft).
Crankcase upper half.
Crankcase lower half (used only when the lower half contains bearings. A crankcase of either barrel or split type, in which all the bearings are mounted directly on the part to which the cylinders are attached, is called a "crankcase," the terms "upper half" and "lower half" not being used).
Oil pan (used for lower part of split-type or barrel-type crankcase, whether this serves as an oil reservoir or not).
Oil-pan drain-cock (or plug).
Breather.
Oil-pan gasket.
"Bushing" instead of "bearing" for removable and renewable lining used in a plain bearing.
Crankshaft front bearing bushing (upper half and lower half).
Crankshaft front bearing cap.
Crankshaft front bushing support (sometimes used in barrel-type crankcase).
Crankshaft rear bearing bushing.
Crankshaft rear bearing shims (other shims accordingly).
Crankshaft center bearing bushing (if only three bearings or if all except end bearings are alike).
Crankshaft second bearing bushing, etc. (if more than three bearings, for example, front bearing, second bearing, third bearing, fourth bearing, rear bearing).

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Hand-hole cover.
Hand-hole-cover gasket.
Timing-gear cover.
Timing-gear-cover gasket.
Flywheel housing.
Generator bracket (other brackets take name of part supported).

Group 3—Crankshaft:
Crankshaft.
Flywheel.
Crankshaft timing-gear (or sprocket).
Crankshaft timing-gear key.
Flywheel starter gear.
Crankshaft starter sprocket.
Flywheel studs.
Clutch-spring stud.
Crankshaft starting jaw (or pin).

Group 4—Starting-Crank:
Starting-crank.
Starting-crank jaw.
Starting-crank shaft.
Starting-crank handle.
Starting-crank-handle pin.

Group 5—Connecting-rods:
Connecting-rod.
Straight connecting-rod
Forked connecting-rod
V-type engine.
Connecting-rod cap.
Connecting-rod bushing (upper half and lower half).
Connecting-rod cap stud (or bolt).
Connecting-rod cap nut.
Connecting-rod bearing shims.
Connecting-rod dipper.
Piston-pin bushing.

Group 6—Pistons:
Piston.
Piston-pin.
Piston-pin lock-screw (in connecting-rod or piston).
Piston-ring.
Piston-ring groove.

DIVISION II—VALVES

Group 1—Camshaft:
Camshaft.
Eccentric shaft (Knight engine).
Camshaft timing-gear.
Camshaft timing-gear key.
Camshaft idler gear.
Camshaft oil-pump gear.
Camshaft ignition-distributor gear.
Exhaust cam.
Inlet cam.
Oil-pump eccentric (or cam).

Group 2—Valves:
Valves should be numbered 1 Ex, 1 In, 2 Ex, 2 In, etc., according to the number of the cylinder. On V-type engines the number should be 1 REx, 1 LEx, etc.
Poppet valve.
Inlet valve.
Exhaust valve.

Valve-spring.
Valve-spring retainer.
Valve-spring retainer lock.
Valve-lifter.
Valve-lifter guide.
Valve-lifter-guide clamp.
Valve-lifter roller.
Valve-lifter-roller pin.
Valve adjusting screw.
Valve adjusting screw nut.
Valve-rocker (either at cam or at overhead valve; if both, upper and lower).
Valve-push-rod (intermediate between lifter and valve in I-head engine).

DIVISION III—COOLING SYSTEM

Group 1—Fan:
Fan.
Stationary fan support.
Adjustable fan support.
Fan hub.
Fan-blades.
Fan pulley.
Fan-belt.
Fan driving pulley.

Group 2—Radiator:
Radiator core.
Radiator shell.
Radiator upper tank.
Radiator right side.
Radiator left side.
Radiator lower tank.
Radiator filler-cap.
Radiator strainer.
Radiator drain-cock.

Group 3—Pump:
Water-pump.
Water-pump impeller.
Water-pump-impeller key.
Water-pump body (in case of doubt, body is member mounted on engine).
Water-pump cover.
Water-pump shaft.
Water-pump gland (part in contact with packing whether threaded or not).
Water-pump-gland nut (or screw, or other part used to compress gland).
Water-pump shaft gear.

Group 4—Pipes and Hose:
Engine water outlet.
Engine water inlet.
Radiator hose (upper and lower).
Radiator water fitting (upper and lower).
Water-pump outlet pipe.

DIVISION IV—FUEL SYSTEM

Group 1—Carbureter and Inlet Pipe:
Carbureter.
Inlet manifold (more than one connection to cylinder).
Inlet pipe (only one connection to cylinder).
Inlet manifold or pipe gaskets (at cylinders).
Carbureter gasket.

Group 2—Carbureter Control:
(Throttle control rods will take names from parts they connect, shafts by location or arrangement, and brackets by parts they support).
Accelerator pedal.
Accelerator pedal bracket.
Accelerator pedal pin.
Accelerator pedal rod.
Accelerator pedal rod end pin.
Carbureter mixture hand-regulator.
Carbureter choke.

Group 3—Carbureter Air Heater:
Cabureter air heater.
Carbureter hot-air pipe.

Group 4—Fuel Tank:
Fuel tank.
Fuel reserve tank.
Fuel gage.
Fuel gage float.
Fuel gage glass.
Fuel tank outlet strainer.
Fuel tank outlet (flange, fitting, etc.).
Fuel tank pressure flange (or fitting).

Group 5—Fuel Pipes and Feed Systems:
Main fuel valve.
Reserve fuel valve.
Fuel pipe, main tank to auxiliary tank (or names of other parts connected).
Fuel pressure-pump (power pump).
Fuel hand-pump.
Fuel pressure-gage pipe.
Fuel pressure-gage tee.
Fuel pressure pipe to tank.
Fuel pressure pump pipe.
Fuel hand-pump pipe.
Fuel hand-pump tee.
Fuel pressure gage.

DIVISION V—EXHAUST SYSTEM

Group 1—Exhaust Manifold:
Exhaust manifold.
Exhaust manifold gasket.

Group 2—Exhaust Pipe and Muffler:
Muffler.
Exhaust pipe (extends from exhaust manifold to muffler. If in more than one part name sections front and rear. For V-type engines with two pipes name right and left).
Muffler outlet pipe.

DIVISION VI—LUBRICATION SYSTEM

Group 1—Oil-pan or Reservoir:
Oil-pan.
Oil-tank (when separate).
Oil-filler strainer.
Oil-filler cap.

Group 2—Oil-pump:
Oil-pump.
Oil-pump body (any type of pump).
Oil-pump plunger.
Oil-pump plunger spring.
Oil-pump inlet valve.
Oil-pump outlet valve.
Oil-pump shaft.
Oil-pump shaft gear (outside the pump).
Oil-pumping shaft gear (inside the pump).
Oil-pumping follower gear.
Oil-pump cover.

Group 3—Oil Pipes, Strainers, Gages:
(Oil pipes should be named from the parts they connect, as "Oil-pump to pressure-gage pipe.")
Circulating-oil strainer.
Oil-strainer cap.
Sight feed.
Sight-feed glass.
Oil level-gage.
Oil level-gage float.
Oil level-gage glass.
Oil pressure-gage.

DIVISION VII—IGNITION

Group 1—Spark-plugs, Cables and Switches:
Spark-plugs.
Spark-plug cables (numbered according to cylinders).
Coil high-tension cable.
(Low-tension cables should be named from the parts they connect, as: "Storage battery to ignition switch cable." In case of more than one conductor the cable should be designated as double, triple, etc.)
Ignition coil.
Ignition switch.
Dry cell (two or more cells make a dry battery).

Group 2—Ignition Distributor:
Ignition-distributor breaker.
Ignition-distributor breaker-arm.
Ignition-distributor breaker-arm point.
Ignition-distributor fixed breaker-point.
Ignition-distributor brush.
Ignition-distributor shaft.
Ignition-distributor shaft gear.

Group 3—Magneto:
Magneto.
Magneto distributor.
Magneto breaker-box.
Magneto breaker-arm.
Magneto fixed breaker-point.
Magneto breaker-arm point.
Magneto distributor brush.
Magneto-collector-ring brush.
Magneto coupling, pump end.
Magneto coupling, center member.
Magneto coupling, magneto end.

Group 4—Ignition Control:
Spark control rod (name parts connected).
(Other control parts named as explained under throttle control.)

DIVISION VIII—STARTING AND LIGHTING EQUIPMENT

A one-unit system uses a starter-generator.
A two-unit system uses a generator and a starting motor.
A combined unit system uses a duplex starter-generator.

Group 1—Generator:
Generator.
Generator brush.
Generator brush-holder.
Generator gear.
Generator shaft.
Generator coupling (members as indicated under magneto coupling).

Group 2—Starting Motor:
Starting motor.
Starting-motor brush.
Starting-motor brush-holder.
Starting-motor pinion.
Starting-motor intermediate gear.
Starting-motor intermediate-gear shaft.
Starting-motor intermediate pinion.
Overrunning clutch.

Group 3—Wiring:
(Cables and conduits should be named from parts they connect.)
Starting switch.
Starting-switch pedal (or lever).

Group 4—Battery:
Storage battery.
Filler cap.
Terminal post.
Connector strip.

DIVISION IX—MISCELLANEOUS ELECTRICAL EQUIPMENT

Group 1—Lamps and Wiring:
Head-lamp.
Tail-lamp.
Side-lamp.
Instrument lamp.
Tonneau lamp.
Dome lamp.
Pillar lamp.
Inspection lamp.
Inspection-lamp cord.
Inspection-lamp plug.
Inspection-lamp socket.
Head-lamp socket.
Head-lamp support.
Head-lamp support tie-rod.
Tail-lamp support.
(Cables and conduits should be named from the parts they connect.)
Junction-box (wires not attached to box).
Junction-box screw.
Junction-box cover.
Fuse-box.
Fuse-box cover.
Fuse-block.
Fuse-clip.
Fuse (designated by name of part fed by circuit).
Junction panel.

Group 2—Switches and Instruments:
Lighting switch.
Ammeter.
Voltmeter.
Volt-ammeter.
Charging indicator.
Reverse current cut-out.
Current regulator.

Group 3—Horn:
(No names have been selected for horn parts.)

Group 4—Miscellaneous:
(Will include any additional electrical equipment, such as electrical gearshift.)

DIVISION X—CLUTCH

General

Plate clutch (one plate clamped between two others).

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Disk clutch (more than three disks).
Dry disk clutch.
Lubricated disk clutch.
Cone clutch (leather faced, asbestos faced).
Expanding clutch.

Group 1—Clutching Parts:

Cone Clutch

Clutch cone.
Clutch facing.
Clutch-facing spring.
Clutch-facing-spring plunger.
Clutch spring.
Clutch thrust-bearing.
Clutch cone hub.
Clutch cone bushing.
Clutch-spring spider (for cone clutch with multiple springs).
Clutch-spring stud.
Clutch-spring retainer.
Clutch-spring nut.
Clutch spindle.
Clutch shaft (not attached to crankshaft).
Clutch shaft bearing (not in transmission case).

Disk Clutch

Clutch case (rotating member).
Clutch housing (non-rotating member).
Clutch cover.
Clutch housing cover.
Clutch driving disk.
Clutch driven disk.
Clutch driving disk stud.
Clutch pressure plate (front and rear, if two—used on both disk and plate clutches).
Clutch driven spider (or drum—driving and driven, if two).
Clutch cork-inserts.
(Facing, spring, thrust-bearing, etc., as under cone clutch.)

Plate Clutch

Clutch driven plate.
Clutch driving plate.
Clutch pressure levers.
(Other parts as under cone and disk clutches.)

Group 2—Releasing Parts:
Clutch release sleeve.
Clutch release shoe or clutch release bearing housing.
Clutch release bearing.
Clutch release fork.
Clutch release fork shaft.
Clutch pedal shaft.
Clutch pedal adjusting link.
Clutch release fork lever.
Clutch pedal.
Clutch pedal pad.
Clutch brake.
Clutch brake facing.

DIVISION XI—TRANSMISSION

Group 1—Transmission:
Transmission case (upper half and lower half, if bearings seat in both).
Transmission case cover.
Clutch gear.
Clutch gear bearing (front and rear, if two).
Clutch gear bearing retainer.
Countershaft.
Countershaft front bearing (if ball or roller).
Countershaft front bearing bushing (if plain bearing).
Countershaft front bearing retainer.
Countershaft rear bearing retainer.
Countershaft drive gear.
Countershaft second-speed gear.
Countershaft-low-speed gear.
Countershaft reverse gear.
Reverse idler gear.
Reverse idler gearshaft.
Reverse idler gear bushing.
Transmission shaft.
Transmission shaft pilot bearing.
Transmission shaft pilot bearing bushing (if plain).
Transmission shaft rear bearing.
Transmission shaft rear bearing retainer.
Second and high sliding gear.
Low and reverse sliding gear.

Group 2—Shifting Mechanism:
High-gear shift fork.
Low-gear shift fork.
Reverse shift fork (if three are used).
High-gear shift bar.
Low-gear shift bar.
Reverse shift bar.

Group 3—Control:
Gearshift bar selector.
Gearshift lever shaft.
Low gearshift connecting-rod.
High gearshift connecting-rod.
Gearshift hand lever ("hand" may be omitted).
Gearshift hand lever bracket ("hand" may be omitted).
Gearshift housing (center control).
Gearshift gate.

Group 4—Propeller-shaft:
Propeller-shaft.
Propeller-shaft front universal-joint (assembly—"propeller-shaft" may be omitted).
Propeller-shaft rear universal-joint (assembly—"propeller-shaft" may be omitted).
Propeller-shaft front bearing (with inclosed shaft).
Transmission shaft universal-joint flange (substitute name of any other shaft on which flange is mounted).
Universal-joint flange yoke.
Universal-joint slip yoke.
Universal-joint plain yoke.
Universal-joint center cross (ring or block).
Universal-joint bearing bushing.
Universal-joint pin (may be designated as long and short, straight and shoulder, etc.).
Universal-joint inner casing.
Universal-joint outer casing.
Universal-joint casing packing.
Universal-joint casing nut.
Universal-joint trunnion (for trunnion type joint).
Universal-joint trunnion block.

DIVISION XII—REAR AXLE

General Types

Dead Axle—An axle carrying road wheels with no provision in the axle itself for driving them.

Live Axle—General name for type of axle with concentric driving shaft.

Plain Live Axle—Has shafts supported directly in bearings at center and at ends, carrying differential and road wheels.

(The plain live axle is practically extinct.)

Semi-Floating Axle—Has differential carried on separate bearings, the inner ends of the shaft being carried by the differential side gears and the outer ends supported in bearings.

The semi-floating axle shaft carries torsion, bending moment and shear. It also carries tension and compression if the wheel bearings do not take thrust, and compression if they take thrust in only one direction.

Three-Quarter Floating Axle—Inner ends of shafts carried as in semi-floating axle. Outer ends supported by wheels, which depend on shafts for alignment. Only one bearing is used in each wheel hub.

The three-quarter floating axle shaft carries torsion and the bending moment imposed by the wheel on corners and uneven road surfaces. It also carries tension and compression if the wheel bearings are not arranged to take thrust.

Full-Floating Axle—Same as three-quarter floating axle, except that each wheel has two bearings and does not depend on shaft for alignment. The wheel may be driven by a flange or a jaw clutch.

The full-floating axle shaft is relieved from all strains except torsion, and in one possible construction, tension and compression.

Types of Axle Drive

The different types of live axle can be driven by *Bevel Gear, Spiral Bevel Gear, Worm, Double-Reduction Gear* or *Single Chain.*

In other constructions the rear wheels are driven by *Double Chains, Internal Gears* or *Jointed Cross-shaft.*

Group 1—Housing:
Rear-axle housing (if one piece).
Right and left halves (if two pieces).
Bevel (or worm) gear housing } (if three pieces).
Right rear-axle tube } (if three pieces).
Left rear-axle tube } (if three pieces).
Rear-axle-housing cover.
Differential carrier (bolted to housing).
Rear-axle spring-seat.
Axle brake-shaft bracket (right and left).
Wheel brake-support, right and left ("wheel" may be omitted).
Wheel brake-shield ("wheel" may be omitted).

Group 2—Torque Arm and Radius Rod:
Radius rods.

Group 3—Drive Pinion:
Axle drive bevel pinion (or worm).
Axle drive pinion (or worm) shaft.
Axle drive pinion front bearing.
Axle drive pinion rear bearing.
Axle drive pinion thrust-bearing.
Axle drive pinion front bearing adjuster.
Axle drive pinion front bearing adjuster lock.
Axle drive pinion rear bearing adjuster.
Axle drive pinion rear bearing adjuster lock.
Axle drive pinion adjusting sleeve (containing both bearings).
Axle drive pinion (or worm) carrier.

Group 4—Differential:
Axle drive bevel (or worm) gear.
Differential.
Differential case, right.
Differential case, left.
Differential side gear.
Differential spider pinion ("spider" may be omitted).
Differential spider (or pinion shaft).
Differential bearing.
Differential thrust-bearing.
Differential bearing adjuster.
Differential bearing adjuster lock.

Group 5—Axle Shafts:
Axle shaft (right and left).
Axle shaft wheel-flange (or clutch).

DIVISION XIII—BRAKES

General

In the following list of brake parts the terms "outer" and "inner" are used, being applicable to any case of two sets of brakes on the rear wheels. Where the brakes are external and internal these terms may be substituted for "outer" and "inner." Where one brake is located at the wheels and the other at the transmission the terms "wheel brake" and "transmission brake" should be substituted. With other concentric or side-by-side brakes the terms "outer" and "inner" should be retained, "outer" indicating in the latter case the ones nearer the wheels.

The list is made up for external contracting and internal expanding brakes. If both brakes are of one type the necessary changes will be obvious. The designation of brake parts on the rear axle as foot-brake or hand-brake parts, or by equivalent terms, is too remote to be clear, especially in the case of stock axle whose brakes may be connected either way according to chassis design. Nearly the same condition prevails in regard to designating parts on the chassis according to whether they are connected to the inner or outer brakes at the axle.

The terms "service brake" and "emergency brake" should not be used. Better designations are "foot brake" and "hand brake"; or if both brakes foot-operated, "right foot-brake" and "left foot-brake."

Group 1—Outer Brake:
Outer brake band.
Outer brake band lining.
Outer brake band adjusting nut (yoke, etc.).
Outer brake hand lever.
Outer brake lever shaft.
Outer brake shaft inner end lever.
Outer brake shaft outer end lever.

Group 2—Inner Brake:
Inner brake shoe (or band).
Inner brake shoe (or band) lining.
Inner brake toggle (link, etc.).
Inner brake toggle lever.
Inner brake toggle shaft.
Inner brake cam.
Inner brake camshaft.
Inner brake camshaft (or toggle shaft) lever.

Group 3—Pedal (or outer) Brake Control:
Outer brake rod.
Outer brake rod yoke.
Outer brake intermediate shaft (or tube)—right and left.
Outer brake intermediate shaft (or tube)—right lever.
Outer brake intermediate shaft (or tube)—left lever.
Outer brake intermediate shaft (or tube)—center lever.
Outer brake right equalizer lever.
Outer brake left equalizer lever.
Outer brake equalizer.
Brake pedal.
Brake pedal rod.
Brake pedal rod yoke.
Brake pedal pad.
Brake pedal shaft.

Group 4—Hand (or inner) Brake Control:
Inner brake rod.
Inner brake rod yoke.
Inner brake intermediate shaft (or tube)—right and left.
Inner brake intermediate shaft (or tube)—right lever.
Inner brake intermediate shaft (or tube)—left lever.
Inner brake intermediate shaft (or tube)—center lever.
Inner brake right equalizer lever.
Inner brake left equalizer lever.
Inner brake equalizer.
Brake hand lever rod.
Brake hand lever rod yoke.
Brake hand lever.
Brake lever segment (or sector).
Brake lever pawl.
Brake pawl spring.
Brake pawl button.
Brake pawl finger lever.
Brake pawl rod.

DIVISION XIV—FRONT AXLE AND STEERING

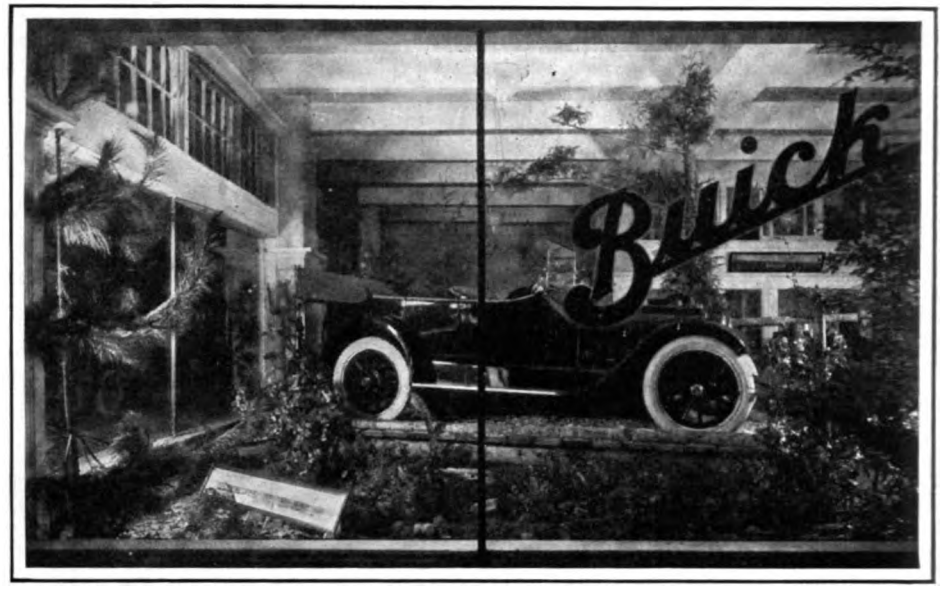
Group 1—Axle Center.
Front axle center.
Front spring seats.
Front axle bushing.

Group 2—Steering Knuckles:
Right steering-knuckle.
Left steering-knuckle.
Steering-knuckle bushing (upper and lower).
Steering-knuckle pivot.
Steering-knuckle pivot nut.

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The Northwest Buick Company Dressed Up

THE Northwest Buick Co., 802 East Pike Street, Seattle, staged this Dress-Up window. Dirt, stones, gravel and shrubbery were secured at no appreciable cost, and served as the ground foundation. Across a limpid brook was erected a bridge of two logs, some planking and two side binding logs. Aside from the labor there was no great cost, and the display is a credit to the agency.



Steering-knuckle thrust-bearing.
Right steering-knuckle arm.
Left steering-knuckle arm.
Steering-knuckle gear rod arm.

Group 3—Steering-rods:
Steering-knuckle tie-rod.
Steering-knuckle tie-rod end.
Steering-knuckle tie-rod clamp bolt.
Steering-knuckle tie-rod pin.
Steering-gear connecting-rod.

Group 4—Steering-gear:
Steering-gear case.
Steering-gear-case cover.
Steering-gear bracket.
Steering-gear arm.
Steering-arm shaft (if separate from sector or other operating member).
Steering-wheel rim.
Steering-wheel spider.
Steering-wheel tube (or shaft).
Spark and throttle sector.
Spark and throttle sector tube.
Spark hand-lever.
Spark hand-lever tube (or rod).
Throttle hand-lever.
Throttle hand-lever tube (or rod).
Steering-column tube (stationary).
Steering-column cowl (or dash or floor) bracket.

The various bushings in the steering-column take names from parts to which they are permanently fitted, being further distinguished as upper and lower, inner and outer, if necessary. Bushings in the steering-gear case take names from the worm and sector or other main operating parts which they support, as steering-gear worm upper bushing, although the steering-wheel tube may be the member which turns inside the bushing.

Steering worm, Steering-worm sector (or gear), Steering-worn shaft } (Worm and sector gear)

DIVISION XV—WHEELS

Group 1—Front Wheels:
Front wheel felloe.
Front wheel felloe band.
Front wheel rim.
Rim bolts.
Rim clamps.
Front wheel hub.
Front wheel hub flanges.
Front wheel hub-cap.
Front wheel outer bearing.
Front wheel outer bearing inner race.
Front wheel outer bearing outer race.
Front wheel outer bearing balls.
Front wheel outer bearing ball retainer.
Front wheel outer bearing rollers.
Front wheel outer bearing roller cage.
Front wheel inner bearing (parts same as outer bearing).
Front wheel bearing spacer.
Front wheel bearing nut.
Front wheel bearing lock nut.
Front wheel bearing locking washer.

Group 2—Rear Wheels:
Rear wheel hub.
Rear wheel hub-flange.
Rear wheel hub-cap.
Rear wheel outer bearing.
Rear wheel inner bearing.
Wheel brake-drum.
(Other parts named like front wheel parts.)

DIVISION XVI—FRAME AND SPRINGS

Group 1—Frame:
Frame side member (right and left).
Front cross member.
Rear cross member.
Center cross member.
(As above if only three cross members; as below if more than three.)
First cross member.
Second cross member, etc.
Sub-frame side member (right and left).
Sub-frame cross member (front and rear).
Right rear gusset (upper and lower).
(Gussets at other cross members named according to member.)

Group 2—Frame Brackets and Sockets:
Front spring front bracket (right and left).
Front spring rear bracket (right and left).
Rear spring front bracket (right and left).
Rear spring rear bracket (right and left).
Running-board bracket (front, right, etc., if not duplicates).
Running-board bracket brace.
Engine front support bracket.
Engine rear support bracket.
Torque-arm bracket.
Radius-rod bracket.

Group 3—Front Springs:
Front spring (right and left).
Front spring shackle.
Front spring shackle-bolt (upper and lower).
Front spring front bolt.
Front spring rebound-clip.
Front spring seat.
Front spring seat pad.
Front spring clip.
Front spring clip plate.
Front spring center-bolt.

Group 4—Rear Springs:
Rear springs (upper and lower for elliptic and three-quarter elliptic).
Rear spring pivot bolt (or pin), Rear spring pivot seat } (for half-elliptic cantilever spring)
Rear spring double shackle, Rear side spring, Cross spring } (for platform spring)
(Other parts as for front springs.)

DIVISION XVII—HOOD, FENDERS AND SHIELDS

Group 1—Hood:
Hood.
Hood sill.
Hood handle.
Hood fastener.
Hood fastener bracket (spring, lever, etc.).

Group 2—Engine Shield:
Engine shield.
Engine shield fastener.
Engine shield bracket (spring, etc.).

Group 3—Fenders and Running-boards.
Running-board (right and left).
Running-board linoleum coverings.
Running-board outside binding.
Running-board inside binding.
Running-board front binding.
Running-board rear binding..
Running-board shield (right and left).
Right front fender.
Left front fender.
Right rear fender.
Left rear fender.
Fender support socket.
Right front fender front support.
Right front fender rear support.
(Other fender supports accordingly.)

Group 4—Windshield:
(Names for windshield parts have not been selected.)

DIVISION XVIII—BODY

Types of Bodies

Roadster—An open car seating two or three. It may have additional seats on running-boards or in rear deck.

Coupelet—Seats two or three. It has a folding top and full-height doors with disappearing panels of glass.

Coupe—An inside operated inclosed car seating two or three. A fourth seat facing backward is sometimes added.

Convertible Coupe—A roadster provided with a detachable coupe top.

Clover Leaf—An open car seating three or four. The rear seat is close to the divided front seat and entrance is only through doors in front of the front seat.

Touring Car—An open car seating four or more with direct entrance to tonneau.

Salon Touring Car—A touring car with passage between front seats, with or without separate entrance to front seats.

Convertible Touring Car—A touring car with folding top and disappearing or removable glass sides.

Sedan—A closed car seating four or more all in one compartment.

Convertible Sedan—A salon touring car provided with a detachable sedan top.

Open Sedan—A sedan so constructed that the sides can be removed or stowed so as to leave the space entirely clear from the glass front to the back.

Limousine—A closed car seating three to five inside, with driver's seat outside, covered with a roof.

Open Limousine—A touring car with permanent standing top and disappearing or removable glass sides.

Berline—A limousine having the driver's seat entirely inclosed.

Brougham—A limousine with no roof over the driver's seat.

Landaulet—A closed car with folding top, seats for three or more inside, and driver's seat outside.

Group 1—Floor-boards and Dash:
Floor-boards (horizontal).
Toe-boards (sloping).
Heel-boards (under seats).
Dash (separates engine compartment from driver's compartment).
Instrument board.

Group 2—Body.*
Group 3—Upholstering.*
Group 4—Top.*

DIVISION XIX—ACCESSORIES

Group 1—Speedometer.*
Group 2—Tire-pump:
Tire-pump.
Tire-pump driving gear.
Tire-pump shaft gear.
Tire-pump idler gear.

*Names for parts in these groups have not been selected.

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Do It This Way

···QUERIES ANSWERED···

TESTING IGNITION

Editor Motor World:

Will you kindly describe what method is used in testing the ordinary magneto coil on the bench and what appliances are necessary? Also, how is the ordinary high-tension magneto tested to insure that it is delivering the spark at high speed?—I. R. Cowdin, Ft. Collins, Col.

To test a magneto coil on the bench, first remove the coil and connect the low-tension circuit with a new battery of the same size as is used on the car, and provide a spark gap of suitable size on the high-tension side. For 60 lb. compression the gap should be ¼ in. in the atmosphere and for 90 lb., ⅓ in. Fig. 2 shows the conventional arrangement which may be used when the coil is not on the magneto armature.

The low-tension circuit is closed and then quickly opened, and if the coil is in good condition a spark should occur at the high-tension gap.

There is no necessity of removing the coil box from the car to do this work if the test wires are long enough to be attached with the coil in place.

Unless the internal wiring of the coil is known, some experimenting will be required in order to connect up with the right terminal. Probably the simplest method of procedure is to note the terminals to which the low- and high-tension wires are attached, and attach the test wires accordingly.

In testing a high-tension magneto, in which the coil is on the armature, a wire running from the battery, Fig. 3, is touched to the insulated side of the breaker. The other terminal of the battery is grounded. If the coil is all right a spark will occur as shown.

Instead of using an enlarged spark gap you may prefer to do your testing under pressure. It is a simple matter to make a device for this purpose, and it is useful not only for testing coils but also complete ignition systems. It may be provided with eight or twelve spark-plug holes as desired, so that it is possible to test all the spark plugs at once. The device is merely a cylindrical chamber made from a piece of tubing, with a heavy plate-glass window at one end and threaded holes for the spark plugs at the other. When testing a magneto, spark plugs which are known to be perfect should be used; but if the spark plugs are under suspicion it will be necessary to use a magneto which is known to be all right. After the spark plugs are screwed into place the pressure is raised to the desired amount, either by a hand-pump attached or by turning on compressed air. A similar device, but different in shape, is shown in Fig. 1. The glass is 5/16 in. thick.

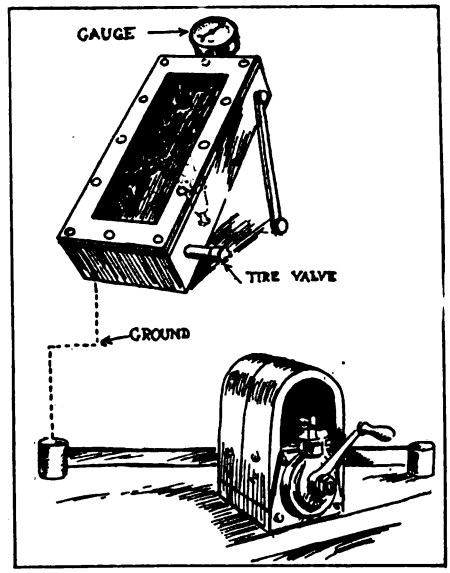


Fig. 1—Compressed air chamber with plate glass front for testing spark plug under compression

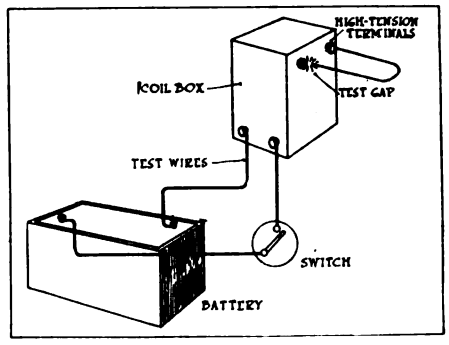


Fig. 2—A battery, switch and test wires are all that are necessary to test a coil

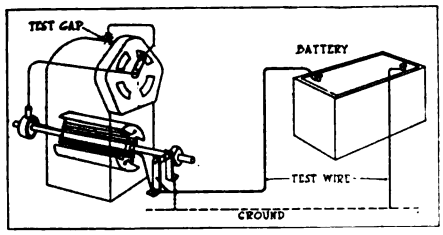


Fig. 3—Testing a high-tension armature. The test wire is attached to the insulated side of the breaker

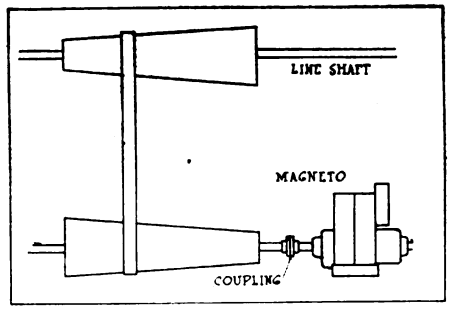


Fig. 4—Simple variable speed pulley arrangement for operating the magneto at varying speeds

The best way to be sure that the magneto is delivering proper sparks at high speed is to test it at the maximum speed desired—say, 3000 r.p.m. There are many ways of driving the magneto at this speed. Probably the simplest is to crank it by hand, as shown in Fig. 5. You should have a reduction varying from 10 to 1 to 15 to 1. A bicycle chain drive will be preferable to a belt. Fig. 4 shows a simple method of driving the magneto from a line shaft, cones providing for the wide variation in speed.

CLUTCH DRAGS—OIL DIRTY

Editor Motor World:

We have a model K Hupmobile with which we have trouble changing the gears from first to second. At times it will charge perfectly, and the next time the gears will grate. The gears shift easily while the car is not in motion.—Melvin O. Weaver, Toledo.

Your trouble probably is due to dirty oil in the motor. The motor and clutch case are lubricated by the same oil, and when it has been used a long while it becomes sticky and interferes with the free action of the clutch. Drain the old oil out, rinse the system thoroughly with kerosene, crank the motor several times with the spark off, and then put in fresh oil. You should have no further trouble unless the grease in the gearbox is too heavy or the box is too full. You should use a very light non-fluid oil or a heavy cylinder oil in the gearbox.

REASON FOR LEAK

Lack of compression in a cylinder in which the valves and pistons are tight may be due to a high spot on the mushroom of the push rod. The remedy is to remove this spot by grinding or else to increase the clearance between push rod and valve stem.

UNIVERSAL FILE HANDLE

A universal file handle may be made of wood or metal and is equipped with a small clamp adjusted by a butterfly screw so that various files may be put in place and locked securely. C. L. Mainland, Auto Garage, Jamaica, L. I.

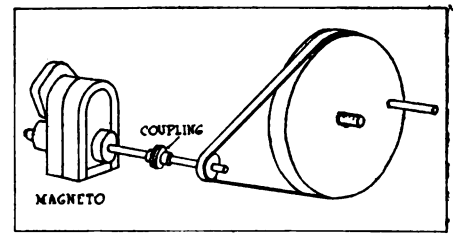
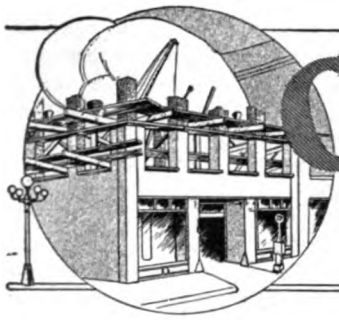


Fig. 5—Another method for determining the condition of the spark produced at high speeds

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Scientific Construction

GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

BUILDING 56 x 106 SUITABLE FOR RAMP

Editor Motor World:

I am inclosing a sketch for a two-story building and basement.

I intend using an elevator 18 x 8. Will that be large enough? You will notice that I want the shop on the second floor, partitioned off from the rest, which will be used for storage purposes. Kindly advise how many cars I will be able to store on first and second floors, and give locations of posts.—George H. Ven Denmark, Ven Denmark Motor Car Co., Elmira, N. Y.

The main objection to your plan is that only about thirty-three cars may be stored.

Fig. 4 illustrates a plan which we believe you will find satisfactory. It provides for forty-one cars, yet the space for showroom and accessory store has not been reduced.

The front entrance has been eliminated for two reasons: First, because the frontage is valuable for display purposes, and, second, because the driveway might better be put to some more useful purpose, such as storing cars. A garage sign at the corner of the building should be sufficient to attract trade to your side-street entrance.

The repairshop has been placed on the ground floor because you will find it more convenient to have it here, and also because it fits in better with the first-floor plan than it does with the second. It is an advantage to have the repairshop on the same floor as the offices, showroom and stockroom, particularly the latter, for the reason that minimum time is wasted in going from these various rooms to the shop. The shop should be separated from the garage preferably by a series of sliding doors so that a car may be run into any part of it with maximum convenience.

If you find it necessary to have the shop on the second floor it would be better to put it at the front, as it would be nearer the offices, and connection with the stockroom might be made by dumbwaiter.

The accessory department has been placed in a separate room. You will find that this is the better plan. However, if you would rather have the two departments together it is merely a question of eliminating the wall between the accessory store and showroom.

The space you have designated for the washrack might be used for housing your machine tools or for a stock or tool room. There seems to be no advantage in having this space for a washrack, and to do so would complicate your design considerably, because it is difficult to place an entrance at this point without wasting space.

It seems well to point out here that one of the great defects we have found with garages, both built and contemplated, is that the owner puts in too many entrances, not just as many as he needs. Quite frequently in small garages there are two front doors, one for exit and one for entrance. This is permissible under certain circumstances, but in other cases it merely spoils the interior layout. In short, an extra door is objectionable unless it is necessary to attract trade or unless it simplifies or economizes on the design of the interior.

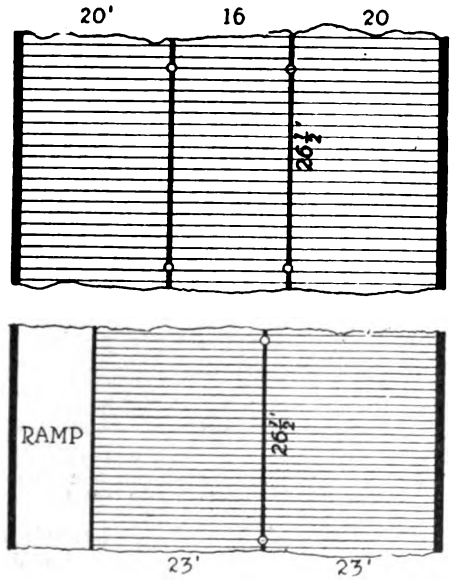


Fig. 1—Upper—Plan of floor joists for layout shown in Fig. 5. The light lines are joists and the medium ones steel beams. Lower—Design of floor joists for Fig. 4. Dimensions are given in the text

Your plot is ideal for the construction of a ramp instead of an elevator, as Fig. 5 plainly shows. You can store almost as many cars—forty instead of forty-one. While the ramp takes up considerably more space than the elevator, you have this space to spare, since your building is wider than necessary.

The ramp has several distinct advantages over the elevator. It costs nothing to keep up, while the elevator will cost several hundred dollars per year, including interest on investment, depreciation and repairs. It is much quicker to drive a car up and down the ramp than to carry it up or down the elevator, and there is no waiting.

The posts are indicated on both plans.

The floor has been designed to carry a uniform load of 140 lb. per square foot. The usual figure employed in designing floors is 120 lb., but 140 was selected so that the floor would be strong enough for practically all requirements. A loaded 5-ton truck may be driven with safety on this floor, and unloaded trucks up to 10 tons' capacity may be accommodated.

There are two rows of three posts each, Fig. 1, spaced 26½ ft. apart, lengthwise. These two rows are 20 ft. from the walls. The posts are connected lengthwise by 20-in. I-beams weighing 100 lb. per foot. The 16-ft. span is supported by 2 x 12-in. joists, 10 in. center to center, and the 20-ft. spans have 3 x 16-in. joists, 18 in. center to center.

The floor construction is different in Fig. 2. The steel work and joists are heavier; and although this will mean somewhat increased cost of construction, it has the advantage that only three posts are used instead of six. This is possible because the floor span is only 46 ft. instead of 56, as in the other. The posts are spaced at equal distances from the center of the open space, and are connected by 24-in. I-beams weighing 105 lb. per foot. The floor is supported on 3 x 18-

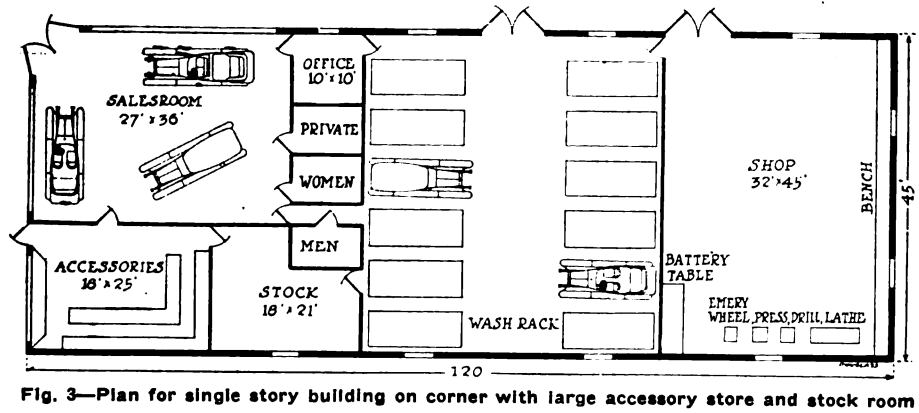


Fig. 3—Plan for single story building on corner with large accessory store and stock room

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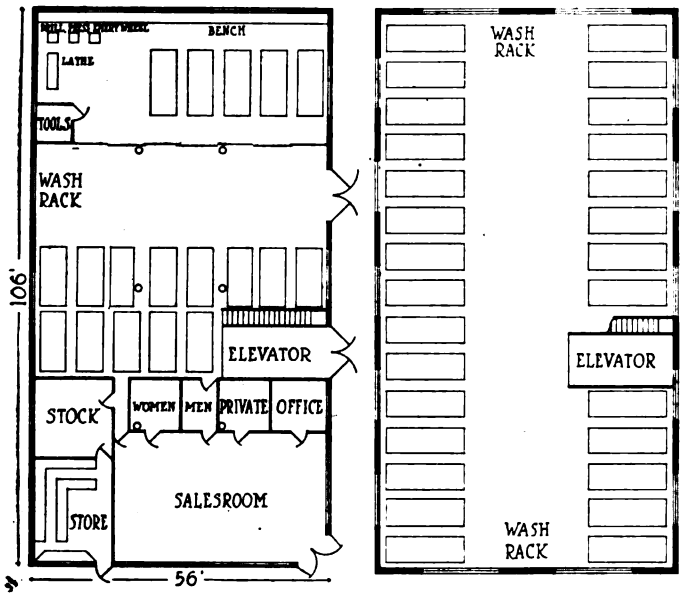


Fig. 4—Plan of two-story complete dealer plant with access to the second floor by elevator. Note how slightly the posts interfere. A small toolroom is shown in this plan

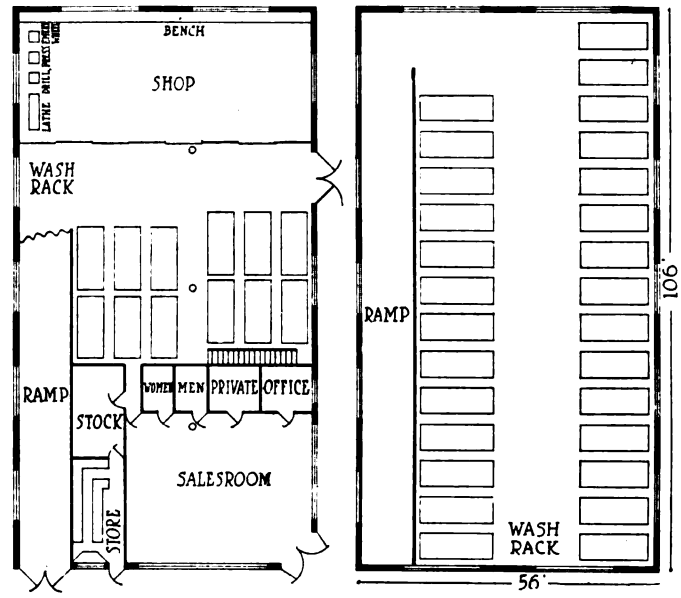


Fig. 5—Plan slightly modified to accommodate the ramp. Its adoption would only reduce the storage capacity by one car, and would leave the other departments unaltered

in. joists placed 1 ft. apart. The posts may be 8½-in. steel columns filled with concrete, the steel being ¼ in. thick. This is with a 13-ft. ceiling.

The same size posts are also used for the construction plans illustrated in Fig. 4.

CORNER BUILDING FOR SMALL TOWN

Editor Motor World:

We contemplate building on a corner lot, 50 ft. on main street by 100 ft. deep, as per inclosed sketch. Please give us plans for garage and accessory business, with repairshop in rear.—El Paso Auto Sales Co., El Paso, Tex.

You will note, Fig. 6, that we have made the accessory store and showroom separate. The accessory store when combined with the showroom always detracts from the latter, as the noise of customers in it prevents prospects from giving their full attention to the salesman.

You should have plate-glass windows in the front and side of your showroom, and also at the front of the accessory store, so that both rooms are fully visible from the street.

The shop should have shelves and cabinets for housing the small tools. Other tools are stored in the small toolroom.

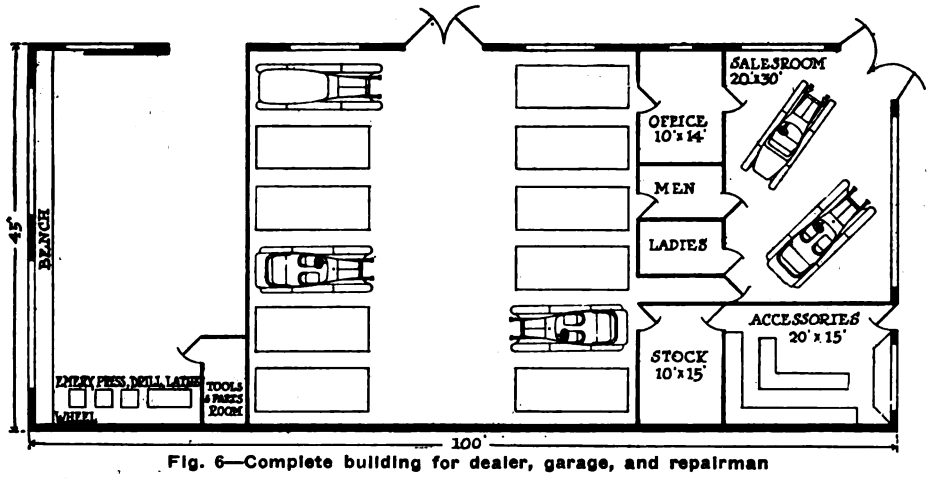


Fig. 6—Complete building for dealer, garage, and repairman



Fig. 7—Corner view of building. The accessory store window is much wider than it looks in perspective; actually it is 7 ft.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 740) PROTECTING AIR HOSE

Compressed air at every pillar in a garage is a convenience, though it is not always easy to provide for the safety of the tubing. If the pillars are hollow, the tubing can be made to rise out of the way by weighting it, as shown. The counterweight descends into the center of the pillar.—Keystone Motor Co., Lewistown, Pa.

(No. 741) GRINDER MOUNTING

A small grinder can be mounted on a box bracket on the wall. The box beneath the grinder provides a convenient place for small tools, spare wheels, buff wheels, etc.—Northampton County Buick Co., Easton, Pa.

(No. 742) HINGED STAIRWAY

Where a small hanging gallery has been put in a garage, a convenient means of reaching it is a hanging stairway. This is hinged at the upper end and when not in use can be pulled up out of the way by means of a block and tackle, fastened to the roof beams.—Keystone Garage, Allentown, Pa.

(No. 743) GASOLINE HOSE SUPPORT

At best a gasoline hose is comparatively short-lived. The fuel attacks it on the inside and it is thrown and knocked around, kinked and bent so that the outside does not stand up as it should. A remedy is to provide a hose rest, as shown. The groove of the rest is curved. The advantage of this simple device is that it is easier to throw the hose up into the groove, where it will be supported properly and protected against injury, than it would be to wind it around the top of the pump or throw it on the floor, almost.—Van's Garage, Poughkeepsie.

(No. 744) CAR-LIFTING DEVICE

A double hook placed over the frame, as shown, is extremely handy in supporting the car while a wheel is removed. By using two of these brackets both wheels or the axle may be taken out with ease. The brackets extend front out of the way, so that the mechanic has full freedom in working on the car. They may be used just as well at the rear as at the front.—Locomobile Co. of America (branch), Philadelphia.

WHEN YOU ARE STUCK

When you are perplexed with a difficult problem; when you are seeking the quickest way to do a job, go through the back pages of this department and undoubtedly you will find what you want.

Take part of the time thus saved and write us about the best Short Cuts you have in your shop. Every shop has some. Show your gratitude by sending yours in. The sketches may be as rough as you like, and the choice of English does not matter.

(No. 745) CONVENIENT DRILLING CHUCK

When the space is constricted it is often difficult to use an ordinary breast or pneumatic drill, and in some cases it is impossible unless considerable time is spent in disassembling the parts. A way to save this time is to build a drilling device consisting of two bevel gears mounted in a substantial steel box, one gear being driven by a flexible shaft and the other driving the chuck.—A. J. Hettrich, Foss-Hughes Co. (Pierce-Arrow), Philadelphia.

(No. 746) TIRE RACK

A convenient tire rack which attaches to the ceiling can be made of ordinary iron pipe and fittings. The main member is made of 2-in. pipe, into which are screwed the nipples to hold the projecting members. The projecting members should be about 3 ft. long and should be on 3-ft. centers to allow room for the largest sizes of tires.—Palmer Garage, Easton, Pa.

(No. 747) PORTABLE GARAGE LAMP

This lamp was made primarily to be used in washing automobiles at night, but has also proved to be of much value in night work of any nature. The vertical support and cross-braces are made of wrought-iron pipe, and the base is made of ¾-in. L's welded onto the upright member. The reflectors are made of sheet metal, the inside being enameled white and the outside green, as was the balance of the lamp. The floor end of the angles were flattened and carried castors. These, combined with a long extension cord, allowed the lamp to be moved to any desired position.—Hodskin Garage, Canton, N. Y.

(No. 748) KNIFE FOR SWITCH TEST

To test a switch in order to ascertain whether it is short-circuited or whether one or both of the wires have become detached, press a knife blade through the insulation of both wires leading to the switch. This will not harm the insulation enough to cause trouble.—Berks Garage & Auto Co., Reading, Pa.

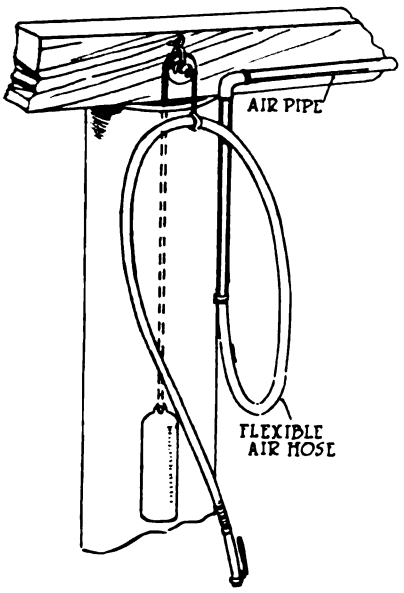
(No. 749) TORCH STAND

An excellent adjustable stand for a torch can be made of a discarded flywheel for a base and a ⅝-in. round rod. The rod is driven into the hole in the center of the flywheel, which, if too large, can be filled up with melted lead. The other member can be bent as shown and the weight of the torch will hold it securely in place.—Berks Garage & Auto Co., Reading, Pa.

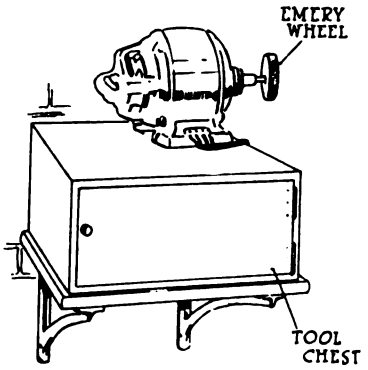
COMPOSITION OF STANDARD ALLOYS AND SOLDERS

ALLOYS	Tin	Copper	Zinc	Antimony	Lead	Bismuth
Brass engine bearings	13	112	¼	..	..	..
Babbitt	10	1	..	1	..	..
Metal to expand in cooling	..	..	..	2	9	1
Pewter	100	..	..	17	..	..
Spelter	..	1	1	..	..	..
SOLDERS						
For Lead	1	..	..	..	1½	..
For Tin	1	..	..	..	2	..
For Pewter	2	..	..	..	1	..
For Brazing (hardest)	..	3	1	..	..	..
For Brazing (hard)	..	1	1	..	..	..
For Brazing (soft)	1	4	3	..	..	..
For Brazing (soft)	2	..	..	1	..	..

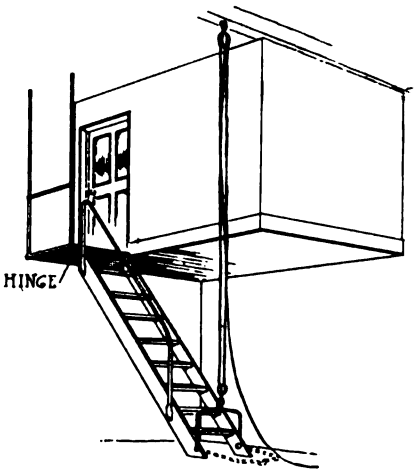
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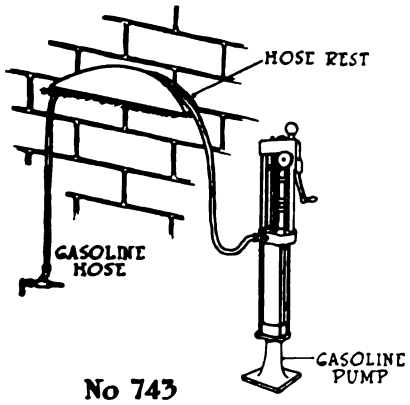
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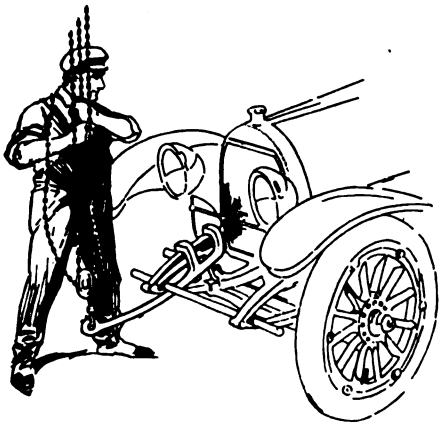
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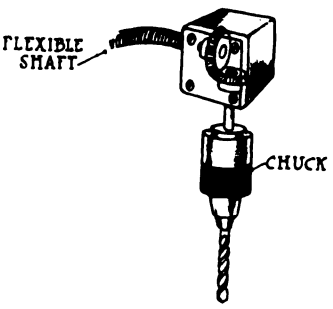
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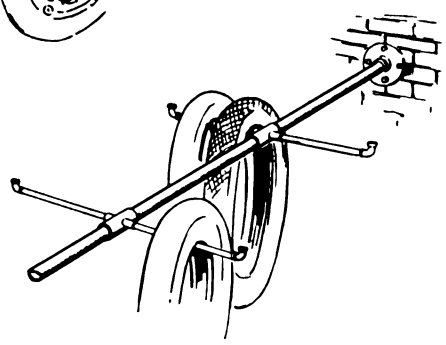
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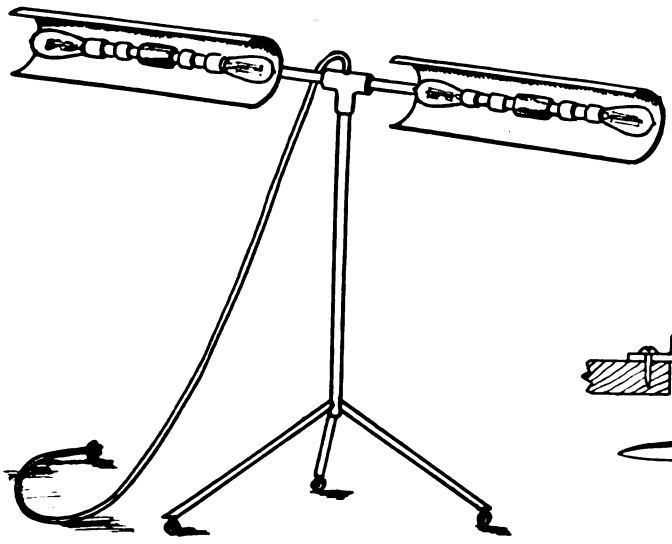
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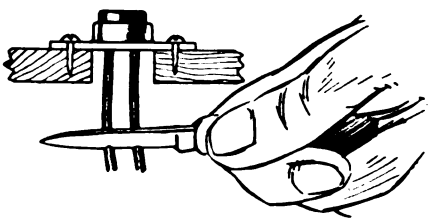
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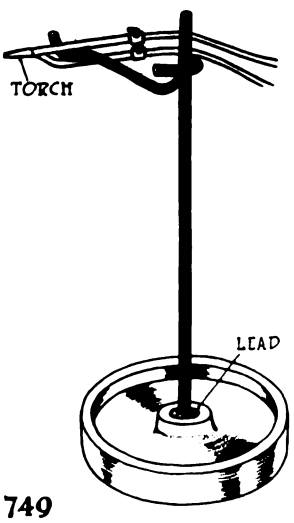
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Accessories & Supplies



GOLDEN GIANT SPARK PLUG

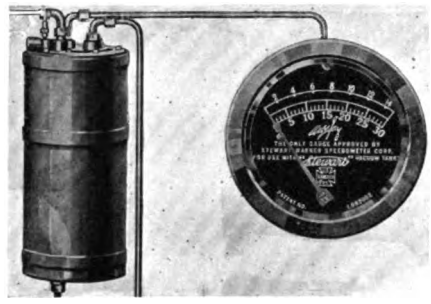
Benford Mfg. Co., Mt. Vernon, N. Y. PRICE, $1.

The most striking exterior feature of the plug is that the shell is durably plated with 24-karat gold. A special insulation styled blue adamant is used in connection with copper-asbestos gaskets made by a special process, and a strongly built shell. The bushing is nickel. Electrodes are of pure nickel. The manufacturer guarantees each plug unconditionally, the guarantee stating that the plug may be returned to the factory at any time if found unsatisfactory and it will be repaired or replaced free of charge. The plugs are packed in individual tin cartons and are made in all styles.

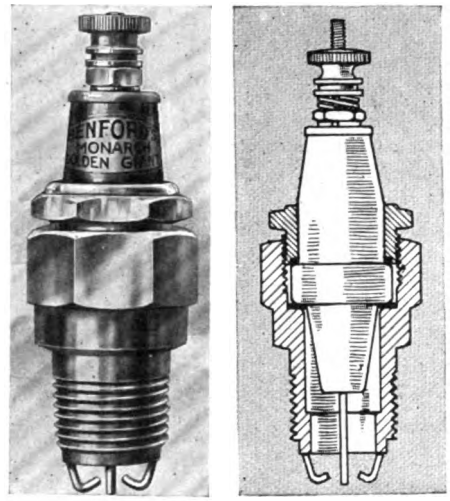
J-A-Y VACUUM GAGE

Webb Jay Corp., Karpen Building, Chicago.

This gage not only shows whether the Stewart vacuum system is operating or not, but also furnishes a means for measuring the fuel consumption. The gage is flush-mounted on the instrument board and connects with the top of the vacuum tank by a small pipe. It is simply a vacuum gage and registers the actual suction pressure or vacuum produced by the motor on the upper chamber while this chamber is being filled with fuel. After it is filled, however, the suction is removed and the pressure brought to atmosphere and the gage hand jumps to atmospheric pressure, which is zero. This cycle is repeated over and over. When the upper tank is emptying into the lower, the hand stands at zero, and when the upper tank is being filled the hand registers the suction of the motor. Thus the hand shows at all times just what is happening in the tank. It is a simple matter to compute the fuel consumption by watching the hand swing back and forth, as each complete movement indicates a consumption of 1/40 of a gallon. It is an extremely simple matter to install this device, it being merely a question of mounting the gage in the cowl board and attaching the pipe to a threaded connection on the tank which has been provided just for this purpose.



J-A-Y Vacuum gage shows action of vacuum tank



Exterior and section of Golden Giant

NONPAREIL TRAILERS

Nonpareil Mfg. Co., Cochranton, Pa. PRICES: Model A, $65; B, $80, and C, $100.

All three models have broad, low express bodies with flare boards, high hickory wheels, Timken bearings and solid tires. The body on the 1000-lb. model A is 6 ft. long, 46 in. wide, 10 in. deep and has 7-in. flare boards, which are removable; weight, 360 lb. The model B has a capacity of 1500 lb., a body 8 ft. by 46 in., and weighs 430 lb. The model C capacity is 1 ton, the body is 8 ft. long, 46 in. wide and 8 in. deep, with sides and ends removable; weight, 465 lb.

PERMA-TITE TIRE PATCH

Motor Supplies Mfg. Co., 21 Fifth Street, N. E., Minneapolis. PRICE, $1.75; dealers 33 1/3 per cent.

A tube and tire patching outfit for all sizes of holes is made. The patch is applied cold, it simply being necessary to use a thin coat of the cement and then put it in place. It is said that permanent vulcanization takes place eventually, due to the heat and air pressure of the moving tire.

EAGLE CLAW WRENCH

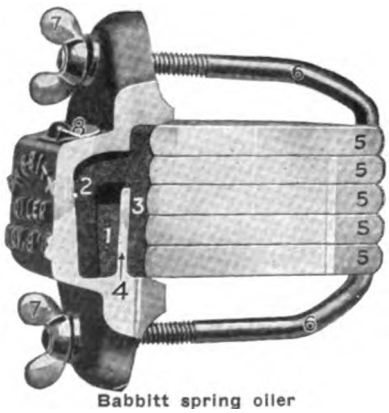
Mechanical Specialties Co., People's Gas Building, Chicago. PRICES: 7-in., $7.20 per dozen; up to 13 in., $15 per dozen.

Several styles of Eagle Claw wrenches are made and are designed to handle all sizes and shapes of work. The different sizes are adjustable from zero to 2 in.

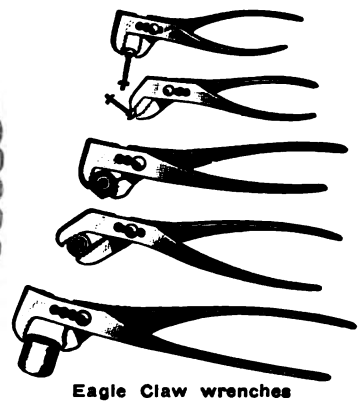
BABBITT SPRING OILER

Babbitt Spring Oiler Co., Penn Building, Cleveland. PRICE, $4.50 to $12 per set.

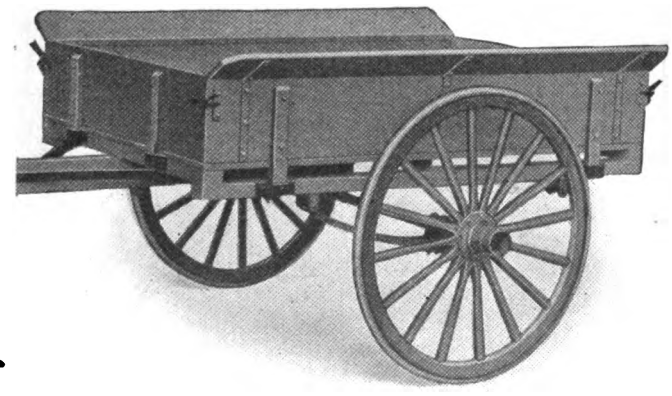
A spring lubricator consisting of a felt wick housed in a metal casing and clamped to the side of the spring. Oil is supplied once a week.



Babbitt spring oiler

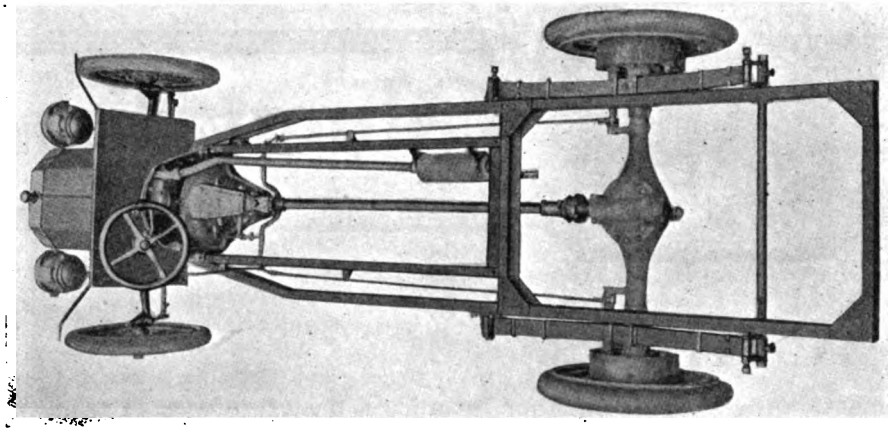


Eagle Claw wrenches



Model A Nonpareil trailer

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Ames-ton worm-driven truck attachment for Fords

AMES-TON TRUCK FOR FORDS

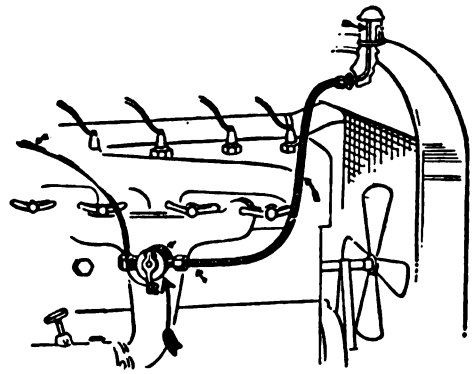
Ames Motor Car Co., Owensboro, Ky. PRICE, $395.

Worm-drive is the particular feature of the Ames-ton attachment for converting a Ford into a 1-ton truck. A heavy channel frame to support the truck body forms an extension on the Ford frame. The weight of the truck is carried on half-elliptic springs and 3-in. expanding brakes are fitted. The wheelbase is 120 in., tires 32 x 3½, and rear wheels are second growth hickory with 2-in. spokes. Tread is 56 in. and the loading space, back of the driver's seat, 8½ ft. It weighs 1100 lb., which, added to the weight of the Ford chassis, brings the unit up to 2000 lb. The gear ratio is 6.2 to 1. The price is complete with all fittings and the change may be made in a few hours, it is said.

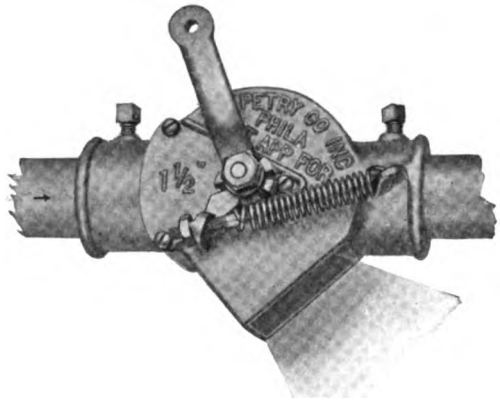
A-W CONVERTIBLE TOP

The Adams-Williams Mfg. Corp., 1790 Broadway, New York.

An all-weather convertible top which affords all the conveniences and advantages of a one-man touring and the fully inclosed glass limousine. It differs from conventional types in that it affords the automobilist of moderate means a top which is adapted to spring, summer, fall and winter, without the expense of maintaining two distinct types of bodies. It is light, increasing the weight of the car only 30 lb. One of the distinctive features is that with the glass panels removed the top cannot be distinguished from the regular one-man top. The panels are of French plate glass set in steel frames having lugs fitted into recesses in the molding. The structure is rigidly retained by an ingeniously concealed spring that is operated by the fingers. Movement or weaving of the top cannot be communicated to the glass because of a patented construction of the top proper. When the panels are not in use they are stored in a compact leather case, generally located in back of the front seat. The door panels are practically a part of the doors and open with them and incline inward, so that when the doors are closed they are perfectly tight. It is possible to slam the doors without injury to the panels, which are accessible without disturbing the occupants of the tonneau. The A-W top provides a partially or wholly inclosed body and the change from open touring to fully glass inclosed can be made in 2 min. When all of the panels are in place the interior of the car is rain-, snow-, dust- and wind-proof, and the construction is guaranteed against rattling, squeaking or vibratory noises. A feature of the design is that a separate and distinct type is made for each standard model car and the lines harmonize perfectly with the body of the car. There is no varnish to require careful washing.



Vapo Humidifier supplies moisture to the carbureter



Petry cut-out

INSTANT BACK CURTAIN LIGHT

Auto Patent Equipment Co., 216 Post Square, Cincinnati. PRICE, $2.50.

This accessory consists of a frame designed to fit the back curtains of 70 per cent of all cars. The frame has flexible edges to which the removable celluloid light is attached by snap fasteners.

LIGHTNING CLEANSER

Lightning Cleanser Mfg. Co., Perin Building, Cincinnati. PRICE, $1.50 per ½ gal.

The cleanser is an oily liquid which is said to loosen mud, oil, grease and dust and may be used in place of soap and water in cleaning the car. When it dries it forms a thin, hard coat of a wax-like substance on the surface, preserving the finish from the elements, it is claimed. The cleanser is applied with a cloth, sponge or waste, after which the body is wiped dry and polished.

PETRY CUT-OUT

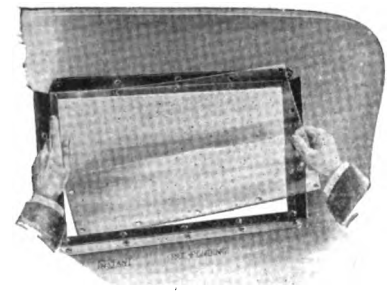
N. A. Petry Co., Inc., Philadelphia. PRICES: 1¼ to 1⅝ in., $3; 1⅞ to 2⅛ in., $3.50; 2⅜ to 3 in., $4.

This cut-out is a damper type, one position of the damper deflecting the exhaust gases down into the open and the other position allowing them to pass through to the muffler. The valve may be readily removed for cleaning and the tension of the closing spring may be varied to suit the requirements.

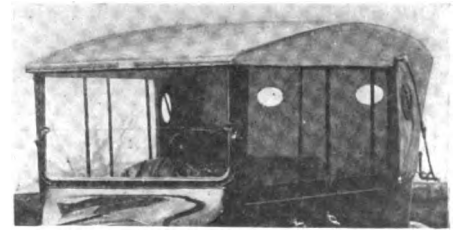
VAPO HUMIDIFIER

Auto Gas Saver Co., 29 South La Salle Street, Chicago. PRICE, $5.

This device supplies warm, moist vapor to the manifold, the exact amount being controlled from the dash. It consists of a valve at the manifold from which runs a pipe to the filler spout of the radiator, at which point the vapor is procured. It is said to provide a better mixture, and consequently improves the power and smoothness of operation of the motor.



Instant back curtain light



A-W convertible top

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No Trades

OF late there seems an apparent movement on the part of many dealers to eliminate the trading of used cars when making new sales, and in this way to make a long step toward the solution of their own used-car problem. It is admitted that if all dealers refused to make trades the used car as a problem would no longer be the *bête noir* of the dealer, but not all dealers who can plainly see the advantages of such a practice have the courage to take this step.

Generally, it will be found that in nearly every city there will be one or two dealers who have an iron-bound policy to take no cars in trade—who would sooner lose a sale—and often do—than accept a used car in part payment for a new one. And, just as generally, it will be found that these dealers are the most successful.

There is one dealer in a fairly large Pennsylvania city who sells Dodge, Buick and Packard cars. During the past 9 months he has consistently refused to make trades when selling Dodge cars. On Buicks he will make a trade when forced to do so, and on Packards he has always traded and says he probably always will.

But beginning the next fiscal year for the Buick factory this dealer is going to refuse to trade when selling Buicks. And his reason for this is that his books show him a greater net profit from the sale of Dodge cars than he realized from the sale of Buicks, although he sold many more Buicks than Dodges.

In another instance a dealer refuses to trade in used cars, but agrees to take a used car for a purchaser of a new car and sell it for him for a commission of 5 per cent. Why, reasons this dealer, should I give a used car space and devote my time, or the time of my salesmen, to its sale without remuneration? He has found that he has lost only a very few sales by this method.

One thing which appears bound to have an important bearing on the used-car problem is the growing practice of selling cars on time payments. A dealer in another Pennsylvania city states that fully 50 per cent of his sales are made on the time-payment plan. In a total of fifty-two sales, but nine included the trading in of used cars. In other words, the time-payment plan had brought in forty-three brand new car owners with no cars to trade. This, of itself, is sufficient inducement to this dealer to warrant him concentrating his efforts on sales made on this basis. It wipes out his used-car problem.

Where will the used cars go if a "No Trades" slogan becomes general? Assuredly they will go to the used-car dealers. These dealers are specialists in their line. The used-car business is a big business. But it is a business apart from the business of selling new cars. Many dealers in new cars are successful in spite of the fact that they trade used cars. But it can be said almost without fear of contradiction that ALL dealers who refuse to trade used cars are successful.

$39—Ten Years—$100,000

THE other day at the ad men's convention in Philadelphia was a man with a note-book. Every now and then he put down something.

Said he to the man next to him: "One thing I'm trying to do is improve my English."

Said the other man: "I often read with a dictionary at my side."

The first man put this down in his note book.

He has been putting things down in his note book for ten years. Ten years ago he had $39. To-day his assets are close to $100,000. He has done it all by picking up ideas.

He was asked how he got his start on this idea-garnering career. He said: "Myself and my brothers were always on the lookout for new ideas. One day we picked up a trade paper. It was a revelation to us. It was full of ideas.

"We have been reading that paper and many other papers ever since. They are a wonderful field for us in our business development. They show us the best things other men have done, and whenever we see a good idea we use it."

There are good papers in many trades, just as there are good papers in the motor car trade—and there are ideas everywhere. If each dealer in any trade would apply the ideas he can pick out of his trade paper alone he would go farther and faster on the road of business development. But the one essential is APPLICATION OF IDEAS.

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BOOST ELECTRIC CARS

Editor Motor World:

There was recently an article in Motor World on electric cars that I thought was as fine and as practical an article as I have ever read. It seems to me that if the people interested in electrics were to take this matter up locally with the different electric companies something could be done to improve the situation. Certainly such a thing as boosting stations around San Francisco would be a wonderful thing for the electric owner.

San Francisco is so hilly that by the time an electric is 20 miles outside of San Francisco 50 per cent of its juice is gone; otherwise it could probably travel 100 miles in most any direction with level roads. So you can see what a wonderful thing a boosting station would be located here and there on our State highways. You know we have wonderful roads. Touring in California is one delightful trip from start to finish.—ARTHUR D'ETTEL, Secretary Garage Owners' Protective Association of San Francisco.

THAT ASSOCIATION EDITORIAL

Editor Motor World:

The editorial on page 21 of the Motor World of June 14 is red hot and A1 in every respect.

I hereby nominate the man that wrote it as a candidate for the Hall of Fame.

Please follow up with a law compelling every garageman to read it and then sit down and think about it for 30 min.

F. A. BEAN.

Grosse Pointe, Mich., June 17, 1916.
(Paye P. O.)

STANDARDIZE BULB DATA

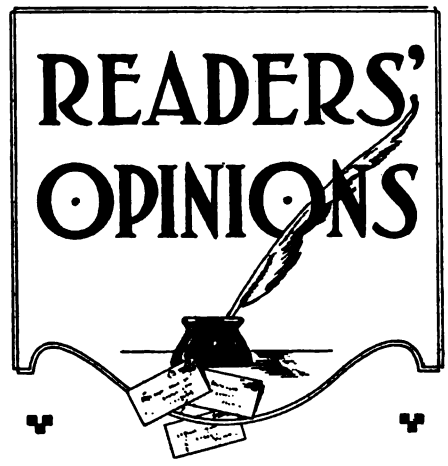
Editor Motor World:

We noted your very excellent article in the May 24 issue in regard to automobile lamps. We certainly appreciate the appearance of articles of this kind, which tend to clear up points in regard to automobile lamps, for which there has been considerable confusion in the trade.

I note that in your table of proper lamps for 1916 cars you refer to the lamp bases as Ediswan. This term is obsolete among all of the larger lamp manufacturers and we have been trying for some time to standardize the word Bayonet in describing this type of base.

Carrying out the idea of your May 24 article a little further, I have prepared a write-up dealing with the standardization of automobile lamps and their demand. Possibly you can find room for this in an early issue of your publication.—National Lamp Works, General Electric Co., Publicity Department, W. E. Underwood.

Cleveland, June 12.



Simplifying the Lamp Business

The demand for automobile lamp bulbs 5 years ago was practically nothing, as electrically lighted cars at that time were a novelty. Now such lighting is universal and the demand for the present year is estimated at over 30,000,000 lamp bulbs in this country alone.

Naturally, such rapid growth has outstripped the slower process of standardization of lamps and lamp terms among lamp manufacturers and among the trade.

However, great progress toward standardization has been made in the last 2 years. Car manufacturers who have been equipping their cars with special lamps are now using lamps of standard ratings and sizes, because standard lamps may not only be purchased more economically for initial installations, but may also be more easily and cheaply purchased by the car owner when lamp renewals are necessary. In addition, bulb manufacturers have succeeded in reducing the variety of sizes of lamps regularly made. This movement towards a limited assortment of standard bulbs on the part of car and lamp manufacturers has greatly simplified the lamp renewal business for the garageman and supply house.

It is now possible to supply the proper lamps for 90 per cent of all cars from a selected stock of 100 lamps, and two of the most progressive lamp manufacturers are marketing such a stock packed in a display container with a list of proper lamps for all popular cars.

Now that the demand can be met with such a limited stock, there is no question as to the large profit which any garage may make on lamp bulbs.

Although the number of sizes and types of lamps now in general use has been reduced to a comparatively few standard sizes and the reducing process is still going on, there is need for a better understanding among garagemen and car owners of the main points about lamps and terms descriptive of lamps.

The various kinds of lamp bases have been a source of trouble from the start. Originally, lamps were made with any one of seven or eight different types of bases. Some car makers specified one style of base and some another, as fancy dictated. Present day cars are wired with either the single-wire system or double-wire system, requiring respectively single or double contact bayonet base lamps. In the single-wire system one terminal of the battery or generator is connected to the frame of the car and from the other terminal wires are run to the lamps, only one wire entering each lamp socket. The shell of the socket is connected to the frame, thus completing the circuit when the lamp is lighted. For this system of wiring, lamps with single contact bayonet bases are used.

The double-wire system is equally as popular as the single-wire system among car makers. For this method of car wiring two wires are run to each lamp socket and the proper lamp base for cars wired in this way is the double-contact bayonet base.

These two types of bases were formerly known as double- and single-contact Ediswan bases. This term is obsolete and it will avoid confustion if garagemen will always refer to these bases as bayonet, rather than Ediswan.

Lamps having candelabra screw bases are required for a few gasoline cars and for most electrics.

Another important point which requires care on the part of the garageman is that of lamp voltage rating. Three voltage ratings have been standardized, 6-8 volts for three-cell storage battery-generator lighting systems, 12-16 volts for six-cell systems, and 18-24 volts for nine-cell systems. It is necessary, of course, to make certain that the voltage rating of the lamp is adapted to the lighting system of the particular car for which it is sold.

The first demand for lamps called for a host of different bulb sizes and shapes. This has been boiled down so that the present demand is almost entirely for round bulbs of four different sizes.

Because of the very considerable simplification which has taken place in the demand for lamps, it may be readily seen that the garageman may now supply practically all calls from a limited stock of lamp bulbs and each of these bulbs will be suitable for a large number of different makes of cars.

Chalmers Dealers Gather at Plant

DETROIT, June 28—More than fifty sub-dealers of the Chalmers organization, operating under the Michigan distributer, the L. J. Robinson Co., were in the city this week for a 2-day convention to view the 1917 Chalmers cars and to formulate plans for a furtherance of business for the coming season. Talks were given by President Chalmers, Vice-president C. A. Pfeffer, Vice-president of the selling division Paul Smith, L. J. Robinson and Harry Newman of Chicago. A big drive-away of new models closed the meeting and took many of the new cars away from Detroit.

Milwaukee Lecture Series Stopped

MILWAUKEE, June 28—The Milwaukee Automobile Dealers, Inc., has interrupted the series of business and efficiency lectures instituted in April, due to the hot weather, and will complete the course beginning in October. The lectures are designed to promote service, education, economy and efficiency, and are for the benefit of the sales, office and service forces of the thirty-seven dealers comprising the M. A. D. The lectures are fourteen in number and are given by Prof. R. C. Griswold of the Sheldon School. Every phase of the business is thoroughly discussed from an academic standpoint in simple, straightforward language.

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The RETAIL NEWS

NORTHWEST

J. O. Nordin, Minneapolis, Minn., is building a concrete garage at 3112 Washington Avenue North.

The Stimson Automobile Co., Minneapolis, 1202 Hennepin Avenue, is now handling the Monroe.

The J. H. Shields Co., Minneapolis, has opened a distributing office for the Vim truck at 1108 Harmon Place.

The Whitcomb-Littlewood Auto Co., Minneapolis, a new firm, is Minnesota representative of the H. A. L. car, at 30 Eighth Street N.

Russell Sage, Bird Island, Minn., has opened a repairshop with Boardman & Son.

The Bush Garage, Red Wing, Minn., has taken the Cadillac agency.

F. E. Wade, Fairmont, Minn., has rented the F. L. McCadden Garage.

The Yellowstone Garage, Billings, Mont., 2300 Montana Avenue, has been opened by William Frank and E. H. Preston.

A. H. Johnson, LaMoure, N. D., has bought an interest in the Ernst Bros. business.

Roy Duholm, Austin, Minn., has opened a repairshop on the second floor of the Gransee Garage which has been leased by Clarence Rosenthal.

L. J. Case, Aberdeen, S. D., has removed his business to 419 S. Main Street.

The St. Paul Chalmers Co., St. Paul, has taken over the St. Paul representation of the Chalmers from the Northwestern Chalmers Co. It will move to 408 Main Avenue, and H. F. Hine will be sales manager.

The Kvenvold & Hoffman Garage, Hartland, Minn., has opened.

Emil Gregor, Waterville, Minn., has opened a garage.

Nelson Bros., Wheaton, Minn., have opened a garage in the Hokanson Building.

C. C. Kisor, Morristown, Minn., has taken the Elcar agency.

Albin Braaten, Oklee, Minn., has bought the A. J. Lillo Garage.

The Jacobs Garage, Wabash, Minn., has been opened.

W. C. Orr, Dillon, Mont., has opened a garage opposite the city hall.

Edward Gruber, Townsend, Mont., will erect a garage, 50 x 90 ft.

H. D. Mack, Dickey, N. D., has taken the Ford and Crow agencies.

The Batavia Motor Car Company, Batavia, Ia., is building a new garage 50 x 90, on Main Street.

Ray Buchanan, Liscomb, Ia., has purchased an interest in the Liscomb Garage and will devote his time to the business.

MOUNTAIN

The Western Auto Repair & Service Co., Denver, has closed its garage at 1431 Cleveland Place.

A. O. Stout, Buckingham, Col., has secured the Pullman agency for Logan and Sedgwick Counties.

The Steamboat Mercantile Co., Steamboat Springs, Col., has taken the Velie agency for Routt and Moffat Counties.

The C-B Auto & Service Co., Denver, a new $5000 concern organized by W. C. Borah and C. A. and E. N. Harman, who are respectively president, vice-president and secretary of the firm, has opened a used car and rental business at 1439 Cleveland Place.

W. Aldridge, Denver, general manager and one of the organizers of the Highway Auto Sales Co., 1435 Cleveland Place, Crow-Elkhart and Argo distributer in Colorado, has sold his interest and left the motor car business.

The Vim Truck Sales Co., Denver, is the name of a new Colorado distributing agency for the Vim truck opened at 801-807 Broadway by Charles F. Cole, formerly Pathfinder distributer in Colorado.

The Auto Equipment, Denver, celebrated its seventh anniversary with a banquet for its employees in the Metropole Hotel last week. This wholesale supply house at 1554-1556 Broadway now has a territory of fourteen states, and reports on business outside of the Denver district were made by L. E. Robinson, manager of the Colorado Springs branch, and J. R. Alexander, traveling representative. President S. T. McCollum, Treasurer S. E. Howe, Jr., and Publicity Manager A. Paul Porter conducted a lively program of business betterment talks. The concern has recently enlarged its display facilities.

The Gould-Esser Co., Denver, a machinery concern at 1613 Blake Street, has secured the Colorado distributing agency for the Troy trailer.

The Mulnix & Rarie Auto Sales Co., Denver, the new name under which the firm of Mulnix & Rarie is operating in new quarters at 35 East Colfax Avenue, has taken the Roame and Halliday distributing agencies for Colorado and Wyoming in addition to the Grant and Pathfinder agencies it has held for the same territory.

COAST

The Pacific Kissel Kar Co. has opened distributing headquarters for the Kissel in Seattle, at 806 East Pike Street. W. C. McKay has been named distributer in the State of Washington. Branches are now operated by this company in San Diego, Pasadena, Los Angeles and San Francisco and Portland, Ore., and with the addition of a branch and service station in Seattle will have one of the best and largest organizations on the Pacific Coast.

R. K. Roberts, Seattle, formerly with the Oakland Motor Car Co. in San Francisco, will shortly enter the distributing field and handle the Oakland line under the firm name of the North Pacific Oakland Co. Associated with Roberts will be E. M. Mark.

Vick Bros., Salem, Ore., have secured the Ford agency for Lane County and opened a garage and salesroom in Eugene.

The Wall Shipp Co., Salem, Ore. has put in a line of supplies and secured the distributing agency for the Stewart-Warner products.

D. L. McPhee, G. K. Cassidy and C. M. Herald, Portland, Ore., have incorporated the American Tire & Rubber Co. of Portland, Ore., and opened salesrooms at Broadway and Oak Street. The company will do a general tire business and specialize in United States and Knight tires at wholesale and retail.

The Simplex Rubber Co. of California, Los Angeles, has opened a salesroom and service station at 1113 West Pico Street with A. C. Thompson in charge. The concern will handle solid tires for trucks exclusively. It directly represents the Simplex Rubber Co. of America, Ossining, N. Y.

The Colfax Tire Shop, Colfax, Wash., has been incorporated by B. P. Hargrave, R. M. Dimmick, Claude Swegle, J. J. Kimm, R. E. Perry. Capital, $2,000.

A. J. Field & Co., Davenport, Wash., has been made Chalmers dealer.

The 500 Taxicab Co., Spokane, Wash., has been organized by William C. Nichols, Frank L. Chase. Capital, $20,000.

The Chewelah Auto Co., Chewelah, Wash., has been made Chalmers dealer.

The H. & B. Repair and Accessory Co., North Yakima, Wash., has been organized by Walter Hesse and Harry G. Brown.

The Francis Motor Car Exchange, Portland, Ore., has been organized to handle used Ford cars and parts.

Verner and Copeland, Bakersfield, Cal., have been appointed Kern County distributers of the Saxon.

The Chandler Motor Car Co. of California, Los Angeles, is no more. The firm name of the southern California Chandler distributer has been changed to Earl V. Armstrong, Inc. All legal provisions governing such a change have been complied with and alterations made in the company's articles of incorporation.

MIDDLE WEST

The Motor & Electric Co., Menominee, Mich., has been organized by James Merrick, who will make a specialty of Maxwell and Studebaker service.

John Schwide, East Hamlin, Mich., has opened a new garage in the Hunt Building.

Murvin Sluyter, Alma, Mich., has opened a garage at 217 West Superior Street.

Fred Thompson, Belding, Mich., has taken the agency for the Chevrolet.

Ben W. Haehnle, Jackson, Mich., has secured the agency for the Standard truck.

The Oswald Motor Car Co., Grand Rapids, Mich., distributer of the Dort, Baker and R. & L. electrics and Shattuck convertible trailer, has moved its salesroom and service station from 66 Sheldon Avenue to 131 Michigan Street, N. W., formerly occupied by the Peckham Auto Sales Co. The new location is only temporary, as a new building is contemplated.

Hinz & Truxell, Lansing, Mich., distributers of the Chevrolet and Hudson, have opened a new garage on Washtenaw Street.

Isaac Koski, Marquette, Mich., has purchased the interest of his partner, William Hemmila, in their garage on Division Street.

F. W. Fitz, Lamb, Mich., recently lost his garage by fire, the loss being between $8,000 and $10,000.

C. E. Pugsley and Frank Meyers, Dowagiac, Mich., have secured the Oakland agency from W. A. Stolley and in the future will conduct a copartnership. They will erect a new garage, 40 x 50, on North Front Street.

The Chandler Auto Sales Co., Flint, Mich., has opened a new salesroom and service station at 913-915 South Saginaw Street, which was formerly occupied by the Flint Garage.

George Newville, Muskegon, Mich., who conducts a salesroom at 265 Pine Street, has been appointed distributer of the Allen.

The Horning & Moore Auto Sales Co., 529 West Genesee Avenue, Saginaw, Mich., has been appointed distributer of the Denby motor truck in Saginaw County.

Frank Fisher, Platteville, Wis., is having plans prepared for a two-story garage and repairshop, 40 x 110, of brick, concrete and hollow tile.

James Morgan, Rhinelander, Wis., will erect a new garage. It will be two stories and basement, 60 x 140, fireproof, and cost about $12,000.

The Frint Motor Car Co., 211 Wisconsin Street, Milwaukee, State distributer of the Oldsmobile and Monroe, has established a retail department in connection with its wholesale business. The new department is in charge of A. F. Eckstein, until recently with the Jonas Automobile Co., Cadillac distributer.

C. M. Thorning, Milwaukee, proprietor of the Blenheim Garage, 144 Twenty-sixth Street, has taken the Wisconsin State distribution of the Sun.

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The Belleview Garage Co., Milwaukee, recently organized, is awarding contracts for a new garage and repairshop at Downer Avenue and Mineral Spring Road, East Milwaukee. It will be of brick and steel, 70x 160, one story and basement, and cost $12,000. Richard Mokros is general manager.

Henry Beushausen, Reedsburg, Wis., has opened a tire and vulcanizing shop on the third floor of the Townsend-Metcalf Garage, Reedsburg.

George C. and L. J. Laing, Sheboygan, Wis., operating the Laing Vulcanizing have purchased the property and buildings which they have occupied for several years.

SOUTH

G. R. Crutcher, Louisville, Ky., distributer of the McFarlan, has opened an office and salesroom at 206 East Broadway.

The Peoples Motor Co., Louisville, Ky., has acquired the agency for the Inter-State, and established headquarters at 951 South Third Street.

The Winklemann-Schade Motors Co., Louisville, Ky., has organized and opened a temporary office and salesroom at 949 South Third Street, as Maxwell distributers. W. F. Winklemann, head of the company, was formerly sales manager of the Southern Motors Co.

The Louisville Tire Co., Louisville, Ky., distributer of the Empire, has opened an office and salesroom at 407 East Broadway.

EAST

The Keystone Motor Car Co., Harrisburg, has started the erection of a two-story, brick, fireproof salesroom, repairshop and garage on South Eleventh Street, to cost $25,000. The new building will be 100 x 118, with storage space for 150 cars.

Ness Brothers & Company, York, Pa., engaged in the rim, spoke and wheel manufacturing business, have added a line of automobile accessories.

The Gorson Automobile Exchange, 238-40 North Broad Street, Philadelphia, purchased the building at Broad and Melon Streets, and will build a four-story building containing four stories on the site. The purchase price was $70,000.

J. R. Pettit, Philadelphia, is having a one-story brick and concrete garage built at 6234-36-38 Market Street, costing $8000. The building is 75 x 100.

The Buick Motor Co., 235-37 North Broad Street, Philadelphia, has leased the 6-story concrete building now being built at the northwest corner of Broad and Poplar Streets, which will be used as a wholesale and retail branch. The present quarters will be vacated about September 1. The new building has a frontage of 65 feet on Broad Street, and a depth of 160 feet on Popla. Street.

C. A. Fair, Mulberry Street, Harrisburg, for years engaged in the wagon business, has gone into the manufacture of delivery and commercial car bodies.

The Anderson Motor Co., Inc., York, Pa., will occupy its new three-story brick, fireproof garage, King and Queen Streets, September 1. The garage will have 30,000 square feet.

The Keystone Hardware Co., York Pa., Murray E. and W. Reeser Ness, proprietors, has taken on a line of automobile accessories. Included are the agencies for Miller and Marathon tires.

The Hudson Sales Co., Harrisburg, I. W. Dill, proprietor, is erecting a modern two-story fireproof service station and salesrooms, 60 x 22, on the site of its old salesrooms on Mulberry Street.

Eugene J. Ellis, Rochester, N. Y., formerly assistant truck sales manager of the Packard Motor Car Co., Detroit, has taken over the firm of E. J. Ellis & So. and will handle Packard cars and trucks.

H. Schroeder, Harrisburg, vice-president of the Overland-Harrisburg Co., has leased the Eliott Building, 128-130 West Market Street, York, Pa., for sales service and showrooms for the Overland and Willys-Knight.

The Smith Motor Car Co., Wilmington, Del., has been formed to utilize a large garage erected at Ninth and French Streets —just completed. The firm comprises G. B. Smith, Newark, N. J., and R. L. Smith, West Chester, Pa. They will handle the Allen, Hupmobile and Standard.

A. F. and W. L. Fader, Wilmington, Del., who have been in the automobile business in Newark, Del., for some time, have taken the Wilmington agency for the Oakland and have opened headquarters in the new Topkis Building.

William H. Ryan, Wilmington, Del., has taken the agency for the Paterson.

The Bunker-Bancroft Co., Springfield, Mass., has taken the agency for the Apperson.

Peckham Bros., Providence, R. I., have bought a large lot on which they will erect a new building.

The Eisner-Lenk Co., Boston, Mass., has moved to 1096 Boylston Street.

Ralph Lyons, Princeton, Me., has opened a garage on Main Street.

The Old Colony Garage, Boston, has just been opened in the business district.

The Crocker Garage Co., Falmouth, Mass.. has been purchased by Arthur G. Cushman, a former employee.

A. C. Zacher, West Medford, Mass., has opened a tire repairshop.

C. J. & J. O. Hollis, Weymouth, Mass., are erecting a new garage.

Frank Turner, Brookline, Mass., is erecting a two-story garage.

J. Willard Cobb, Greenfield, Mass., has taken the Cadillac agency.

The Draper Bros., Milton, N. H., have opened a new garage.

The Ryan & Ryan Garage, Webster, Mass., has been leased by Emil Roemer.

Dydak Piekos, Holyoke, Mass., is erecting a garage, 120 x 50, to cost $12,500.

John A. Clark and **Angus D. Martin**, Quincy, Mass., owners of the M. C. M. Garage, have dissolved partnership. Clark has become sole owner.

Alexander B. Campbell, Worcester, Mass., is having a three-story brick building on Burnside Court remodeled into a garage at a cost of $20,000.

The Richmond Garage & Motor Co., South Boston, Mass., has filed a petition with the Supreme Court to go out of business and close up its affairs.

SOUTHWEST

B. C. Scott and **Carl Jaeger**, Clarksville, Mo., have purchased a building and are remodeling it for a garage.

The Kimball & DeLay Auto Co., Parsons, Kan., have enlarged their showrooms and shops and built an office addition.

Abraham Warrick, Hutchinson, Kan., whose shop was burned three weeks ago, has opened in a new location.

J. H. Parvin, Hutchinson, Kan., agent for the Gray tractor, has opened in a new location, 24 Sherman Street West, following the fire three weeks ago.

J. C. Dickinson, Odessa, Mo., formerly of Kansas City, has purchased a half interest in the garage of J. W. Colvin.

C. W. Smith, Lawrence, Kan., is closing out his accessories, to devote his time to the Ford agency.

W. E. Knabe, Milan, Mo., has recently opened a garage and repairshop.

Will McBride, West Plains, Mo., will soon occupy his new garage and repairshop in the Fitzgerald Building; he is agent for the Maxwell and Saxon.

John Downs, Bellflower, Mo., recently made manager of the Southern Hotel, is erecting a garage in connection with a blacksmith shop, which will also have a stable in connection.

T. N. Rigby, Albany, Mo., has bought the property occupied by the Darlington Garage, Darlington, Mo., from C. C. Bush. Bush is a dealer in cars.

A. R. Cogswell, Kirwin, Kan., is erecting a cement garage.

Charles Adamson, Elk City, Kan., has rented the building formerly occupied by the Loether Bros. Garage, and will operate a storage garage.

J. M. Baker and E. N. Schriber, El Dorado, Kan., have added to their floor space. An addition gives 50 x 60 extra space, and a storeroom 17 x 28 will be built. The company, The El Dorado Garage, now has 6,000 feet of live storage space, the shops 2,000 feet, and the dead storage in the basement 5,000 feet.

The Merchants Truck Co., St. Louis, has been incorporated at $5,000, with these incorporators and members of the board: John A. Yung, Theodore Mueller, H. T. Steele, H. B. Willower, Vincent McShane, all of St. Louis.

Eller Bros., Gaylord, Kans., have recently opened their newly equipped repairshop in their Main Street Garage.

William Liddle, Holden, Mo., has let the contract for an addition, 30x48, for a repair department.

A. A. Sexton, Kennett, Mo., is building a brick garage.

Labbe Bros., Axtell, Kan., dealers in Velie and Reo at Axtell and Vermillion, are having a brick garage erected in Vermillion for their use.

Martin Bros., Ottawa, Kan., has secured the agency for the Chalmers.

B. C. Lindsey, Winchester, Kan., formerly of Altamont, has bought an interest in a garage and automobile agency.

The Farris-Stephens Auto Supply Co., Joplin, Mo., suffered damage of $5,000 by fire.

G. A. Millar, Wichita, Kan., has entered the business of making automobile bodies, and will soon enter a two-story brick factory.

Campbell & Marts, Marceline, Mo., blacksmiths, are erecting a garage annex, cement floors.

Benjamin Markley, Cherokee, Kan., has purchased the equipment of the Spencer & Lindsey Garage, and will soon open it for business.

The Dodge Automobile Agency, Springfield, Mo., will occupy about September 15 a new two-story brick and terra cotta building, work on which has just started. Display rooms and offices will be on the first floor, repair department on the second, storage in the basement. Electric elevators will serve. Motor cars may enter and leave by the rear.

James Hall & Son, Fairview, Ok., Overland dealer, has added accessories.

Clem Beckham, Burrton, Kan., will occupy for storage purposes a building being erected adjoining his garage.

V. T. Altes, Unionville, Mo., will soon move his livery barn and erect a brick or concrete garage.

The City Motor Car Co., Whitewater, Kan., Eilert & Viles, proprietors, has opened a garage and repairshop.

H. Hamlin, California, Mo., is now occupying an addition to his garage.

Fred Fitch, Pittsburg, Kan., has let the contract for the erection of a garage 50x170.

Frakes & Hiatt, Rushville, Mo., are planning to buy, rent or build a new garage.

Teater & Delap, Blairstown, Mo., are now occupying their new garage and repairshop; they also deal in accessories.

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Grother & Son, Sweet Springs, Mo., have secured the Buick agency; John McGuire was formerly distributer here.

W. R. Archer, of Stone & Archer, dealers in automobile accessories in Dodge City, Kan., visited Kingsley, Kan., recently to make arrangements to open a store in that city.

H. O. Turley and **H. M. Turley**, La Plata, Mo., have sold their interest in the Model Garage & Machine Shop to P. C. Sloan.

Joseph G. Akins & Son, Humansville, Mo., have opened a garage, carrying accessories.

G. C. Sparks, Kiowa, Kan., is building a garage close to the Elmore Hotel, which he owns, for the use of his guests.

The White Way Garage, Waterville, Kan., successor to the Merchants Auto Co., has opened up in the Thomas Building.

The Huffine Motor Co., Frederick, Okla., will move to the Palace Hotel Building, this month, where it will put in large stock of accessories and Buicks.

Oster & Merten, Kingsley, Kan., have bought the Sims Garage and will handle the Reo and Case.

Frank Grove, Conway Springs, Kan., has leased the Thorne garage at Norwich, and has already taken charge.

The Dodge Automobile Agency, Springfield, Mo., is to have a new brick and terra cotta building; work has already been begun. A modern elevator will also be installed.

Fred Fitch, Pittsburg, Kan., is having a new garage building, 50x170, erected for his own use.

Fred Chancellor, Merriden, Mo., has secured the agency for the Overland.

McDonald & Burnham, New Bloomfield, Mo., have opened a repairshop.

F. R. Plummer & Son, Coats, Kan., are building a brick and tile garage.

The Adams Auto & Supply Co., Chillicothe, Mo., has constructed a new garage with modern equipment.

Harry Miller, Chillicothe, Mo., has just completed a new garage in which he will open an automobile sales business.

Will Foster and Oscar Fields, Morley, Mo., will erect a new garage on the site of the Old Red Front livery stable.

The Hargrave Garage, Goodland, Kan., burned down recently with the loss of the building and three new Inter-State cars owned by a patron. Hargraves, the owner, has started rebuilding the shop.

The Wilhite Brothers, Garden City, Mo., are having a new garage built of concrete to house the Dodge agency which they are taking.

E. O. McCain, Oskaloosa, Kan., has opened a garage, taking the agency for the Overland.

Walter Kuhlmann, California, Mo., has taken over the agency for the Haynes.

Mannie Trimble, Mexico, Mo., recently bought the J. Sullivan vulcanizing business.

C. H. Briggs, Goodland, Kan., is building a garage across the street from the Commercial Hotel, which he owns.

H. B. Bell, Dodge City, Kan., is building an addition to his garage, 50x75 ft., two stories.

The Centralia Taxi Co., Centralia, Mo has been purchased by Charles A. Thummel from A. H. Owings.

W. R. Schooling, Sturgeon, Mo., has purchased the General Garage, formerly owned by C. A. Burkey, and has placed his son, Ray Schooling, in charge.

R. O. Graham and R. E. Troxel, Jameson, Mo., have opened a garage and will operate a repairshop in connection.

Rainey Goodman, Belle, Mo., has sold his garage to Walter Glieck, and is going to St. Louis to open another.

Warren Martin and **J. M. Jones**, Ardmore, Okla., have taken over the Reo agency.

O. W. Hiatt, Kansas City, Mo., for nine years Buick dealer, is establishing the Hiatt Buick Corporation, and will get headquarters further uptown, in the retail automobile trade center. Heretofore the retail has been conducted in the same building with the wholesale. The growth of both the wholesale and the retail have made necessary this separation.

The Topeka Buick Co., Topeka, Kan., is erecting a building with a snow-white front and modern equipment, which it will occupy soon. O. W. Hiatt of Kansas City, and M. D. Wood constitute the company. Wood will manage it.

The Ramsey Auto Co., Kansas City, Mo., has been organized with J. A. Ramsey, formerly with the Commerce Truck Co., as manager, to handle the Detroiter.

The Velie Motor Car Co., Kansas City, Mo., has leased for 10 years a tract at Sixteenth and McGee Streets; a salesroom will be erected at once.

R. O. Farmer, Anthony, Kan., has traded a farm for a garage in Nickerson.

Loren Turk, Ash Grove, Mo., has taken the agency for the Maxwell.

George P. Kliewer, Inman, Kan., recently leased the repair department of his garage to Charles Rutledge.

The Haskett-Mace Motor Co., Springfield, Mo., opened for business May 29, with a stock of tires and accessories.

George Wells, Grant City, Mo., has sold his garage to Erna Banium and Arthur Turner.

The George C. Hale Co., Kansas City, Mo., has finally received the contract for 20 pieces of motor driven fire apparatus, the ordinance having been signed by the mayor.

J. C. Granere, Clyde, Kan., has moved his repairshop from Calderhead to Agenda.

H. M. Dickerson and William Lazalier, Poplar Bluff, Mo., are the owners of a new garage to be opened in a new building under the name of the Automobile Repairing Club.

S. H. Browne & Son, Vandalia, Mo., recently purchased a garage in that city.

Warren Scott, Bonner Springs, Kan., has sold his share in the Golden Belt Garage to Armour Scott, his brother.

Edward Davis, Moundridge, Kan., has moved his equipment into a new garage which he built some time ago. Edward Goering, recently from South Dakota, has installed an electric charging station in the garage.

Arnhold's Garage, Jefferson City, Mo., was opened to the public the middle of June. This firm, in addition to garage service, has the agency for the Hudson and Pullman.

The Capital Garage, Jefferson City, Mo., has taken the agency for the Dort.

Charles Adamson, Elk City, Kan., has opened a garage in the building formerly occupied by Loether Bros. Garage.

N. F. Jenkins, Wymore, Neb., is erecting a concrete garage.

W. E. Knabe, Milan, Mo., recently opened a new garage.

Hagar Bros., Laddonia, Mo., have bought the garage of Chiem & Hudson.

P. C. Redman, Abilene, Kan., recently bought a building adjoining his present garage for the purpose of opening a salesroom.

J. O. Smith, Smith Center, Kan., who has the agency for the Ford, has built an addition to his garage.

L. W. Booth, Guymon, Okla., will occupy a building now under construction.

E. L. Brewer, Independence, Kan., will use the North Side Planing Mill building for a garage and repairshop.

Simmons & Simmons, Belleville, Kan., are closing out a stock of variety goods to make room for a vulcanizing business.

The Marion-Handley Sales Co., Kansas City, Mo., has been organized to handle the product of the company indicated in eastern Kansas and western Missouri. The Marion had previously been represented here. L. C. Cadenhead, formerly of Ottawa, Kan., recently with the Franklin Company, is president and manager, and C. F. Gehde, formerly in the bond business in Austin, Tex., is secretary-treasurer. They have opened in the Coca Cola Building, receiving cars June 25.

Russell H. Clark & Co., Kansas City, Mo., body and top builders, is building outing and commercial trailers, the specialty being the Russ Outing Trailer convertible, by removing the wire spring bed, into a commercial trailer. The firm is also stocking commercial bodies for touring cars; it is furnishing new commercial cars complete, or providing the used cars to be made into commercial cars.

The Slavens Auto Co., Kansas City, Mo., is now handling used cars; this fall the U. S. Motor Parts Co., recently established by Slavens, will equip the quarters with shops and handle parts.

Sheldon R. Parsons, Kansas City, Mo., has established the Parsons Motor Co., for handling the Tonford unit one-ton truck of the Detroit Truck Co. in Kansas and Jackson County, Mo. Parsons will equip a shop and salesroom shortly at 1804 Grand Avenue.

The Phoenix Auto Supply Co., St. Louis, is exhibiting a new equipment outfit for a Ford. It costs $264 and was designed by John F. Shuford, general manager of the Phoenix company, and it is called the Shu-Ford. This is how it is listed: Heinze-Springfield starting and lighting system, $75; Bosch magneto, $50; Lynite pistons, $30; Livingston radiator, $45; crown fenders, $16; linoleum covered runningboards, $6; Warner seat covers, $22; demountable wheels, $10; Sears-Cross speed indicator, $10.

The Commercial Auto Body Co., St. Louis, has been incorporated at $50,000 by Hugh F. Cartwright, M. E. Cartwright and X. F. Wilfey. Cartwright has been conducting a factory at Sixteenth and Pine Streets and during the last year turned out 10,000 bodies. The capacity will be enlarged.

George F. Farasey, with the Kelly-Springfield Tire Co., at Boston and Cleveland, has taken charge of the St. Louis branch for the same company, succeeding C. R. Higgason.

D. A. Livingston, St. Louis, a salesman, has organized the Supreme Motor Co., which will begin business early in August. The new company has the agency for the Simplex Crane chassis. The company will handle probably two lower priced lines but has not determined upon these nor has it decided definitely upon the location of showrooms.

E. E. Denniston, St. Louis, has taken charge of the wholesale department of the Overland Automobile Co. of St. Louis. Denniston comes from Buffalo, N. Y., where he distributed the Stevens-Duryea and later conducted a truck body building plant. Here he succeeds H. A. DeWitt, who resigned as sales manager of the wholesale department of the Overland company, to become Overland distributer in Little Rock, Ark.

St. Louis—New agencies and changes in existing sales arrangements during the past week in St. Louis are:

The Newell Motor Car Co. will handle the Detroiter. The Newell company now is distributer of the Haynes, Sun, Dort, and Detroiter. The Elcar Motor Sales Co. has been designated as the distributing agency for the Elcar. The Fred Campbell Auto Supply Co. has been made exclusive sales agent for the White Star Refining Co. of Detroit. The John Berry Automobile Co. has become agent for the Dearborn one-ton truck attachment.

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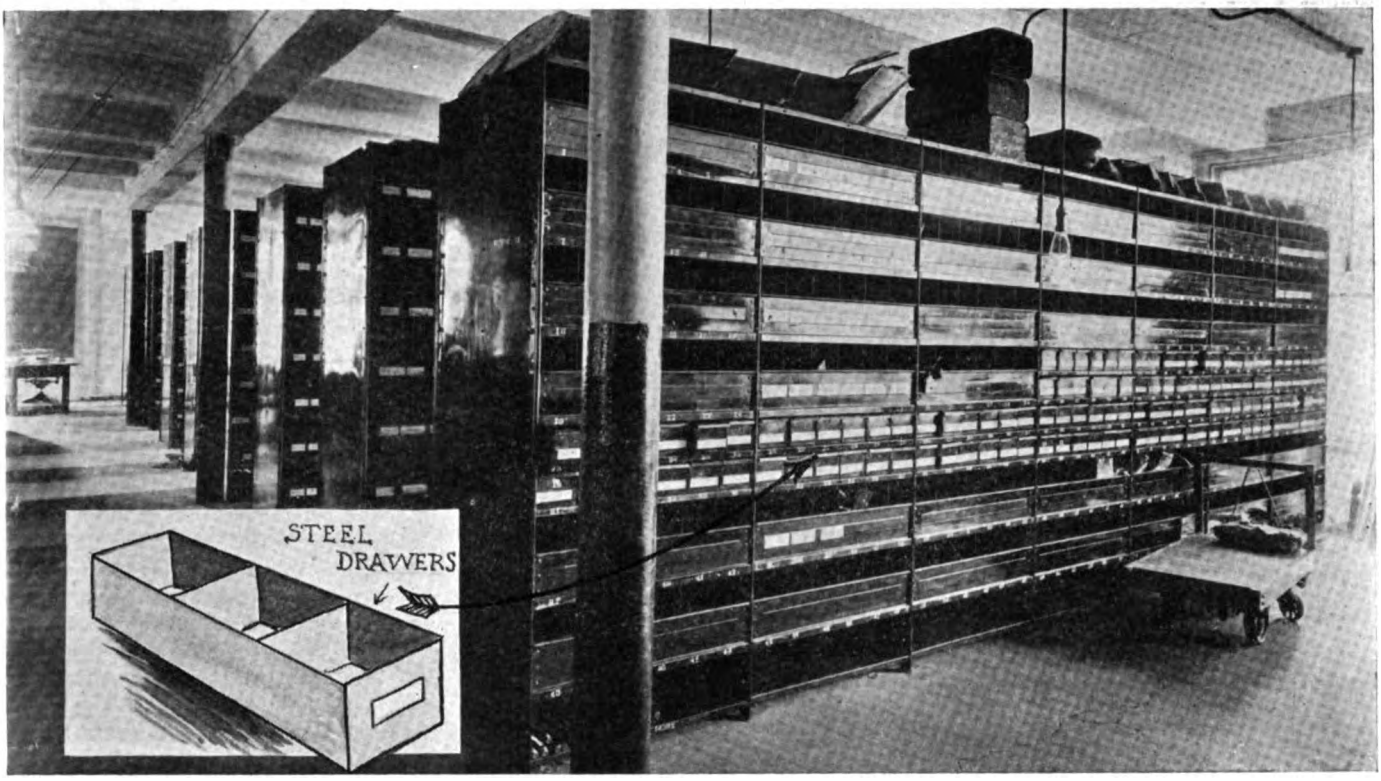


Fig. 1—Parts are kept in steel racks divided into "sections" and "stalls"; each stall has a number of small drawers (see insert) and each is indexed

Studebaker Employes at Home in Any Branch

Standardized System Permits Man From One Branch to Locate Any Part in Another Branch in Two Minutes—Special Racks and Stands Facilitate Work—Cash Sales 300 a Day

$60,000 worth of parts in stock; $1,500 worth sent out every day; 300 cash sales made over the counter daily; 6,000 different things on hand; and——

Nothing in stock that is not actually needed; stock status ascertainable at any minute by glancing at a card; practically all shipments made within a day of receipt of order; record of every cash sale completed when sale is completed; and every one of the 6,000 parts in stock getatable within 2 minutes at the outside.

Squeezed into a couple of sentences, that is what has been accomplished by

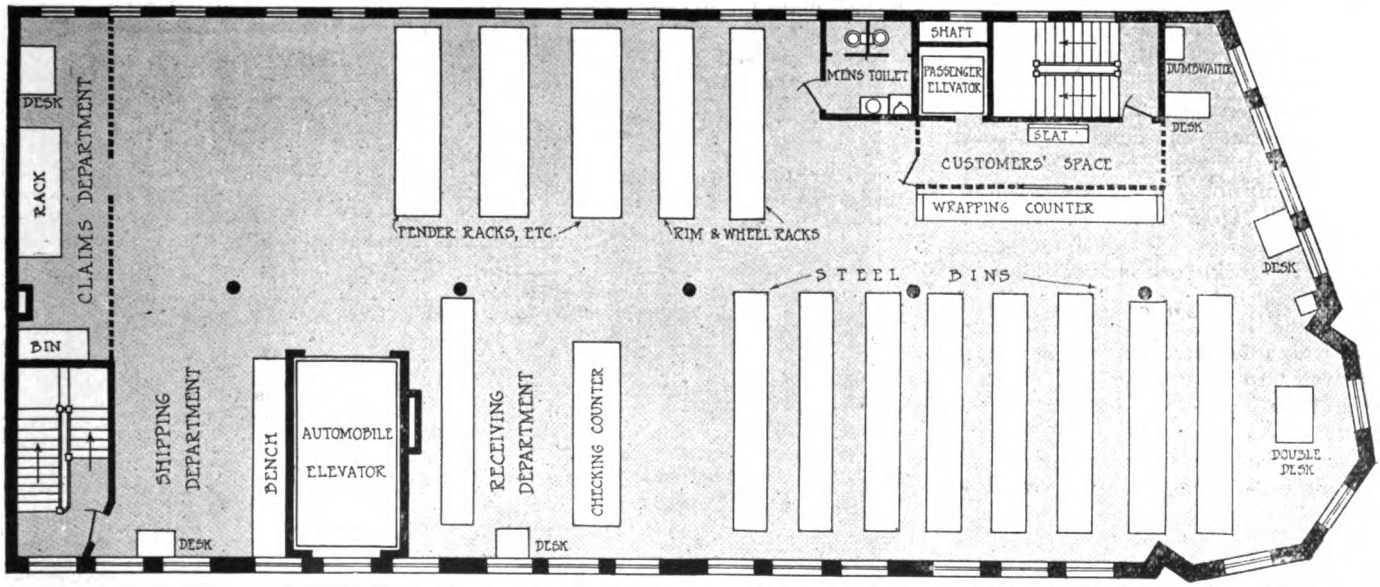


Fig. 2—The floor plan is laid out to promote efficiency with the stock of parts arranged so that those in most demand are most easily reached. The stock department occupies a whole floor

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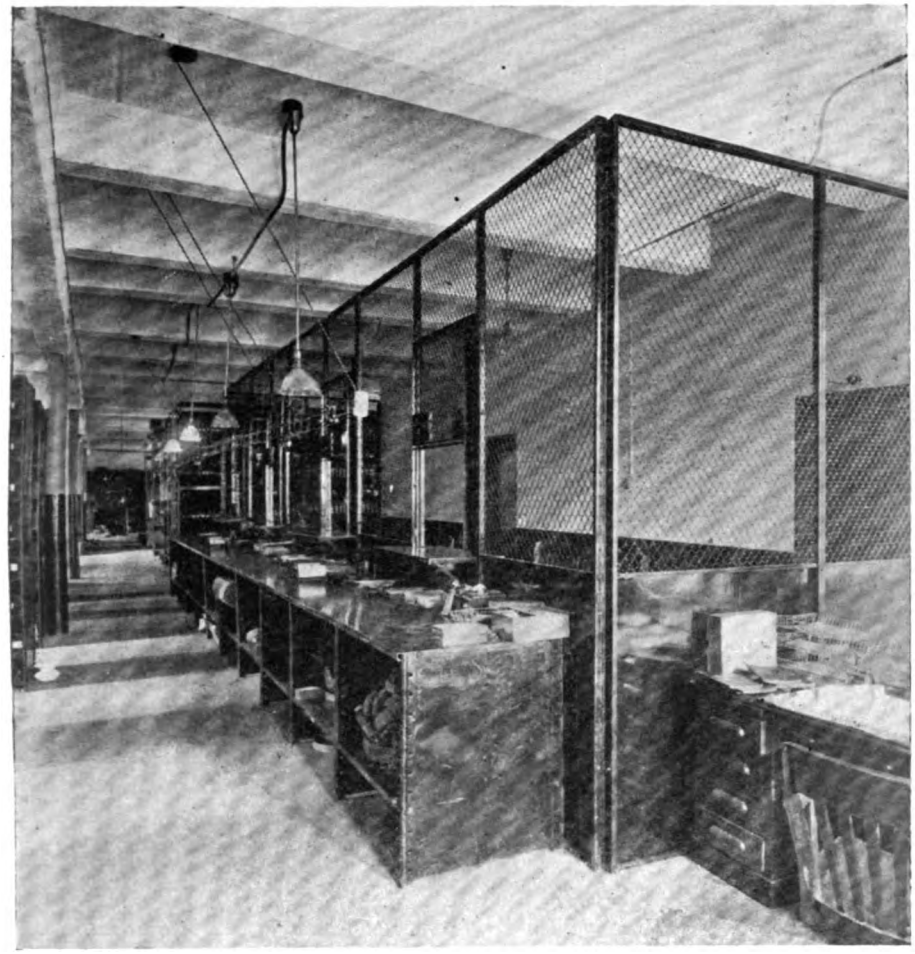


Fig. 3—Customers are separated from the stockroom by a steel partition; cash sales are made over a steel counter beneath which are stored some of the more bulky parts

the intelligent application of a simple system in the stock and claims department of the New York branch of the Studebaker Corp.

Concentrated system—simplified system—is the watchword. And, it may be added, there is nothing local about the system either of the stock department or of the rest of the establishment. All the Studebaker branches have been standardized along the same lines, and any employe, from the biggest to the littlest, can be transferred from any branch to any other branch and continue his own line of work without loss of time and without confusion. There are no loose ends to pick up and no new tricks to be acquired.

The New York stock includes all parts for all Studebaker cars from and including the 1909 E. M. F. up to date. A single card system makes it a simple matter to locate any part, from a frame to a cotter pin, in less than 2 minutes and at the same time shows the number on hand, number on order, number sent out—in fact, it is a complete perpetual inventory on one set of cards.

Underlying the whole system is the method of storing parts and identifying the various racks and bins. This part of the plant, as well as the counters and wire partitions, was manufactured and installed by the Lyon Metallic Co. and is built of steel throughout.

The bulk of the parts is stored in 9 units of shelving. See Fig. 1. Each unit is 21 feet long, 7 feet high and 3 feet wide, and contains two sets of shelves and bins back to back. Half of the unit is called a section and each section is numbered, the numbers running consecutively; 1 and 2 are the back-to-back sections of unit No. 1; and 3 and 4 are the corresponding sections of unit No. 2.

On the end of each unit is painted, at the top, the unit number in red; lower down, in white, are the section numbers and below them the numbers of the models of cars for which the parts are intended. Each section is divided vertically into seven "stalls," a stall running the whole height of the unit, and each stall is divided into compartments, which may be bins, shelves or drawers. In many cases the lower partitions are omitted and the compartments made longer to hold longer parts.

The stalls in each section are lettered A, B, C, D, E, F and G. The compartments—bins, shelves or drawers—are numbered consecutively. Lastly, each

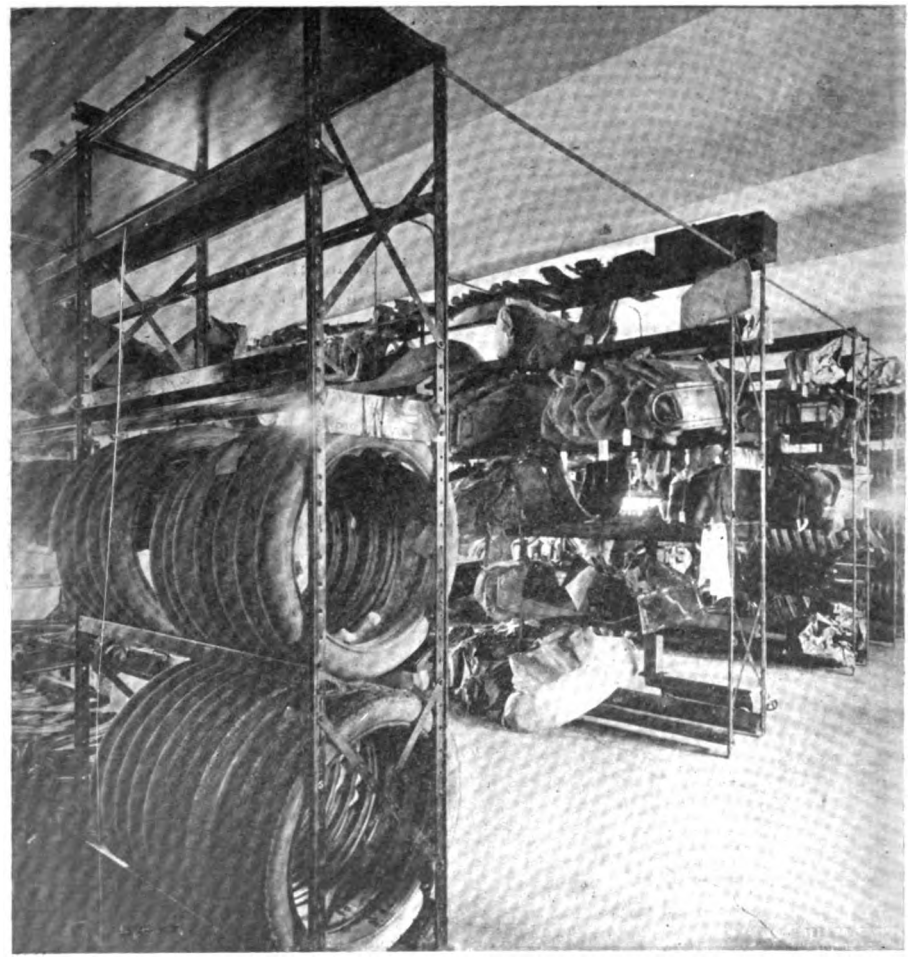


Fig. 4—Wheels, tires, fenders, runningboards, tops, etc., are stored in special steel racks and great care is taken to see that everything is always in perfect order

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PARTS STOCK CARD

Name Bearing Race & Retainer Assy.

Sales Pr. 2.25 Max. Section 7 Shelf 6 Bin 24 Part No. 52711-2

Cost Pr. 1.49 Min.

ON ORDER				RECEIVED				DELIVERED					DELIVERED				
Date	Order No.	Routing	Qty.	Date	Invoice No.	Qty.	Total Received	Date	Order No.	Qty	Total Del'd	Balance O. H.	Date	Order No.	Qty.	Total Del'd	Balance O. H.

INSTRUCTIONS. Make separate card for each part. Post "Received" panel from Home Office and sister branch invoices, 816, 810 (Credits) or 804. Post the "Delivered" panel from 807, 810 and cash sale slips. See Hand Book page 26 for further instructions.

W

Fig. 5—The parts stock card is the basis of the whole system and constitutes a most complete record of everything on hand. An excellent feature which applies to all other forms is that instructions for their use are printed on the form

STUDEBAKER CORPORATION OF AMERICA
BROADWAY AT 56th ST., NEW YORK CITY

No. 2892

Sold to _____ Reg. No. 2897

Date 4/14 191_

QUAN.	CATALOG NO. LETTER	CATALOG NO. NUMBER	DESCRIPTION	PRICE	EXTENSION

Salesman

Fig. 6—When cash sales are made, they are entered on a form of this kind which is made out in triplicate

compartment carries a card bearing the designating number of the part it contains.

John Driverman comes in and asks for an exhaust valve spring for his 1913 Studebaker. The stock man looks in a section of the card index devoted to that particular model and finds the part is No. C123 and is in unit 3, section 5, stall E, bin 11. In practice, there are many times when the man does not have to hunt up the number; he knows from experience just where to go, and only rarely is it necessary to look for anything except the actual number of the part, because, in the first place, the man knows in what sections he will find the parts for a particular model, and in the second place, the parts numbers are arranged to run consecutively on the bins.

Incidentally, it has been found that a great deal of space can be saved by substituting drawers for bins or shelves for small parts. Many screws, bolts and other small parts occupy so little space that an adequate stock will nowhere nearly fill a bin. So they are being placed in drawers, each drawer being divided into three compartments. By this arrangement one compartment does the work of three. The change from bins to drawers is being made as convenience permits and will allow for a great deal of expansion without the installation of more units.

Not even the tops of the units are wasted, for on them are stored tanks, mufflers, windshields and hoods, each on the unit for the model to which it belongs. No elaborate spotting system is required, as they can be identified at a glance.

Rims, wheels, fenders, runningboards, springs and such lengthy parts as torsion rods, brace rods and propeller shafts are placed in racks. These are of open frame construction; Fig. 4 gives a good idea of the installation. For come of the heavier stock, such as springs, which are very weighty, the branch built its own racks, making them of wrought iron pipe put together with ordinary pipe fittings. These are enormously strong, though not as easily demounted for transportation as the Lyon units. However, as Manager Dilger says, the branch expects to stay where it is for quite a while, so this does not greatly matter.

Cylinders, rear axles and starters are carried in another home-made rack, which is of wood and is the last in the row. These parts are located by the same system as the others, but of course are of such a character as to be very readily found.

One unit of the shelving type is designed especially for such things as rubber mats, crankshafts, axle shafts and camshafts; there are no vertical divisions in the shelves between the stall divisions, so that the necessary length is available.

At the end of the floor and separated by a heavy steel wire partition, the door of which is kept locked, is the claim department. Here are received all the parts from the territory on which claims are made for defective material or workmanship. This is a separate department and has its individual storage system and its own little staff—manager and assistant.

All "claim parts" are sent direct from the receiving department to the claim department, where they are kept until finally disposed of. Parts on which defect claims are allowed are put in a junk bin which is divided into three compartments for brass, iron and aluminum. Parts on which claims are not allowed are placed in bins and tagged with the name of the dealer who sent them; the bins are lettered and the parts are classified according to the initial letter of the sender's name—Jones' stuff goes in bin J; Smith's goes in bin S, and so on.

Settlements are made only on material manufactured by the Studebaker company. What is called "vendor stuff"—magnetos, lamps, starting and lighting equipment, manufactured by outside concerns—is all sent to the Studebaker factory for adjustment. The factory advises the branch of the decision and the branch advises the dealer.

Opposite the passenger elevator entrance—the stock room is on the fourth story and occupies the entire floor—there is a counter behind a steel wire

STUDEBAKER DEALER'S CLAIM SHEET

ORIGINAL

Dealers will always use this form in returning parts to our branch for adjustment. Make the form in 4 copies and send Original and Duplicate to Branch after filling in all information asked for. Pack Triplicate with parts and keep Quadruplicate for your record. Leave Credit Memo. column blank.

STUDEBAKER BRANCH at _____ we are returning Parts as below,

Via _____ Signed _____

Address _____

Branch Claim No. _____ Date _____

Qty	Part No.	Name of Part	Billed on our Invoice No.	Motor No. of Car	Serial No. of Car	Date Sold by Purchaser	Nature of Defect	Name and Address of Owner	Credit Memo Date	Credit Memo Amount

original — SEND THIS COPY TO BRANCH

duplicate — SEND THIS COPY TO BRANCH

triplicate — PACK THIS COPY IN BOX WITH PARTS

quadruplicate — DEALER WILL KEEP THIS COPY FOR REFERENCE

Fig. 7—Parts which are received from dealers on claims are entered on this form; the notes at the bottom indicate the disposition of the three copies

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partition in which is the usual opening for passing out parts. The counter is a Lyon product and is of very heavy steel. The space under it is used for the storage of some of the bulky parts for which there is little call, such as gearcases and crankcases. The counter is a busy place, for the sales made through the hole in the partition sometimes run up to 350 in a day. The counter is shown in Fig. 3.

On one side of the freight elevator enclosure near the opposite end of the room and close to the door, is the packing and shipping department, where all parts are crated, labeled and the final preparations made for sending them out. Of the two men on this job one is kept busy practically all the time crating and boxing. The other man, who does the clerical work connected with the shipping, also attends to tracing stray or delayed shipments.

On the opposite side of the elevator enclosure is the checking counter, with a heavy metal top, on which all goods are checked as they come in. Here also outgoing parts are checked. As shipments are received and checked the parts are placed on hand trucks and distributed to the various receptacles; this is done regularly once a day. Once a day also the parts to go out are "picked" in similar trucks and brought to the shipping department. Small parts are "picked" into buckets.

The repairshop is on the floor above the stock department, and all parts required there are sent up from stock. Little time is lost in doing this, for there is a good-sized dumbwaiter running between the two floors and an electric bell and push-button on each floor.

When the foreman of the repairshop wants anything he makes a requisition, puts it on the dumbwaiter, lowers it to the stock floor and rings the bell. A stock room man takes the requisition off, puts the required stuff on the dummy and rings his bell, when the repairshop pulls it up. Thus no time is lost running up and down and no one need stand around waiting; he can go about his work until he hears the bell ring.

The same principle is involved in the handling of cash. A trolley system runs from the sales counter to the cashier's office below. When a sale is made the cash and slip (Fig. 6) are placed in the carrier and shot down to the cashier, who takes the money, makes the change is any is required, receipts the bill and shoots it back to the sales window.

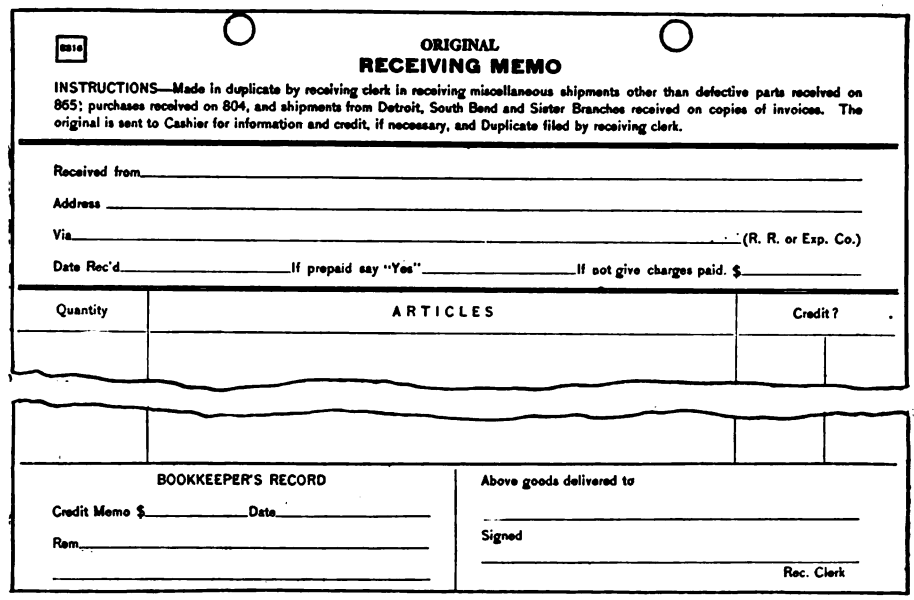
Though there is a considerable amount of correspondence in the stock department, it is not considered advisable to have women stenographers on the floor. So two dictagraphs are installed. Letters are dictated to the machines, the cylinders sent downstairs to be transcribed, and the letters returned for signature. An exception is made in the case of the claim department, which, however, is separated from stock room activities by a considerable distance.

Considering the volume of business handled and the perfect working of the whole system, the forms used are very few. At the bottom of the system is the Parts Stock Card (Fig. 5) which comes close to being the whole bookkeeping system in itself.

The Parts Stock Card measures 5 x 8 inches. It serves to index the part and indicate its location; gives cost and sales prices; records both incoming and outgoing stock, and gives all details necessary to the maintenance of a perpetual inventory. Not only are the parts actually on hand and those sent out recorded, but the stuff on order and in transit is shown.

At the top of the card there is a space for the name of the part; to the right spaces for the cost and selling prices; and further to the right of the top of the card spaces for the section, stall and bin and for the number of the part. Spaces are provided for maximum and minimum number of parts, but these are not used. The number of parts carried is not arbitrarily fixed. An inventory is taken every six months and the number of parts carried is based on the last inventory. Thus the stock is increased or cut down according to actual demand, and over- and under-stocking are avoided. "Shelf" in the location index is read "Stall," to suit the divisions of the storage units.

The body of the card is divided into four vertical panels. The first on the left is headed "On Order," and there are sub-heads over columns for date, order number, routing (freight or express) and



ORIGINAL

RECEIVING MEMO

INSTRUCTIONS—Made in duplicate by receiving clerk in receiving miscellaneous shipments other than defective parts received on 865; purchases received on 804, and shipments from Detroit, South Bend and Sister Branches received on copies of invoices. The original is sent to Cashier for information and credit, if necessary, and Duplicate filed by receiving clerk.

Received from_____

Address _____

Via_____ (R. R. or Exp. Co.)

Date Rec'd_____ If prepaid say "Yes"_____ If not give charges paid. $_____

Quantity	ARTICLES	Credit?

BOOKKEEPER'S RECORD

Credit Memo $_____ Date_____

Rem._____

Above goods delivered to

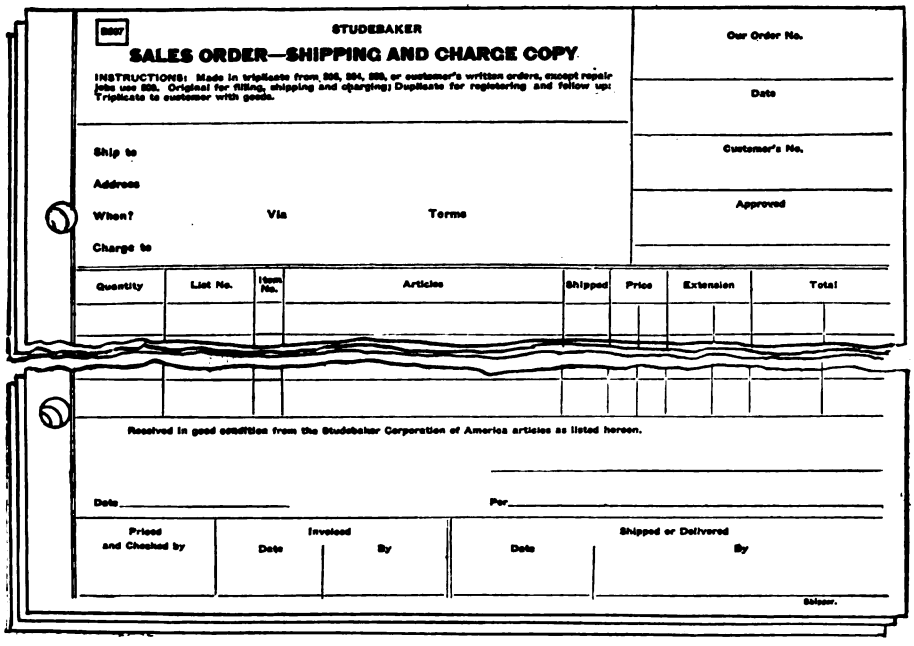
_____

Signed

_____

Rec. Clerk

Fig. 8—Parts other than those received on claim are entered on this form; note the complete instructions at top of sheet



STUDEBAKER

SALES ORDER—SHIPPING AND CHARGE COPY

INSTRUCTIONS: Made in triplicate from 806, 804, 865, or customer's written orders, except repair jobs use 865. Original for filling, shipping and charging; Duplicate for registering and follow up; Triplicate to customer with goods.

Our Order No.

Date

Customer's No.

Approved

Ship to

Address

When? Via Terms

Charge to

Quantity	List No.	Item No.	Articles	Shipped	Price	Extension	Total

Received in good condition from the Studebaker Corporation of America articles as listed hereon.

Date_____ Per_____

Priced and Checked by	Invoiced Date	By	Shipped or Delivered Date	By

Shipper.

Fig. 9—This is the form that is made out when goods are shipped, and like the others contains specific instructions for the use of the various copies

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quantity. The second panel is headed "Received" and the columns are subheaded for date, invoice, number, quantity ordered and total received. The third is headed "Delivered" and subheaded for date, order number, total delivered and balance on hand. The fourth panel is simply a continuation of the third, with the same heading and subheadings, the reason being that the parts are sent out in smaller and more numerous shipments than they are received in. The reverse of the card is a continuation of the obverse, providing for additional entries in all the columns.

By comparing the parts received with the parts ordered it is easy to tell if requisitions on the factory have been filled completely or partly, and by comparing the total received with the total delivered the number on hand is immediately available. The "Received" panel is posted from the home office and branch house invoices and the "Delivered" panel from the cash sale slips, the shop requisitions and sales orders on the factory.

The Sales Order (Fig. 9) is used if, for any reason such as temporary shortage, it is desired to have parts shipped direct from the factory to the dealer. This is a paper blank 8½ x 11 with spaces for name and address of consignee, routing, quantity, list number, item number, name of article, date shipped, price, extension and total. This is made up from the customer's written order (which is on another form) and is in triplicate, the original for filing, shipping and charging; the duplicate for registering and following up, and the triplicate goes to the customer with the parts.

Cash sales made over the counter are entered on a form (Fig. 6) 6½ x 8½, on a Niagara Triplicator, which makes two carbon copies on plain sheets of different colors. The original, which is the only printed form, bears a serial number and is ruled for customer's name, date, quantity, parts number and letter, description, price and extension; it is used for posting to the stock cards. One of the carbon copies goes to the customer with his goods and the other to the cashier.

Goods received are listed on a Receiving Memo (Fig. 8), which is made out in duplicate; the original is sent to the cashier for information and for credit, if necessary, and the duplicate is filed in the receiving department.

Dealers sending parts to the Claims Department for adjustment list the articles on a special form (Fig. 7) 8½ x 11, which is made out in quadruplicate. All are in different colors—yellow, orange, pink and gray. The original and duplicate are sent to the branch with the parts; the third copy is packed with the parts and the fourth kept by the dealer as a record.

If Your Pump Doesn't Measure Correctly

United States Bureau of Standards Says Most of Them Don't and Tells Why

GASOLINE pumps in service show a tendency toward undermeasurement, according to F. J. Schlink, assistant physicist of the United States Bureau of Standards. Schlink presented a paper before the Eleventh Annual Conference on Weights and Measures, which was held May 23, and in the paper he outlined the principal causes for the failure of such pumps to measure accurately and gave some excellent suggestions for the maintenance of pumps of various types. He said in part:

Results of the tests in the field indicate that pumps in service show a decided tendency toward undermeasurement, this being due to the fact that nearly all of the defects of construction or installation tend to produce errors in this one direction. These include leaks of air and liquid, retention of liquid by the hose, vapor formation consequent upon excessive suction head, failure to complete the full stroke, and slippage of liquid past valves and piston.

Why Pumps Undermeasure

The principal causes of short delivery of pumps of the piston type are leaking of foot valves, and formation of vapor or air space under the piston, resulting from excessive virtual suction lift or leaky piping, or piping containing traps tending toward the periodical retention of vapor. It appears that a total vertical suction lift greater than 7 ft. may be excessive with the ordinary commercial (not "blended" or "casing-head") gasolines. "Casing-head" or "blended" gasoline should not be lifted any appreciable vertical distance on the suction side in those types of pumps in which the piston and cylinder form the measuring element, on account of the vaporization difficulty already mentioned. Special installations, in which the pump is located at or near the level of the supply tank, should be employed for the last-mentioned grades of gasoline.

Another source of error which should be guarded against in design and installation of piston measuring pumps is the inertia of the moving liquid column.

Avoid Long Hoses

The use of long filling hoses and of hoses so arranged that they cannot be readily drained results in cases of short delivery to individual purchasers; this should be obviated by so relating the length of hose and the height of hose connections that the hose can always be readily drained to a definite level. A measuring pump should not be installed inside a building with the hose connection outside, unless so arranged that the manner of operation of the pump is clearly visible to the purchaser. The writer also questions the advisability of permitting the use of a shut-off cock on the outer or delivery end of the hose, as its use may readily operate to prevent the regular drainage of the hose into the customer's tanks.

It is recommended that the design of piston type measuring pumps should tend toward types which cannot be operated through less than full strokes without that incompleteness of the cycle being clearly indicated to the customer. This certainty of stroke completion is readily obtainable in simple designs, which, so far as the writer knows, have not yet been offered for use.

In order to prevent the short deliveries consequent upon operating the piston pumps at less than full stroke, they might well carry a clearly legible placard or notice, reading, "THIS PUMP TO DELIVER —— GAL. FOR EACH FULL STROKE."

Pumps which provide for the return of undelivered liquid to the storage tank should be equipped with some manner of device which will prevent this return taking place at the same time that liquid is being delivered to the purchaser, as such diversion of a portion of the customer's purchase constitutes an easy means to fraud.

How to Test Pumps

In testing pumps, the hose should be removed if this is feasible, and the test delivery made from the pipe outlet, unless a suitable can-filling outlet is provided. Test should be made with a standard measure of suitable capacity and of the conical type, used in combination with a cylindrical graduate reading to cubic inches, or by a measure of special form, similar to that designed by Theo. Seraphin of Philadelphia, which comprises a zero graduation for the correct discharge and additional graduations for deliveries in excess and deficiency, so arranged as to cover the normal range found in the field work. Two speeds at least, one faster and one slower than normal operation, should be used in the test in order to determine whether or not the action of the pump is substantially independent of the speed of operation.

Separator Law Is Appealed

NEW YORK, July 3—The recent decision of the Appellate Division of the Supreme Court upholding the legality of the oil separator ordinance has been appealed by the automobile interests, consisting of the Automobile Dealers' Association, the New York Garage Association, the Brooklyn Motor Vehicle Dealers' Association and the Brooklyn Garage Owners' Board of Trade.

In accordance with the stipulation entered into between the automobile interests and the Corporation Counsel's office, this appeal will act as a stay, preventing the enforcement of the oil separator ordinance until the Court of Appeals has finally determined the question. This decision will probably be handed down some time during the coming winter, and in the meantime the enforcement of the oil separator ordinance will be held in abeyance.

NEW YORK AND CHICAGO SHOW DATES JAN. 6 AND JAN. 27

NEW YORK, June 30—The National Automobile Chamber of Commerce has announced the 1917 show dates. The New York show will open at the Grand Central Palace, Jan. 6 to 13, inclusive; the Chicago date is Jan. 27 to Feb. 3, inclusive.

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Here's a Rational Service Warranty

Thorpe Makes a Plea For Service without Extravagance

By J. C. Thorpe

Editor Motor World:

You will find inclosed a discussion of a Rational Service Warranty which I will be very glad to have you publish in Motor World at your early convenience if the article appears to have merit.

The last issue has just reached my desk and I note the discussion of the same subject which has come from the National Automobile Chamber of Commerce. It occurs to me that additional discussions of this subject are very desirable and that they may arouse a greater interest for standardized service than the dealers have indicated in the past.—National Automobile Trade Association, by J. C. Thorpe.

Chicago, June 29.

This word of seven letters, "s-e-r-v-i-c-e," has been the pet slogan, understood or implied, of every merchant in every line of industry for some years. It has been rolled like a choice morsel under the tongue of automobile factory management, accessory manufacturer, automobile distributer and dealer, garageman, crossroad repairman and salesman alike. Despite the apparent familiarity with the magic word, it may be asserted with reasonable surety that it has successfully withstood accurate definition. In the mind of the automobile buyer it has meant anything from a cursory "once over" by the dealer's service expert accompanied by a copious supply of so-called expert advice, to a semi-annual complete overhauling during the life of the car without expense to the owner.

Quite innocently it has become, in many instances, the vehicle of the most pronounced fallacy existing in the relations of buyer and seller, namely, the possibility of getting or giving something for nothing. Service has been paraded in most alluring dress before the mind of the prospective purchaser by unscrupulous salesmen, to the extent of creating an impression of expenseless ownership that forever rankles in the soul of the motor car owner.

Service is truly a great word, with marked significance relating to the success of every merchandising enterprise. "Satisfying service for reasonable compensation" always develops a good will between buyer and seller that makes the selling enterprise impregnable to the assault of the most adverse business conditions. It is upon this broad, but fundamental, principle that public confidence, an essential of merchandising success, must be developed. A reputation for fair and honest dealing; for rendering satisfying service and exacting fair compensation for it, may mean much for additional patronage and the continual increase of "volume of business," the goal of every ambitious and far-seeing merchant. It should never be interested in the light of "something for nothing," as just so far as this idea persists in business management just so far may its disintegrating influence be traced in the failure of the enterprise, for its ultimate failure is certain.

As it relates to the retail automobile business, the cost of service, whatever it may be understood or misunderstood to be, should enter very definitely into every dealer's annual budget as an estimated expense. It is thus chargeable against gross income—and immediately becomes one of the items of purchase for the patrons of the dealer. Service thus becomes an essential feature of "value received," and after all, it is a question worthy of consideration whether the ability to "keep a car sold" is not of equal importance from the standpoint of business management and earned profits as "selling the car." If so, then the expense for service must appear as clearly upon the cost keeping record as the sales expense.

The following "Proposed Standard Service Warranty" is the result of continued study within the Automobile Trade Association of Champaign County, Illinois, supplemented by discussions carried on by letter and in person with many outside interests. The discussion which it aroused within this organization presents evidence of the wide variance of opinion existing among earnest and carefully progressive business men:

Proposed Standard Service Warranty

I. Service is defined under the terms of this "Service Warranty" as "The Co-operation of the Dealer with the Owner," whether he be the original purchaser or not, in such a manner that the Owner will secure permanent use of his investment at the lowest possible cost.

(Note: Service loses its identity with the appearance of "Unfairness" on the part of either the Dealer or the Owner. If the Owner, either through forethought or ignorance, or through a misunderstanding of the Dealer's Service obligations—asks for, and through the Dealer's zeal to maintain good-will, secures concessions incompatible with fair business procedure, a fictitious value is immediately placed upon such Dealer's Service. Such an unreal value cannot be maintained and apparently nourishes another phase of price cutting that is ruinous. Primarily the Dealer is the arbiter of service limitations, but no great amount of discussion need ever arise respecting what is fair and unfair.)

II. The automobile covered by this Service Warranty is subject to the guarantee of the manufacturer in accordance with the Standard Warranty promulgated by the National Automobile Chamber of Commerce and is not guaranteed by the Dealer.

(This plain statement of responsibility involving faulty workmanship or material is deemed essential for the purpose of eliminating discussions with owners that often become unpleasant and disastrous to business. It emphasizes the importance of factory integrity as a material asset in the owner's investment. It also serves to clear up opinions relating to the position of the dealer in a transaction where his moral responsibility may be taken undue advantage of. Confidence of the purchaser in the Dealer's integrity is essential, but as relates to the motor car itself the integrity of the factory is of greater importance.)

III. The manufacturer offers the following warranty, adopted by the National Automobile Chamber of Commerce, to the purchasers of automobiles: "We (the manufacturer) warrant each new motor vehicle manufactured by us to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory any part or parts thereof which shall, within ninety (90) days after delivery of such vehicle to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our vehicles.

This warranty shall not apply to any vehicle which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident.

We make no warranty whatever in respect to tires, rims, ignition apparatus, horns or other signaling devices, starting devices, generators, batteries, speedometers or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers.

IV. The Dealer, through his Service Department and for the Owner, will handle all claims for adjustment arising under the terms of the Standard Warranty of the National Automobile Chamber of Commerce and will exert his best efforts in securing prompt and satisfactory settlement. It is understood that the Owner will abide by the decision of the manufacturer respecting "no charge" replacements, and make settlement at current prices for any parts or accessories furnished by the Dealer under an Adjustment Claim, that are not credited by the Manufacturer.

V. The Dealer agrees to assist the Owner in learning to drive and care for his car.

VI. The Dealer agrees to make all the necessary adjustments for the proper operation of the car, without cost to the Owner, for a period of ninety days from the date of sale; provided repairs or adjustments have not been made outside the Service Department of the Dealer or without his knowledge.

VII. Subsequent to the ninety days warranty described above, inspections of the car will be made at the request of the Owner at times mutually agreeable to the Owner and Dealer, following which a detailed report of the condition of the car will be given the owner. Such adjustments as may be deemed necessary for the proper operation of the car will then be made at the request of the Owner, in a careful and workmanlike manner by the Service Department of the Dealer, and for the labor and materials necessary therefor the Owner shall pay the current prices, plus carrying charges.

VIII. The Dealer will maintain such a stock of parts as will be required to fully and promptly meet the normal requirements of the Service Warranty and will employ competent mechanics on duty at all reasonable hours to give accurate attention to the needs of the Owner.

IX. The Dealer invites fair and business-like co-operation from the Owner in maintaining the integrity of this Service Warranty, which is hereby made a part of the Sales Contract for the purchase of a .....automobile on this date .....1916.

Issued by.....

.....

Member National Automobile Trade Association.

Accepted by.....

Purchaser-Owner.

(Note.—The permanency of the Legitimate Dealer's business is based upon ability to render satisfactory service to the car owner. No person or firm is recognized as a Legitimate Dealer who does not provide suitable facilities for properly pursuing the interests of his patrons with respect to the care and operation of the automobiles sold to them, in accordance with a reasonable local service warranty, and in full accord with the warranty of the manufacturer, who does not maintain and operate a properly equipped service station, carry a suitable supply of parts, and employ efficient mechanics, who are capable of giving expert advice and accurate mechanical service.)

It is hoped by the writer that this presentation of a subject of most vital importance may arouse discussion that will bring the motor car interests to a better understanding of SERVICE.—J. C. Thorpe, National Automobile Trade Association.

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Nebraska Has a Car to Every 18 People

And Dealers See a Good Year's Business Ahead—Railroad Strike Threatening

OMAHA, NEB., June 29.—Every third family in the State of Nebraska owns an automobile, according to a report issued by Secretary of State Charles Pool.

Strictly speaking, this is not correct. But so far as numbers go, it is true, for there is a car in Nebraska for every eighteen inhabitants. Iowa, next door, has one to every eighteen people.

There are now registered with the Secretary of State 76,815 automobiles, which does not include 3016 motorcycles. Automobile registries during May totaled 5650, and conservative estimates indicate that by the end of September there will be in this State one car for every 2.7 families.

Omaha dealers are happy men these days, for prosperity is upon them. And Omaha distributers declare that this spirit is reflected over the State at large. Crops have seldom been in better condition, confidence in the outcome of the national political situation appears steady, the strike situation which threatened Omaha for a short time has been brought to a happy ending, and every indication is for a banner year.

It must be confessed, however, that the possibility of a railroad strike is being watched with close attention by the dealers and distributers. They know perfectly well how serious this would affect their business, particularly on account of the distance from the factory centers. But they are entertaining every hope.

Oils and accessories, say the supply men, are sharing in the heavy volume of business in due proportion, and the dealers are stocking up heavily for the coming season.

Glare Mix-up in Kansas City

KANSAS CITY, MO., June 29.—The ordinance passed recently, signed by the mayor, requiring ground glass on automobile headlights, has technically been put into force, but is temporarily held in abeyance because of extensive objections.

The first objection came from several members of the Automobile Club, which had backed the measure, and dealers in accessories have made formal representation to the council committees of their knowledge of facts concerning its operation.

The ordinance requires, apparently, that the entire surface of the lens be ground. Many cases are pointed out in which a slight jar has resulted in the breaking of such ground lenses, and it has been stated that the heat from the lights may cause the lenses to break even without jarring. There are many complaints that the ground lenses do not allow enough light to be cast on the road for safe driving.

It is possible that the ordinance may be amended so that the character of the lenses allowed in other States will be permitted in Kansas City. Technically, nearly every motorist who enters Kansas City now is violating the law, because few have lenses of which the entire surface is ground.

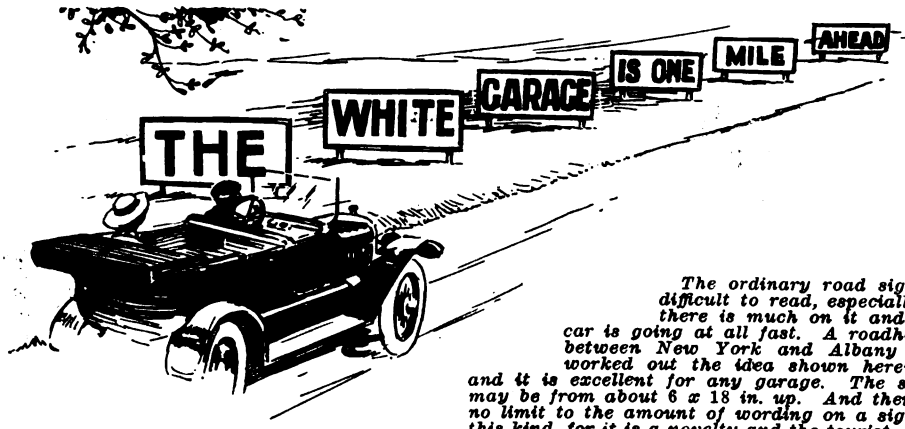
Stole 3 Gallons of Oil

OMAHA, June 29.—With the price of gasoline still hovering around the 23-cent mark and no relief in sight, significance of a more or less humorous nature is attached to incidents in connection with traffic in that precious fluid.

"Must have been some poor, desperate banker," was one remark lately when it was discovered that during the night some one had broken into the Standard Oil filling station at Forty-fifth and Grant Streets, broken the lock on the gasoline pump and stolen 3 gal. of oil, molesting nothing else. As a matter of fact, this act was attributed to the gang of motor car thieves which has been operating as busily in Omaha as in other cities over the country for a good while past.

The latest development in the line of "humorous" incidents is the filing of complaints by the city weight and measure inspector against two prominent oil companies, charging that their pumps fail to give legal measure. This case has not yet been heard.

A Sign That Is Easy to Read



The ordinary road sign is difficult to read, especially if there is much on it and the car is going at all fast. A roadhouse between New York and Albany has worked out the idea shown herewith and it is excellent for any garage. The signs may be from about 6 x 18 in. up. And there is no limit to the amount of wording on a sign of this kind, for it is a novelty and the tourist, once he discovers it, will be interested in reading it because of its novelty. Each sign may be affixed to a single post, instead of two, as here shown.

Bidwell, of International Fame, is Arrested

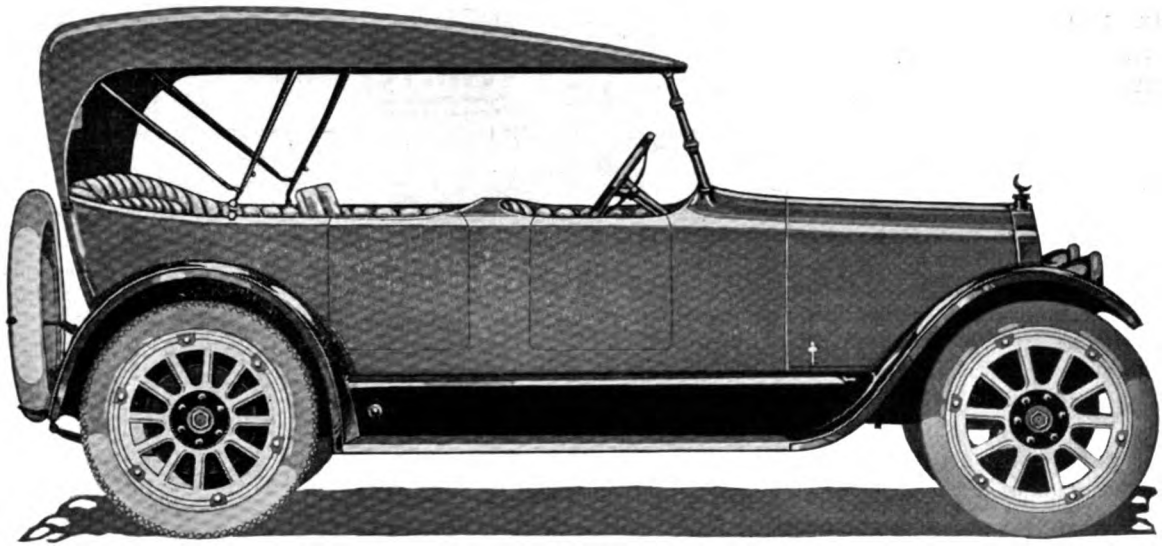
WASHINGTON, D. C., June 24—Following a hearing before W. H. Lamar, solicitor general of the Post Office Department, Alfred C. Bidwell, president of the International Automobile League, Inc., of Buffalo, was arrested by federal authorities. The hearing was upon an application by Richard H. Lee of Cleveland, chairman of the legislative committee of the American Automobile Association, for a fraud order, refusing the league and the International Automobile, Tire & Rubber Co. of California a further right to use the mails on the ground that they were making promises they could not keep. It is claimed that many thousand persons joined the league on a promise they would obtain automobile supplies at reduced or wholesale prices, the annual assessment being $10. Bidwell furnished bond in the sum of $5,000 for his appearance before United States Commissioner Taylor here on July 18. It is stated that a fraud order was issued against the league and that counsel for Bidwell has until July 18 to file a brief in the case. A warrant alleging violations of sections of the penal code respecting the use of the mails was sworn out and Bidwell's arrest followed.

P. D. Q. Spark Plug Coming

DETROIT, June 29 — The Wolverine Spark Plug Co., capital $100,000, has located at 45 Fort Street, East, in the Boydell Building. Equipment is now being installed to manufacture in large quantities a new spark plug called the P. D. Q. The officers and directors of the company are: President, C. H. Braselton; vice-president, A. Kugeman; secretary and treasurer, P. S. Linton; also F. R. Pence and William Bohleber, directors.

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Two Moon Sixes Continued for 1917—Prices Raised



New 6-66 Moon with seven-passenger body. The lines are unbroken from the tip of the radiator to the back seat

FOLLOWING its plans to adhere strictly to the construction of high-grade six-cylinder cars, the Moon Motor Car Co., St. Louis, will continue its two 1916 chassis. The model 6-40 is continued, with but few changes in the model 6-66, and the later car, known as the 6-30 in the 1916 production, will be continued as the model 6-43. The price of each has been increased. The larger car, which was listed last year at $1,475, now sells for $1,575, and the small six has been increased in price from $1,195 to $1,250.

The most noticeable change in both chassis is in the electrical system, a two-unit outfit being used in place of the single starting and generator equipment. The new Delco-Moon two-unit system embodies an automatic spark advance and a new switch with an ammeter in connection.

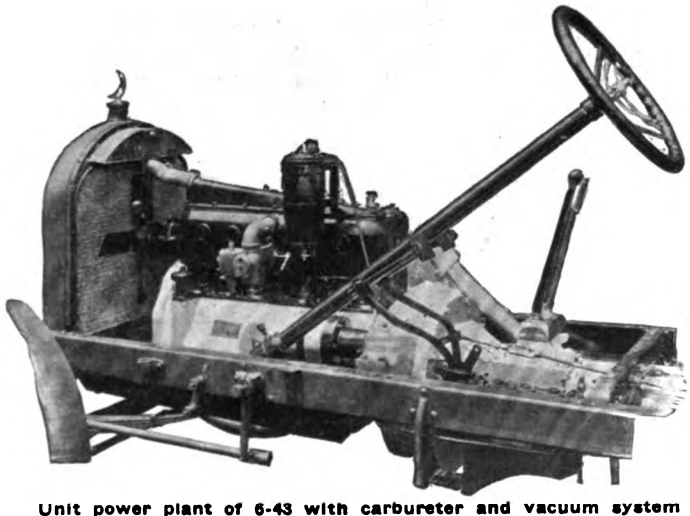
The bodies have also been refined and the 6-66 touring now has the tonneau cowl. The tops of the bodies have been tumbled in creating a marked streamline effect. Acting upon the great demand for four-passenger roadsters, the larger six is offered with an unusually attractive body of this type at the same price as the touring. A light six can be had in a three-passenger roadster at the same price as the five-passenger touring car.

Both models are mechanically similar, the difference being principally in the size of the parts. Continental motors are used of 3¼ x 5¼ and 3¼ x 4½ cylinder dimensions fitted with Delco cranking, lighting and ignition units and the Stewart vacuum feed system. The clutch is disk in unit with the motor, the gearset a three-speed, and drive by hollow shaft to a floating axle. Timken axles are used front and rear.

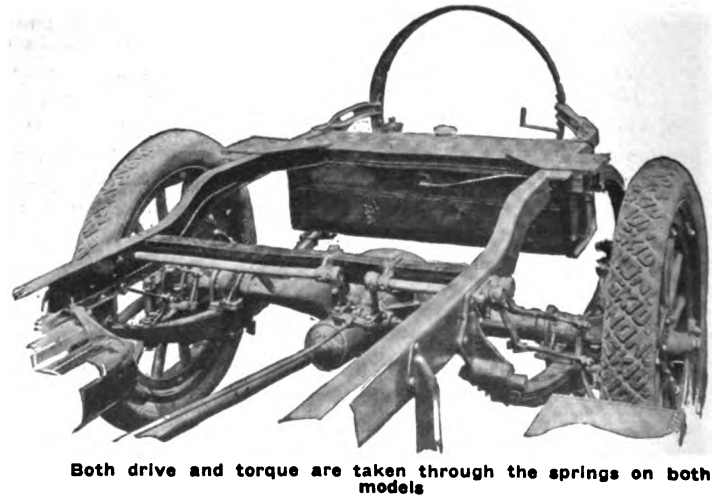
The adoption of the double unit Delco system is accompanied by the use of a Bendix system of drive on the starting motor, which is now bolted to the left side of the crankcase. The generator is still located on the right side of the motor and is driven from the water pump shaft. On the right side also is the exhaust manifold, which has attached a flexible tube instead of the non-flexible type commonly used for carrying off gases. The oiling system in both motors is the same combination splash and force feed as used in other large Continental power plants.

The drive from the motor is conducted to the axle through the Hotchkiss principle, double universals and a floating axle being used. Moon engineers have carefully worked out the framing design to take care of the Hotchkiss drive. The frame has a deep strangle in front to enable a short turning radius and is constructed in the rear to form an integral support for the gasoline tank and tire irons.

Although accessibility has been a big factor in the design of the chassis

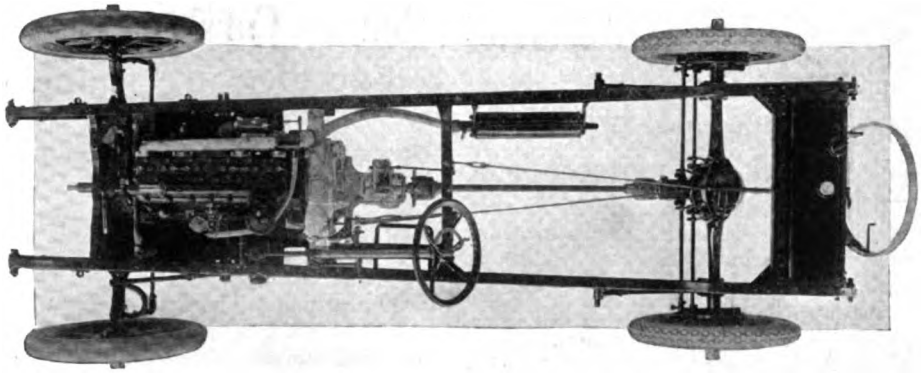


Unit power plant of 6-43 with carbureter and vacuum system mounted high



Both drive and torque are taken through the springs on both models

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Plan view of 6-66 chassis showing the extreme neatness of construction

throughout, the same careful attention has been given the design of the bodies and the kind and location of the equipment. The touring car tonneaus are unusually large and wide tonneau doors and concealed hinges and locks. Both front doors open wide, permitting the driver to enter from either side. Upholstery is done in genuine leather, stuffed with curled hair. A slanting windshield has been incorporated to add to the speedy lines of the cars, and a Stewart tire pump and Warner speedometer driven from a gear which constitutes the flange on the front universal are standard equipment on both models.

Tire sizes have been increased in the big six. The 6-66 is equipped with 35 x 4½ in place of 34 x 4 tires and the 6-43 carries 34 x 4, the same as last year. The wheelbase of the larger car is 125 in. and of the 6-43 118 in.

Price of Used Cars Governed by Demand

Intrinsic Value of Old Machine May Be High but Great Number on the Market May Keep Selling Price Down

"How can a man trade in his old car in part payment for a new one when the garages are crowded with used cars waiting for buyers?"

The question was asked of a central Illinois dealer in a small town, who replied bluntly:

"He may not be able to do it if he insists upon getting a fair price for his old car."

The mere fact that there is a surplus of used cars does not seem to cause as much concern as the necessity for fixing prices that will keep the cars moving, and in order to sell at prices that will attract buyers the dealer must offer the owner an amount so low that he hesitates to name it in many cases. But he is bound by the laws of merchandising and he cannot offer more for the car than he can get for it.

Too many dealers have made the mistake of allowing too much for used cars in order to put through sales of new cars, and they realize the error when they see their profits vanishing because of the low prices they are forced to accept for the cars traded in.

The remedy for this state of affairs is to keep the used cars off the market, according to the same central Illinois dealer.

"The owner does not have to part with his old car if he does not want to," he asserted. "He can use it for 3 to 4 years longer. He cannot get much for it at the end of that time, it is true, but even then it is not necessary to sell, as a rule. A well-built car, with reasonable care and proper overhauling, ought to last 12 years—in fact, cars will last a great deal longer than most people care to keep them.

"As a financial proposition there is no good reason why a man should take a depreciation of 70 per cent after 2 years' use when he can have 4 or 5 years more at a depreciation cost of 85 or 90 per cent.

"In the larger cities there is considerably less trouble in connection with the sale of used cars than in the smaller places; the business appears to be better organized. A man from the country will pay more for a used car in a large city than he will pay for the same car in a small town. The prices in the big towns range about the same for the same cars and sales are made by salesmanship. Small-town dealers are prone to ignore each other except in the matter of knocking. There is no co-operation; every dealer sets prices to suit himself and many take considerable pains to belittle other dealers and their wares. The result is that a would-be buyer is confused after making the rounds of the dealers. In a large town his mind is clarified by making the rounds, for he is shown that there is more or less of a standard of price."

San Francisco Elects Officers

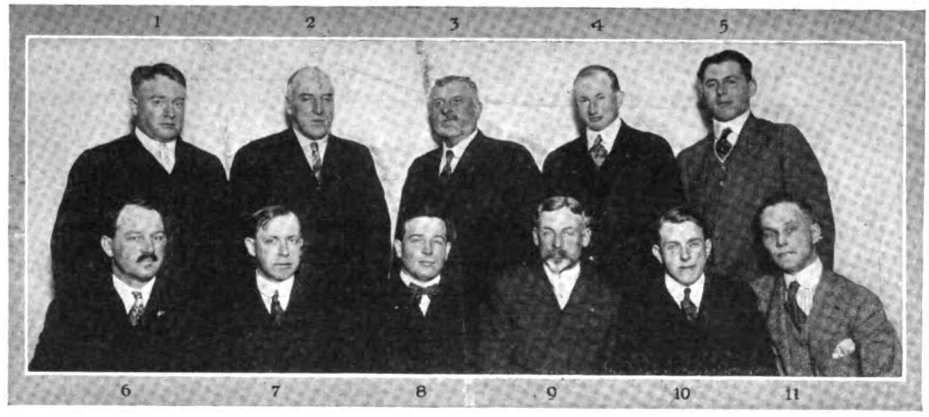
SAN FRANCISCO, July 3—The Garage Owners' Protective Association of San Francisco has elected these officers for the coming year:

President, J. B. Kelly, Kelly Ball Bearing Co.; vice-president, D. S. Cohn, Grand Pacific Garage Co.; secretary and treasurer, A. D'Ettel.

Executive Board—William P. Crowley, Auto Service Co., chairman; S. Anderson, Acme Garage; A. R. Walther, Boulevard Garage.

Membership Committee—C. A. Lyons, Class A Garage; M. Michels, Presidio Heights Garage; Henry Schroeder, California Garage.

Grievance Committee—M. Francis, St. Francis Garage; C. Lubbe, St. George Garage; Mr. Keene, Harding & Keene Garage.



ADVISORY COMMITTEE AUTOMOBILE INDUSTRIES ASSOCIATION OF ALAMEDA COUNTY, CAL.

1, E. F. Peckham, Motor Supply Co., Berkeley; 2, John Doyer, Doyer's Garage, Oakland; 3, George Rodehaver, Rodehaver's Garage, Berkeley; 4, B. W. Hammond, Pac Kissel-Kar, Oakland; 5, Charles Everson, Ford motor cars, Oakland; 6, Charles Hebrank, Osen-Hunter Auto Co., Oakland; 7, E. A. Berg, Berg Auto Supply Co., Oakland; 8, Frank Fageol, Fageol Motor Car Co., Oakland; 9, C. A. Muller, U. S. Tire distributor of Alameda County; 10, Herbert S. Smith, Sec. and Bus. Mgr., Oakland; 11, E. T. Tuller, Mgr. Cole Motor Car Co., Oakland.

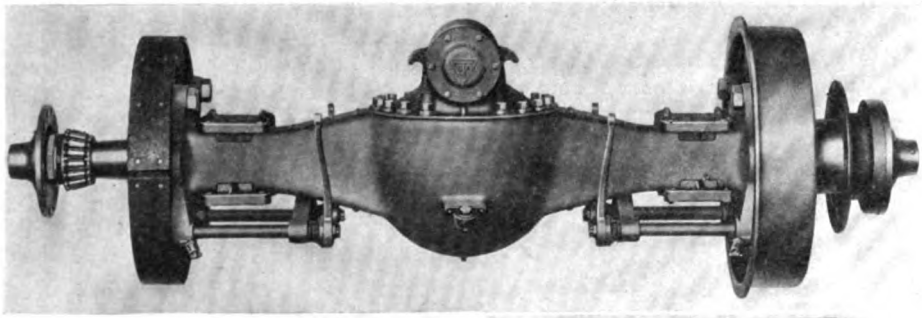
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5-Ton Worm-drive Axle Brought Out By Timken

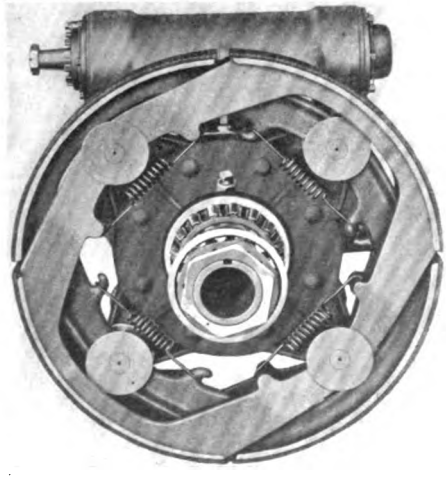
Has Pressed Steel Housing and Timken-David Brown Worm—Unit Is Full-Floating

The Timken-Detroit Axle Co., Detroit, has brought out a 5-ton worm-driven axle unit that has long been in the process of development. This new axle has a pressed-steel housing of great strength, and is equipped with the Timken-David Brown worm gearing with Timken roller bearings. The worm is mounted over the wheel, and throughout the construction is typically Timken. That a large factor of safety has been used is evidenced from the fact that the axle is capable of carrying on the rear tires a weight of 15,000 lb.

The load-sustaining portion is continuous from spring seat to spring seat and is a pressing 6-in. square at either end under the spring seats, and enlarges to a spherical shape in the center to provide clearance for worm gear and differential. The square section at the ends has been used in order to give a firm seat for the spring saddles and added strength where it is needed. The center is open at the top for the attachment of the carrier flange which holds the worm shaft and its bearings, the worm gear, differential and bearings being in one complete unit. The ends of the housing are flanged to a large diameter and the brake spider is riveted to this flange substantially.



The load sustaining portion is continuous from spring seat to spring seat and is a pressing 6-in. square under spring seats, thus giving a firm seat for the spring saddles



The axle is designed as a full-floating unit, and the wheel bearings are mounted on chrome-nickel steel tubes which extend inwardly toward the worm almost to the differential bearings, thus making a sturdy mounting for the shafts, the bearing supports being filler pieces welded and riveted to the housing, and the tubes forced into these filler pieces under great pressure. Thus the axle has a truss or bridge construction, which is the strongest type.

Brakes are 24 in. in diameter and 4 in. wide, and are of the internal duplex form. Substantial flanges on the drums provide against distortion.

Boston Dealers Win "Junk" License Fight

BOSTON, June 29.—Boston dealers handling new cars and also used cars need not take out licenses as dealers in junk. Through a decision of Judge Burke in the Municipal Court this question was decided in favor of the dealers. After Judge Burke heard all sides of the case he decided that motor dealers are in a legitimate business, and not in the second-hand business under the intent of the law. He said that where an automobile dealer did business in new cars first and as his larger business, and where the taking of used cars in part payment was an incidental, the police could not compel him to take out any license. He said that where the men were dealers in used cars solely, such men should take out the license.

The regular dealers made the fight, because under the law, as interpreted strictly, when they took in a car they would have to first report it to the police, giving its full description, and then they would have to hold it for 30 days before selling or otherwise disposing of it. As there are a number of concerns that do nothing but sell used cars, they will have to take out a license or continue the fight. It is probable that the used-car men will fight the case if the police try to make them take out any licenses, and so the issue will be carried to the higher courts.

Dealers Cars Are Taboo For Pleasure Riding

Augusta Chief of Police Says He Will Arrest Dealers Using Demonstrating Cars Themselves

AUGUSTA, ME., June 29.—Motor dealers throughout Maine are somewhat anxious as to what is in store for them, following a communication from Secretary of State John E. Bunker to Chief of Police Stone of Biddeford a few days ago. Bunker stated to the chief of police that he had received information to the effect that Biddeford automobile dealers were using their cars with their dealers' registration numbers for pleasure riding and livery work. This was contrary to the law, Chief Stone was told.

The dealers are not worried about the livery part of the letter, for few of them do that, but on Sundays and other days they feel that they have a right to use their cars to go out for a ride or take their families for a little recreation if they have the time. They wonder just what will happen in case Chief Stone does not make any arrests.

In that case Secretary of State Bunker has the upper hand, for he can suspend the garage license of the dealers and put them out of business. And if he does it in one instance he will have to do it all over the State. In that event every dealer will have to either register one car as his own personal pleasure machine for use on other than business purposes, or stop his riding except when giving demonstrations.

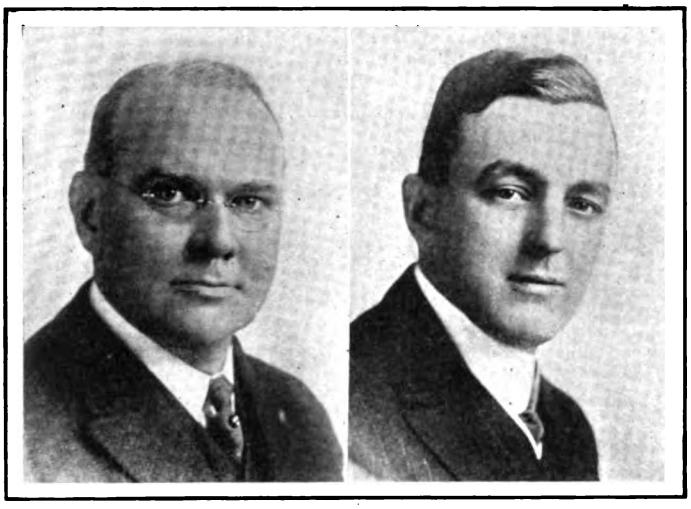
The dealers consider this as unfair, as they feel that when the law was passed the Legislature had no intention of placing such restrictions upon them. It puts the police officials throughout the State in a quandary, for they cannot tell when a man is riding for pleasure or giving a demonstration, particularly on a week day. That the dealers will attempt to have the law changed or a different interpretation made is evident; for though the law is similar to the one in many other States, the Maine dealers have never heard of any such decision being made elsewhere.

Jacksonville Dealers Cruise

JACKSONVILLE, FLA., June 29—The Jacksonville Automobile Dealers' Association, which was formed about 3 months ago, already has about fifty members enrolled and is entering on an active campaign of co-operation. On June 25 a steamer was chartered and the members cruised on the St. John River. The association has been successful in standardizing prices on work and supplies.

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THEY SOLD THEIR DEALER BUSINESS FOR $1,000,000



J. W. Leavitt A. D. Plughoff

Overland Pays Million for Leavitt Business

Takes Over Pacific Coast Firm in Business 25 Years—Two New Coast Branches

SAN FRANCISCO, June 28—Nearly $1,000,000 has been paid for a motor car dealer's business. That dealer is J. W. Leavitt & Co., Overland and Willys-Knight distributer on the Pacific Coast, and the business has been taken over by the Willys-Overland Co., Toledo. Hereafter the business will be operated as a factory branch and the entire Leavitt organization will remain intact except that J. W. Leavitt will retire. The change took effect on July 1.

A. D. Plughoff, formerly vice-president and general manager of the Leavitt company, will be the managing director of the branch, which will be styled Willys-Overland of California and will head the newly created Washington and Oregon branch, which will be styled Overland-Pacific, Inc.

Others who will be active in the management of the branch are A. R. Theisen, who has been treasurer of the Leavitt company and manager of the San Francisco branch, will be treasurer of Overland-Pacific with headquarters at Seattle. A. W. Barber, formerly branch manager in San Francisco for the Stevens-Duryea Co. and who for the past year has been Philadelphia zone manager for the Overland Co., will be San Francisco branch manager.

J. W. Leavitt & Co. had been in business on the Pacific Coast for nearly a quarter of a century and had built up a business in motor cars that is second to none in the world. The firm was started in 1893 as Leavitt & Bill and sold bicycles. Motor cars were taken on in 1902 and in 1906 the firm name was changed to J. W. Leavitt & Co.

In 1909 the Leavitt company had only a small store in San Francisco. Three times during the past seven years it has been necessary to enlarge the company's San Francisco quarters and in that time branches have been opened in nine Pacific Coast cities, these being Spokane, Seattle, Portland, Sacramento, Oakland, Fresno, Los Angeles, Pasadena and San Diego.

Last year, Pacific Coast purchasers bought more than 9000 cars from the Leavitt company, bringing the aggregate business up to the $7,000,000 mark.

The principal purpose of the Overland company in taking over the Leavitt business is to extend the long arm of Overland service direct from factory to owner.

Studebaker Dealers Gather

DETROIT, July 1.—Practically every eastern Studebaker dealer in the territory of the New York, Boston, Philadelphia and Norfolk, Va., branches attended the series of conventions held at these branches last week and part of the week before. The conventions were conducted by L. J. Ollier, vice-president and director of sales of the Studebaker Corp.; R. T. Hodgkins, general sales manager; H. A. Biggs of Frank Seaman, Inc., advertising counsel, and C. F. O'Meara, efficiency expert.

Realizing that it would work a hardship on dealers to ask them to visit the factory at this time of the year, the factory officials came from Detroit to tell them of the company's plans for the year.

Commercial preparedness was the keynote of the gatherings at the eastern cities. A warning was sounded to dealers against any tendency to treat the immediate future as a period of "easy sailing" simply because the demand for automobiles at this time exceeds anything experienced in the past. It was pointed out that increased production will demand increased selling activity.

Announcement was made to the dealers by Vice-president Ollier that the Studebaker Corp. plans a production of 100,000 cars beginning July 1. Sales for the past twelve months have been double those in any similar period, and practically another doubling of sales for the coming twelve months over the period just closing is provided to take care of the greater output. Information was given to the dealers regarding the factory's plans for selling the increased production of cars.

Jeffery Four Up $95; Has New Type Body

Roll Edge Body to Match the Six Is Brought Out—Few Mechanical Alterations

KENOSHA, July 1.—Jeffery's 1916 four is continued for the coming year with no changes in the chassis, a price increase of $95, the new car selling for $1,095, and a new body which gives the car the trade name of the roll-edge four. A new cellular radiator is the only other change.

The roll-edge four comes upon the demand of Jeffery dealers who have been insistent since the six was announced last January with a roll-edge body, that the four be furnished them in the same style, according to the announcement of the factory.

A particularly noteworthy feature of this new Jeffery body is its unbroken lines from the radiator to the rear seat and between fenders. The roll-edge on the top of the body blends into the hood without any break whatever from the straight line effect making the car look exceptionally long and clean.

The divided front seat feature which was a part of the 1916 body design is continued without change.

In general the new four has a 3¾ x 5¼ in. block motor, disk clutch, three-speed gearset, and semi-floating axle. The wheelbase is 116 in. and the tires 34 x 4. Practically every part of the car is Jeffery built.

The new bodies are finished in Savoy green with a fine gold stripe, fenders and running gear black, and the wheels green with a gold line. Upholstery is in black leather with deep double-deck springs. Auxiliary seats which disappear in the back of the front seats are standard equipment on all models.

Newman Is Chicago Chalmers Distributer

MILWAUKEE, July 1.—Announcement was made to-day that Harry Newman, Inc., since Dec. 1, 1915, distributer of Chalmers cars in Wisconsin, northern Michigan and southeastern Minnesota, with headquarters at 701 Grand Avenue, Milwaukee, has been appointed Chicago distributer and will establish stores in Chicago and Springfield, Ill., in addition to that at Milwaukee. The new territory, which will be served from the Chicago store, Michigan Avenue and Twenty-fifth Street, includes Illinois, north and western Indiana, eastern Iowa, bordering on the Mississippi River, and northeastern Missouri. It is stated that the Newman company has contracted with the Chalmers Motor Co. for more than 5000 cars for the fiscal year ending July 1, 1917.

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Day and Warner in General Motors Directorate.

NEW YORK, July 3.—Following a policy of having the various units of its organization as representative as possible on the board of directors, the General Motors Company, at a meeting on June 27, elected W. L. Day, general manager of the General Motors Truck Co., and Fred W. Warner, general manager of the Oakland Motor Car Co., both at Pontiac, Mich., to the board of directors.

These elections fill vacancies occasioned by the resignations on June 1 of three members of the banking interests that had aided in tiding the organization over its period of depression some years ago. Those resigning at the time of the election of W. C. Durant to the presidency to succeed C. W. Nash were Albert Strauss of J. & W. Seligman & Co., and J. J. Storrow of Lee, Higginson & Co., both of New York, and Emery W. Clark, head of the First and Old Detroit National Bank of Detroit, to fill one of these vacancies on the board.

W. C. Leland, vice-president and general manager of the Cadillac Motor Car Co., was elected at the June 1 meeting and Day and Warner have now completed the directorate.

Both Day and Warner are old farm implement men who, like many others in the industry, graduated to the automobile business after long years of experience in the other line. Day came to the truck unit in 1912, leaving the Mitchell Lewis Motor Co., where he was general manager. Before his connection with the latter concern he had been for 27 years general manager of the Parlin & Orrdendorff Plow Co., at Kansas City. Warner two years ago took up the Oakland management, coming from Chicago, where he had managed the Buick branch. Prior to his connection with Buick he had long been connected with the John Deere Plow Co., also at Kansas City.

Elgin Takes Over New Era

JOLIET, ILL., June 29—Important changes are announced in the New Era Engineering Co., which produces the New Era automobile. The company has been taken over by the Elgin Motor Car Corp. of Chicago. F. J. Alvin retires as president and general manager, and has been succeeded by W. J. Burdick, who has been connected with the company for some time.

Delling to Leave Mercer

NEW YORK, July 1—It is stated on good authority that Eric H. Delling, at present chief engineer and designer at the Mercer Automobile Co., Trenton, N. J., expects to sever his connections with that company and devote his time to the development of a new car which will probably bear his name. While nothing definite could be learned about the matter it is believed a company is forming to carry out Delling's ideas.

St. Louis Tractor Demonstration

ST. LOUIS, June 24—The St. Louis Tractor Farming Association, organized to give the National Farming Demonstrations here July 31 to Aug. 4, announces that 100 firms have signed exhibition agreements for the demonstration and that a 2000-acre tract of wheat land has been obtained for the tractor contests. Secretary of Agriculture David F. Houston will be present.

Coming Events

General Events

July 9-13.....Detroit, World's Salesmanship Congress, Detroit Board of Commerce Building.

September .....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Races, Contests and Tours

July 4.....Benton Harbor, Mich.; track race, F. E. Fitzsimmons.*

July 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

July 4.....Visalia, Cal.; road race, Tulare Co. Auto. Club.*

July 4.....Spokane; Coeur d'Alene, track race, Hiller-Reigel Co.*

July 4.....Elmira, N. Y.; track race, Elmira Auto & Motorcycle Racing Assn.

July 4.....Minneapolis, Minn., speedway racemeet.*

July 4.....Sioux City, Ia., speedway racemeet.

July 4.....Coeur d'Alene, Idaho, track racemeet, Hiller-Riegel Co.

July 4.....Tacoma, speedway race, Tacoma Speedway Assn.

July .....Burlington, Ia.; 100-mile track race, Tri-State Fair.

July .....La Grande,, Ore.; track race, La Grande Motor Club.

July 15.....Omaha, Neb., track racemeet.*

July 15.....Portland, Ore.; track race, Northwest Auto Assn.

July 15.....North Yakima, Wash.; track race, Hiller-Riegel Co.

Aug. 5.....Tacoma, Wash., Track racemeet.*

Aug. 11-12.....Pikes Peak, Col.; hill climb, Pikes Peak Auto Highway Co.*

Aug. 12.....Portland, Ore., track race, Hiller-Riegel Co.

Aug. 18-19.....Chicago, Ill., Elgin road race.

Aug. 26.....Kalamazoo, Mich.; 100-mile track race.

Sept. 1-2.....New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 16.....Providence, R. I., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

*Indicates sanction by A. A. A.

Tractor Demonstrations

July 17-21.....Dallas, Tex.
July 24-28.....Hutchinson, Kan.
July 31-Aug. 4...St. Louis, Mo.
Aug. 7-11.....Fremont, Neb.
Aug. 14-18.....Cedar Rapids, Iowa.
Aug. 21-25.....Bloomington, Ill.
Aug. 28-Sept. 1...Indianapolis.
Sept. 4-8.....Madison, Wis.

Shows

Aug.2-9 .....Hollywood and West End, N. J.; show, Atlantic Exhibition Co.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 11-16.....Milwaukee, Wis, second annual Fall show, Milwaukee Automobile Dealers, Inc.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Motor Car Securities Quotations

	July 1, 1915 Bid	Asked	July 1, 1916 Bid	Asked
Ajax Rubber Co. (new)	..	..	64	66
J. I. Case, pfd.	70	79	86	90
Chalmers Motor Co., com.	91	92¾	..	180
Chalmers Motor Co., pfd.	95	98	100	102
Chandler Motor Car Co.	..	..	108½	109
Chevrolet Motor Co.	..	..	215	220
Fiske Rubber Co., com.	..	..	..	150
Fiske Rubber Co., 1st pfd.	..	..	114	120
Fiske Rubber Co., 2d pfd.	..	..	120	..
Firestone Tire & Rubber Co., com.	500	506	570	..
Firestone Tire & Rubber Co., pfd.	109	111	112	114
General Motors Co., com.	156	157	470	541
General Motors Co., pfd.	101	102	100	112
B. F. Goodrich Co., com.	53	54½	74½	75
B. F. Goodrich Co., pfd.	103	105	113¼	113½
Goodyear Tire & Rubber Co., com.	269	272	230	240
Goodyear Tire & Rubber Co., pfd.	106	107	105	107
Grant Motor Car Co.	..	..	12	13
Hupp Motor Co., com.	..	..	8	84
Hupp Motor Co., pfd.	..	..	90	110
International Motor Co., com.	13	14	9	12
International Motor Co., pfd.	32	36	20	28
Kelly-Springfield Tire Co., com.	159	162	70	72
Kelly-Springfield Tire Co., 1st pfd.	85½	86½	85	78
Lee Rubber & Tire Corp.	..	..	47½	48½
Maxwell Motor Co., com.	35	35½	79	79½
Maxwell Motor Co., 1st pfd.	82	83	85½	86
Maxwell Motor Co., 2d pfd.	31½	33	54½	55½
Miller Rubber Co., com.	190	192	350	357
Miller Rubber Co., pfd.	103	105	105	106
Packard Motor Car Co., com.	109	..	..	190
Packard Motor Car Co., pfd.	96½	101	100	104
Paige-Detroit Motor Car Co.	..	..	..	52
Peerless Truck and Motor Corp.	..	..	26	27
Perlman Rim Corp.	..	..	..	..
Portage Rubber Co., com.	35	38	110	130
Portage Rubber Co., pfd.	92	95	120	122
Regal Motor Car Co., pfd.	..	..	17	22
*Reo Motor Truck Co.	15	16	38½	39½
*Reo Motor Car Co.	29¼	30	40	40½
Saxon Motor Car Co.	..	..	72	83
Standard Motor Co.	..	..	7	8
Stewart-Warner Speed Corp., com.	67½	68¼	98	99
Stewart-Warner Speed. Corp., pfd.	104	107	..	..
Studebaker Corp., com.	76	78	113¼	113⅝
Studebaker Corp., pfd.	100	100½	107¼	110
Swinehart Tire & Rubber Co.	77	78	88	91
United Motor Corp.	..	..	65¼	66
U. S. Rubber Co., com.	45½	47	53¾	54½
U. S. Rubber Co., pfd.	105	106	10⁷¼	110
White Motor Co. (new)	..	..	57¾	58¼
Willys-Overland Co., com.	128	128	73	74
Willys-Overland Co., pfd.	102	103½	106½	107½

*Par value $10; all others $100.

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MICHELIN TIRES



Note the remarkable thickness of rubber and fabric

Low Price and High Quality

backed up by big advertising give the Michelin dealer an advantage over all competitors.

Write for the Michelin Proposition

MICHELIN Universal Tread Casings and Red Tubes

Inch Sizes	Q. D. Straight Side	Q. D. Clincher	Red Inner Tubes
32x3½	$18.30	.....	$3.55
32x4	24.90	$24.90	4.65
33	25.65	25.65	4.25
34	25.95	25.95	5.00
36	27.95	27.95	5.30
34x4½	33.00	33.00	6.55
35	34.75	34.75	5.90
36	35.70	35.70	6.90
37	.....	36.60	6.30
35x5	40.50	40.50	6.55
37	41.90	41.90	8.35

Also made in soft bead clincher size 31x4, price $22.25

Compare these prices with those of other tires. Though unsurpassed in Quality at any price, Michelin Tires are almost as low-priced as the cheapest makes.

Michelin Tire Company, Milltown, N. J.

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Quality First

Sales of Chalmers cars in New York City during the first six months of 1916 were $904,150 ahead of 1915 sales for the same period.

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Big Things Are in Store for Dealers Who Represent

Velie

The "Biltwel" Line

Watch the motor publications as well as the great national mediums for Velie news of unusual importance at a near date.

The demand for Velie Biltwel Sixes, tripling the output of a mile of Velie factory, has resulted in plans which mean big business for dealers capable of handling the opportunity.

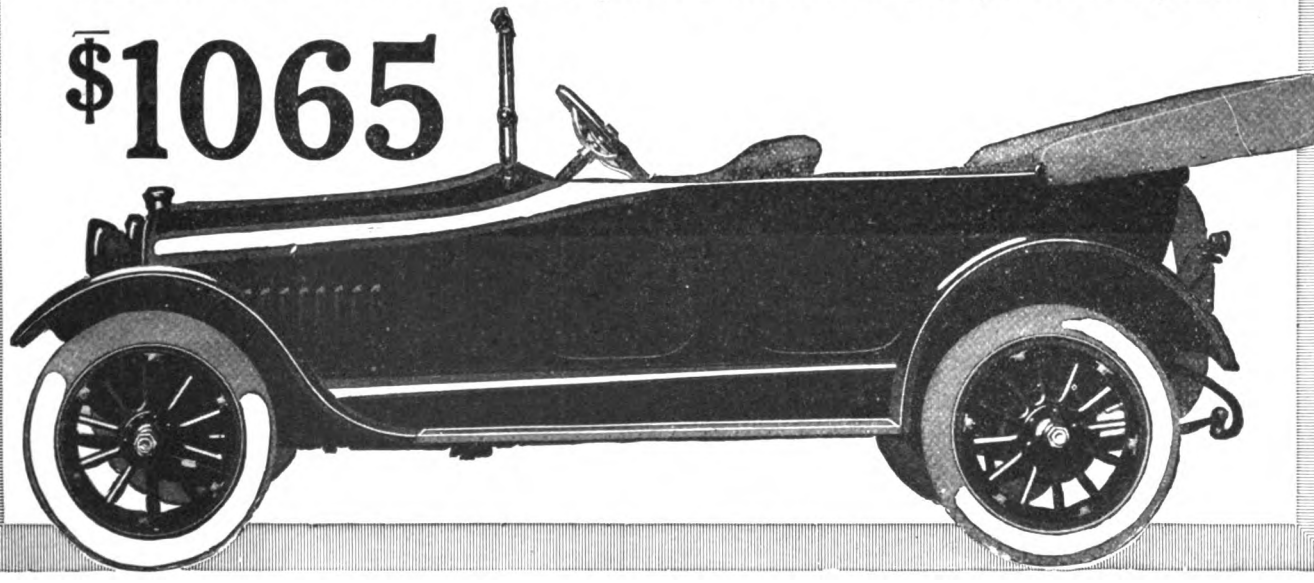
If this means you, we suggest that you get in touch with us for details now. In the meantime Velie dealers can advise prospects that they will not have an opportunity to buy Velie Biltwel Six at a less figure than its low price today. We cannot promise that there will be no advance. The present season has proved very clearly that the Velie Biltwel Six quality classes it with cars costing hundreds more.

For workmanship—design—mirror finish—deep-tufted genuine leather and curled hair upholstery—refinements—equipments, it is unsurpassed at any price.

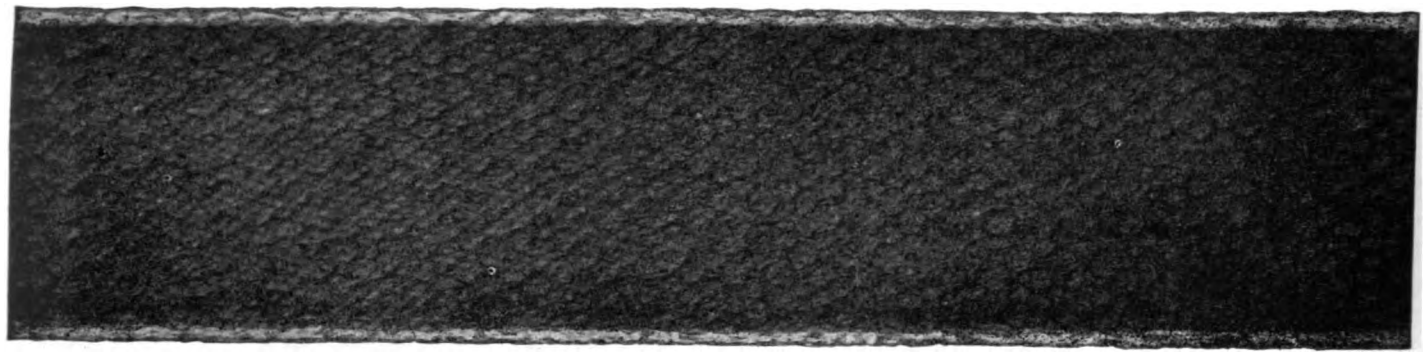
Model 22, Touring Car, $1065; with Sedan Top, $1240. Velie Coupe, $1750. Velie Roadster, $1045. Wire wheels on any model, $70 extra.

Velie Motor Vehicle Co., 115 Velie Place, Moline, Ill.

$1065



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P + P + P = ?

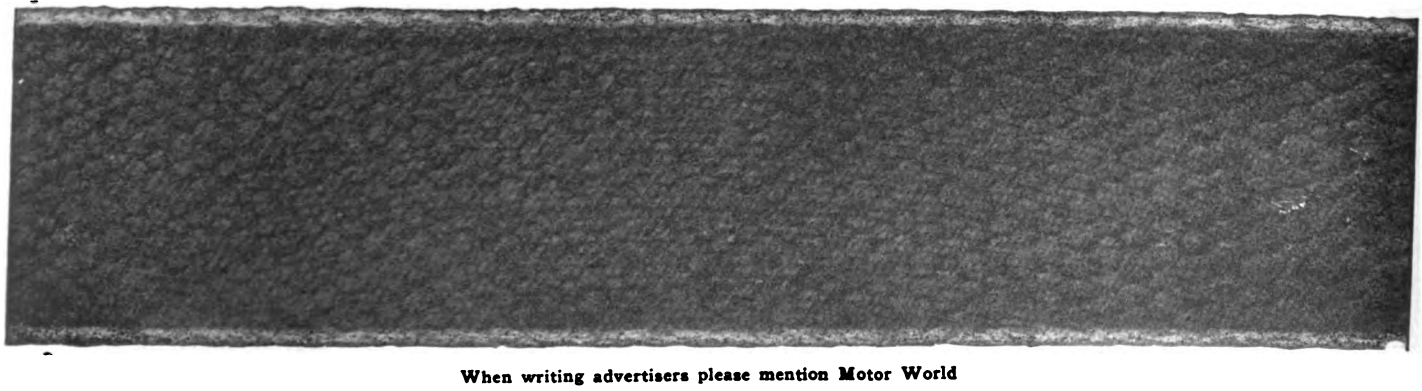
Why are Raybestos and Raybestos **WEAR** now advocated by over 10,000 garages?

The answer is: Profit+Price +Performance=More Sales.

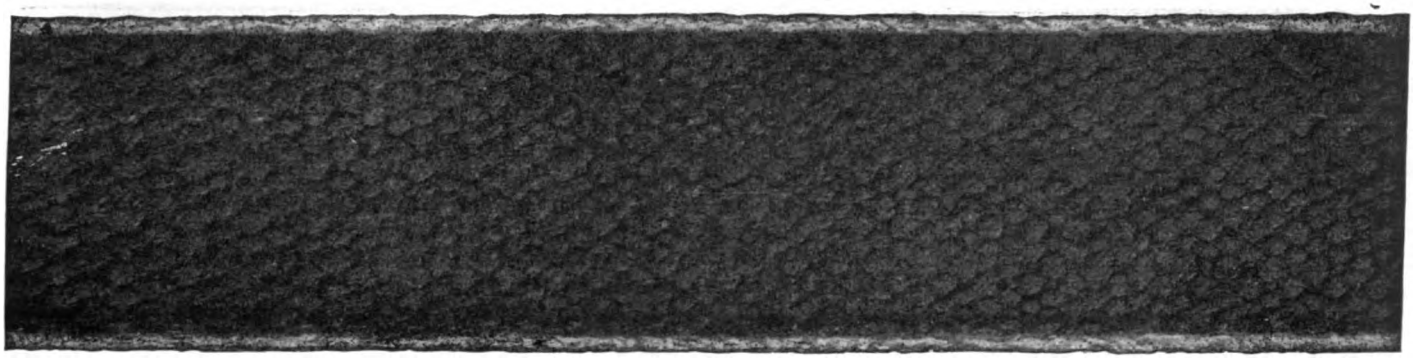
The Profit on Raybestos is a fair, living Profit. The dealer is in business primarily for profit. To his profit on the ***first*** sale of Raybestos he knows he will add the profit of a ***second*** and ***third*** sale to the same motorist.

The Price of Raybestos is fair. The dealer is out to handle that article which offers the most service at a given price. Hence Raybestos. Experienced motorists know that Raybestos offers most at its price.

The Performance of Raybestos—its downright **WEAR**—is a matter of common knowledge.



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Raybestos **WEAR** is today the big seller of Raybestos Brake Lining.

Motorists realize that "safety" talk about brake lining is 90% poppycock.

For—What brake lining is "safe" if brakes are out of adjustment?

And—What brake lining is continuously "safe" if not a hard, solid unit—like Raybestos—and impregnated through and through with the secret Raybestos compound?

So Raybestos is immediately accepted by well-informed motorists. No time wasted in argument on your part of inquiry on the customer's.

Raybestos Price+Raybestos Profit+Raybestos **WEAR**=a combination found nowhere else.

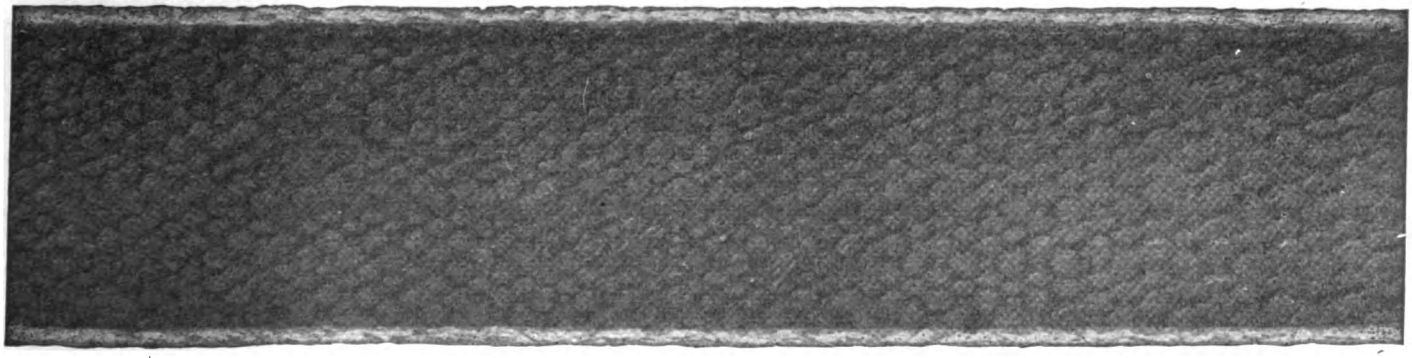
You can actually add to your good reputation by recommending ***genuine*** Raybestos Brake Lining.

The Royal Equipment Company **Bridgeport, Conn.**

Raybestos

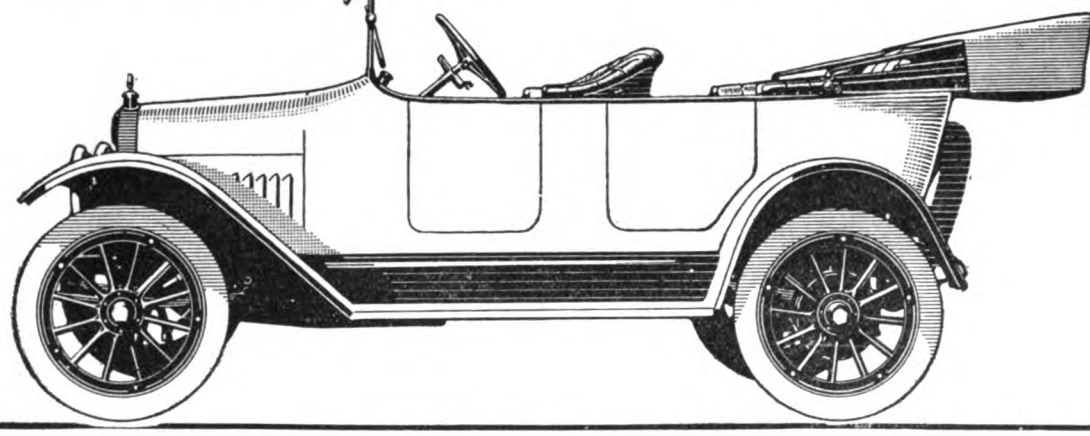
Brake Lining

Sold by over 12,000 Garages



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Maxwell NEW PRICE $595



INCREASED PRODUCTION AND STANDARDIZED MANUFACTURING PERMIT REMARKABLY LOW PRICE

THE prices of Maxwell Cars are again reduced—$595 for the touring car and $580 for the roadster—effective July 1, 1916.

Only the price is changed—not the car.

Greatly increased production reduces our manufacturing cost per car.

Standardized manufacturing—only one Maxwell chassis—makes possible further production economy.

By reducing the price we also reduce the selling expense.

Thus the Maxwell owner gets the most *actual intrinsic value* for his expenditure.

Bear in mind that the Maxwell is the World's Champion Endurance Car. Its genuine through-and-through merit has been established beyond question or doubt.

The Maxwell has lowered many records for gasoline and oil consumption. It is everywhere recognized as one of the most economical cars to maintain.

These facts, considered along with the remarkably low price now quoted, make *Maxwell the one big automobile value of all time.*

This announcement will be read by hundreds of automobile dealers as well as prospective retail buyers. To those dealers who wish to know if there is any open territory, we will say that Maxwell sales contracts for 1916-17 are being signed now by our traveling salesmen. There will be some changes—particularly in the allotment of territory. Therefore, interested dealers, wherever located, should write us now.

WHAT THE MAXWELL PRICE INCLUDES

Long-stroke, high speed, four-cylinder motor; *20* to *25* miles to the gallon of gasoline (average).

Irreversible steering gear; automatic motor lubrication by splash and pump; 500 to 1,000 miles to gallon of oil.

Thermo-syphon cooling.

A running-in-oil clutch, so smooth as to make the driving of a novice as free from gear-clashing as that of a seasoned driver.

Tall, narrow, racing-type radiator, Maxwell-made.

Maxwell-made axles—I-beam front and semi-floating rear; heat-treated alloyed steel.

Gasoline tank in cowl; short, accessible gas line to carburetor.

Maxwell-made stream-line body, well finished in every detail. Deep, comfortable upholstery.

30 x 3½ tires all around, non-skid on rear; average life from *8,000* to *10,000* miles. Demountable rims.

Tire carrier at rear, with extra rim.

Substantial, Maxwell-made crowned fenders and linoleum-covered running boards.

Electric starter, electric lights, electric horn.

High-Tension Magneto, an independent source of ignition.

One-Man top with quick-adjustable, storm proof curtains.

Rain-vision, adjustable, ventilating windshield.

High-grade speedometer.

The Maxwell Touring Car is a *full five-passenger car.* Every Maxwell model seats comfortably the number of passengers which it is rated to carry.

Compare these Maxwell features with those of cars selling at higher prices.

Maxwell

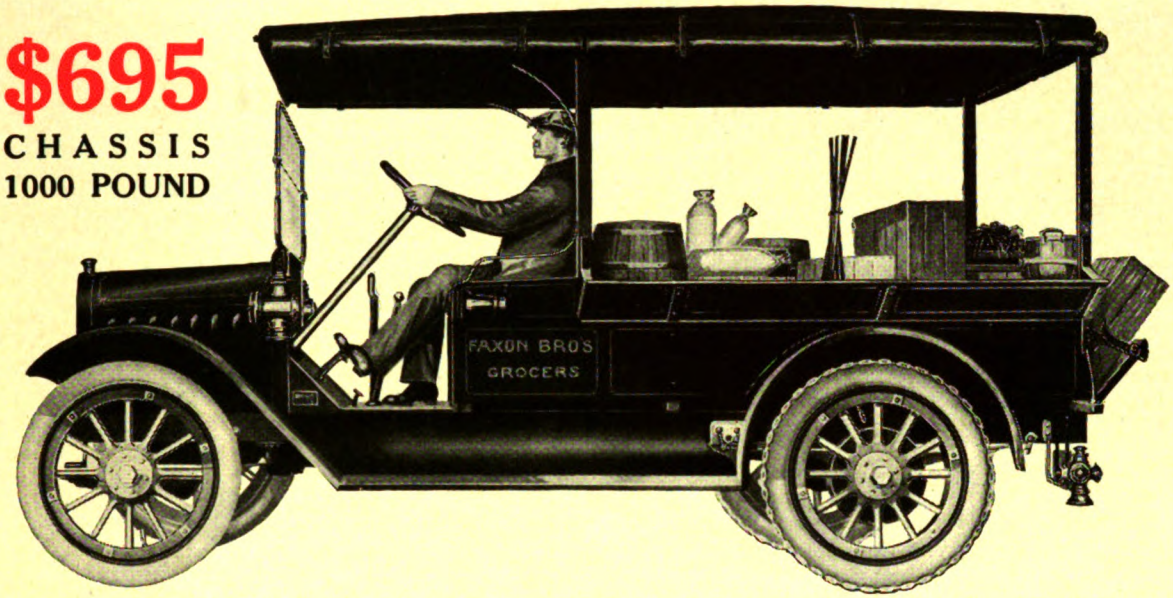
Motor Company · Detroit, Mich.

When writing advertisers please mention Motor World

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Stewart

$695
CHASSIS
1000 POUND



Stewart Sales Increase Over 600%

Stewart Trucks are setting a marvelous pace as money-makers for dealers. They sell fast because they are real trucks built as a truck should be. Stewart Trucks are in use today in practically every line of business and are making good all over the world.

Over Four Years Foremost in Delivery Truck Field

For over four years Stewart Trucks have been built and sold and have made remarkable records for economy and reliability. We know motor truck construction—consistent Stewart quality, and its ever increasing popularity proves this without question.

Stewart Output Will Be Increased 1200%

The almost overwhelming demand for Stewart Trucks makes it necessary for us to add tremendously to our output. Increased factory facilities will meet the call for Stewart Quality Trucks. Quantity production enables us to make better trucks for lower prices.

Stewart Dealers Will Reap Immense Profits

Every Stewart dealer will cash in on this new policy. We will be backed up by enlarged manufacturing facilities and a country-wide advertising campaign that will tell every possible truck customer the merits of Stewart Trucks.

Dealers—Write or Wire for Stewart Money-Making Proposition

The opposite side of this page shows you the remarkable success Stewart Trucks have brought to many dealers. Think what the Stewart line will do for you with our greater facilities and sales effort.
There is still some territory open. Write or wire us for dealer proposition. Do this today.

STEWART MOTOR CORPORATION
BUFFALO, NEW YORK

Stewart

From Coast to Coast Stewart Trucks are finding a big market. These statements show the big success Stewart Trucks are making for dealers. They prove STEWART VALUES.

CHICAGO, ILL.
Ordered 12 demonstrators—all sold in less than a week. Started selling Stewarts May 1st—127 ordered up to date—sold one customer 40 Stewarts.

MINNEAPOLIS, MINN.
One week after receipt of demonstrators sent in order for 36 more.

LOS ANGELES, CAL.
Sold 16 two days after taking agency—sent in orders for 124.

SAN FRANCISCO, CAL.
Chalmers Coast District Manager resigns to take agency—orders train load for quick delivery.

BOSTON, MASS.
Sold as many Stewart Trucks in first two months as all last year. Means a big increase of over 500 per cent.

PITTSBURG, PA.
Necessary to triple our force to take care of big increasing demand for Stewart Trucks. Sales coming in remarkably fast.

NEWARK, N. J.
Gave up a profitable garage business to be better prepared to take care of truck business. Stewart the big seller.

ALBANY, N. Y.
Took on trucks as side line. Found Stewart line so profitable that we have established a special truck department to take care of growth in truck business.

These telegrams further prove Stewart Success:

San Francisco, Cal., June 9.
Stewart Motor Corp.
Buffalo, N. Y.

A train load of Stewart Trucks, accept our order for 135 Stewart Trucks for Northern California territory as follows:

120 Model 5 half-ton trucks and 15 Model 4 one and one-quarter ton trucks for immediate shipment per our letter, including deposit check and signed orders and giving specifications on bodies and colors.

Hirsch Brothers,
Northern California
Distributors.

Chicago, Ill.,
May 20, 1916.

Stewart Motor Corp.
Buffalo, N. Y.

Ship earliest possible dates one hundred Model 5 half-ton trucks and ten Model 4 ton and quarter.

Chicago Auto Sales Co.
Emil J. Krimsky,
President.

Minneapolis, Minn.,
May 31, 1916.

Stewart Motor Corp.,
Buffalo, N. Y.

Accept for immediate shipment our order for 36 Model 5 half-ton trucks. Body Specifications in mail.

R. C. Smith Auto Co.

June 15th, 1916.

Stewart Motor Corp.:

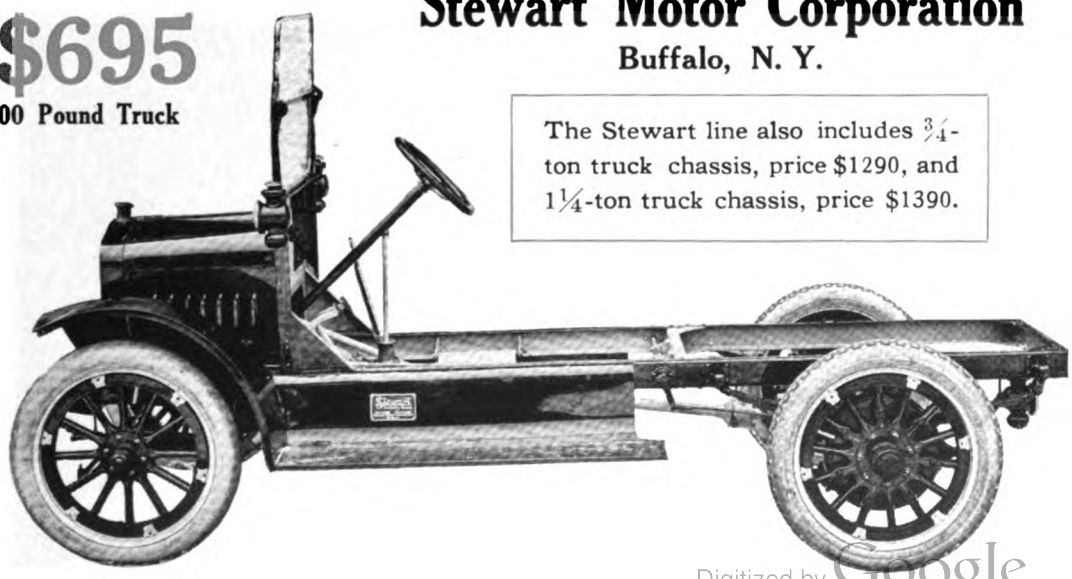
We are mailing today order for 109 Model 5 ½-ton trucks, 14 Model 4 1¼-ton trucks, 1 Model 3 ¾-ton truck. Deposit check, body and color specifications mailed. Kindly rush shipment. Accept your contract covering southern California territory.

Stewart Truck Sales Co.
H. Scott Johnson,
Los. Angeles, Cal.

Chassis $695

Specifications 1000 Pound Truck

4 cylinder engine, 25 H.P.; honeycomb type radiator, most efficient made; 3-speed selective type transmission, dry plate clutch; Bosch magneto; pressed steel frame; internal gear drive TRUCK AXLE; demountable rims; 32"x4" tires, non-skid rear; glass front; mechanical horn; tool kit; jack; tire pump; extra rim.



Stewart Motor Corporation
Buffalo, N. Y.

The Stewart line also includes ¾-ton truck chassis, price $1290, and 1¼-ton truck chassis, price $1390.

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There are many Automobile Time Payment Plans, but there is *only one plan* that—

Gives the Dealer all His Money at Once—NO HOLDBACKS— Protects Him Absolutely— Safe-guards His Cash Sales

The Auto Brokerage Co. service is more than a Banking Proposition.

We are anxious to show you how to sell Cars and Trucks on Credit—

ON A SOUND BUSINESS BASIS.

Write at once for full information.

AUTO BROKERAGE CO., Inc.,
33 West 42nd Street, New York City

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MOON
REG. U. S. PAT. OFF.
MOON MOTOR CAR CO.
ST. LOUIS, MO. U.S.A.

The New 1917 Models

Last spring we adopted the double-cowled body on the Moon Six-44. So quickly did it find favor with both dealers and owners, that we have selected this design for the new 1917 models—the Six-66 and the Six-43. In addition to this feature, the 1917 body design (Delauney-Belleville type) exhibits still further refinement. Speed and power are expressed by its long, straight lines—and this impression is heightened by the smart, slanting windshield.

(We venture a prediction: So well has this design been received by the public that we believe by the end of 1917 every car of any moment will have followed our lead in the adoption of this double-cowled body.)

Moon 1917 models will challenge attention and admiration in any company and under any conditions.

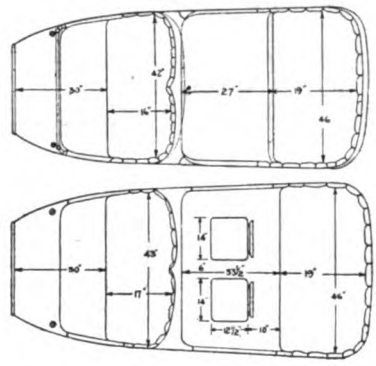
But we have not stopped with the improvement of the body design. You will see in this further list of the principal 1917 features many other reasons for Moon desirableness.

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Six-43
Actual Brake Horsepower

AND

Six-66
Actual Brake Horsepower



MOTOR—New Continental-Moon high-speed efficiency type, developing, in the Six-66, full 66 horsepower (actual brake test). The Six-43 develops 43 horsepower (actual brake test). In each case tremendous power in proportion to its weight.

STARTING, ETC.—New two-unit Delco-Moon starting, lighting and ignition system. Bendix automatic drive in connection with starting motor.

UPHOLSTERY—Genuine tan Spanish leather, adding both to the beauty and the comfort of the car.

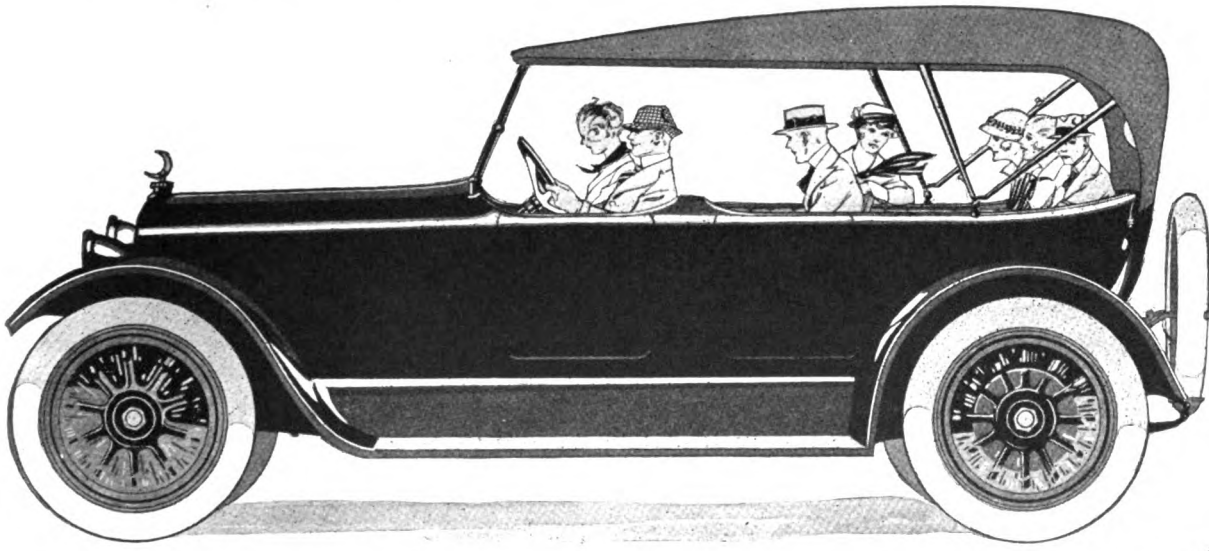
BODY—Delauney-Belleville type, with double cowl and slanting windshield. Big and roomy (Moon cars have always been noted for their roominess in both front and rear compartments). The seats are especially designed to *fit and rest the body.* The Six-43 body is not quite so long as the Six-66, as space is not needed for the extra seats.

REAR AXLE—Of course the spiral gear *noiseless* rear axle.

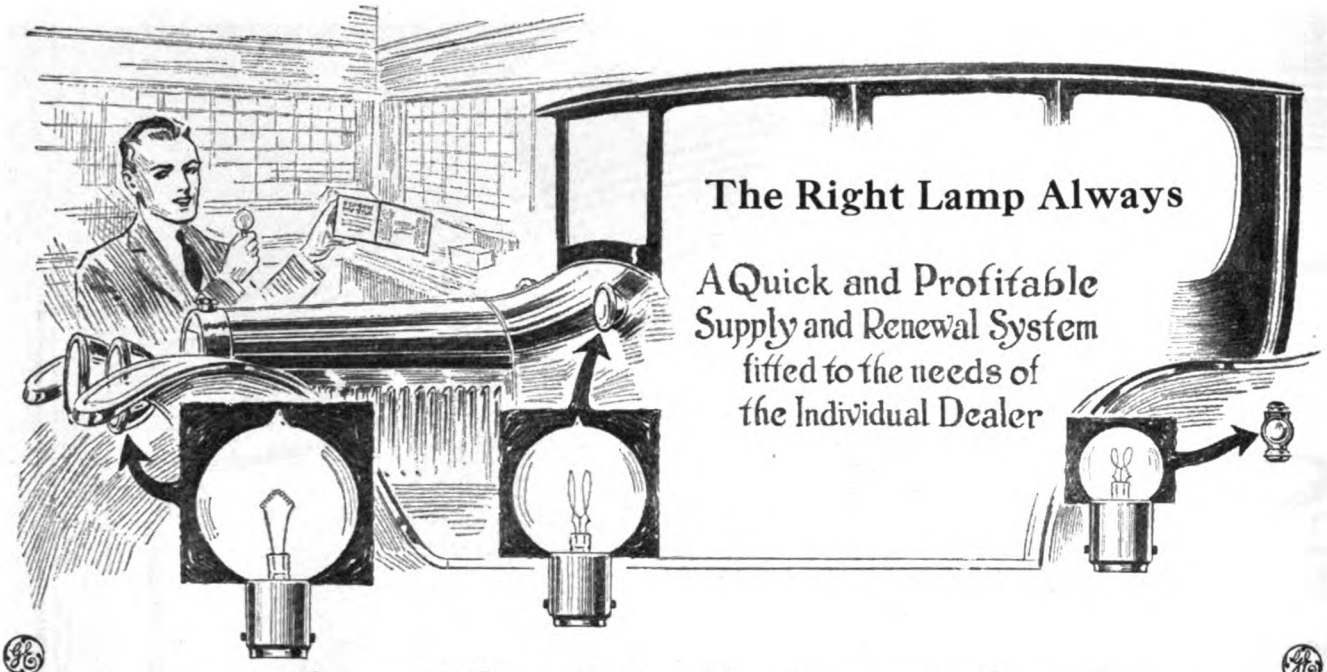
WHEELBASE—On the Six-66, 125 inches; and on the Six-43, 118 inches. It will be readily seen from this that these are *big sixes*—as big or bigger than many other sixes selling $500 to $600 more.

PRICE—Six-66, seven passenger, fully equipped, $1575; Six-43, five passenger, fully equipped, $1250.

MOON MOTOR CAR COMPANY, **St. Louis, Mo.**



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and a Good Profit all along the line

FOR the price of a good tire you can put on your counter our Automobile Lamp Assortment containing enough selected sizes and types of lamps to supply the **right** lamps to practically every automobile owner in your locality.

Our booklet lists the proper lamps for all electrically lighted cars so your clerk can't make a mistake. Better still, our new lamp chest makes it easy for you to sell six lamps instead of one to every driver. From the Assortment stock you select the proper head, side, rear and meter lamps and pack them in the lamp chest. With it the car owner is insured against any lighting emergency.

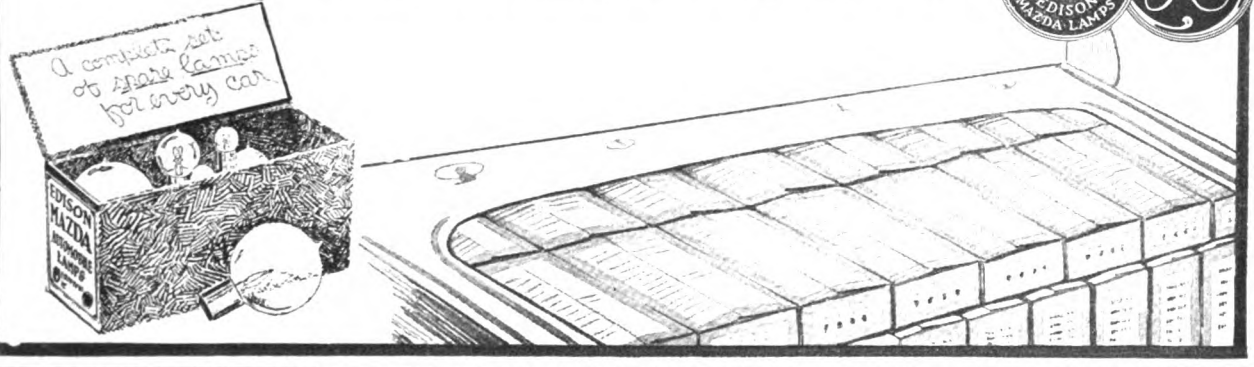
Write today for our money-making dealer proposition. Be the **first** in your locality.

EDISON LAMP WORKS
OF GENERAL ELECTRIC COMPANY
HARRISON, N. J.

EDISON MAZDA

6614

Auto Lamp Chest and Auto Lamp Assortment



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This distinctively American emblem will mark a new luxury car. The name will soon be nationally known

A New Luxury Car

For 1917~ with a choice of Custom Style Bodies.

PEOPLE who know, realize that in the motor car of the future, the determining factor is to be the body.

A standard chassis of finished mechanical excellence, fitted to suit the buyer, with a choice of distinctive and comfortable custom style bodies, is both practical and fashionable.

Those in whom good taste is inherent, value a motor car for its distinctive appearance, quality of detail, body comfort, and performance.

In this advanced style class, a new luxury car will shortly assume a positive leadership.

It is the first American car in which body lines, finish, and body arrangement in their relation to the mental and body comfort of the passengers is given first consideration.

It is a light, perfectly balanced automobile with wonderful acceleration, and with unusual flexibility of applied power.

The chassis includes all of the finest universally approved mechanical units chosen after the joint endorsement of the greatest American automobile engineers.

The touring bodies are straight as an arrow from motometer tip to top cover, fashionably long and low.

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The racy roadster and four passenger sporting models are low and rakish, yet the seats are cleverly arranged for real comfort.

The enclosed types include Sedan, Limousine, and Coupe, and are fitted with bodies of the permanent top style—exclusively 1917 vogue.

To inspire the owner's pride and save depreciation, twenty painting operations, a detailed finish, hand-buffed leather, and custom style mahogany cabinet work are provided, encouraging the owner to keep his car year after year.

There is more room for the driver; more room in the rear seat and a distinct innovation in seat cushions is introduced for the first time. The effect is almost pneumatic.

The passenger will feel that he is sitting down in the car instead of on top of it. The rear seat is actually wide enough for three people.

It is a body in which there is not a cramp or a squeeze for driver or passengers; a body of real riding comfort.

A single chassis designed and built with extreme accuracy, to be produced in limited numbers under the most rigid inspection system, maintaining the highest standard of quality and efficiency by using the one best unit available for each purpose.

On special order, the standard chassis may be fitted with custom made bodies by the world's leading makers.

Only 100 well established dealers will be authorized to sell this car.

Delivery schedules will be provided for these in accordance with daily production.

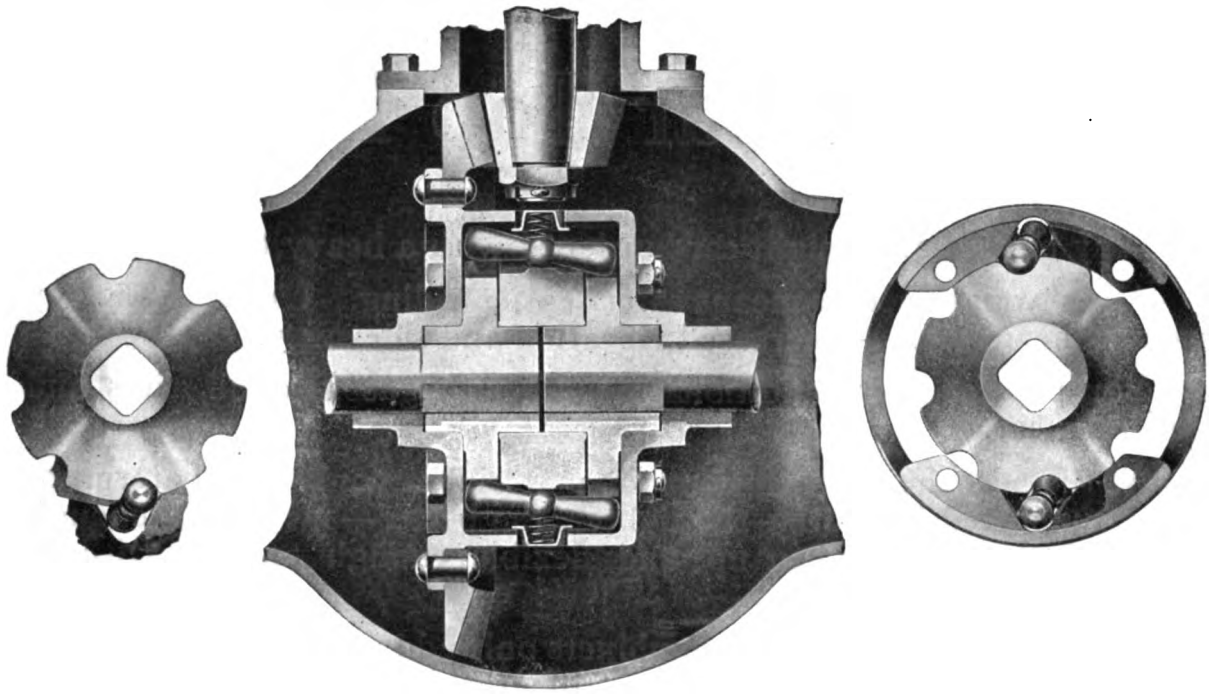
Further interesting details next week.

Dealers and individuals desiring advance information may address



The New All American Car
Care of Motor World. Chicago.

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THE NEW PROCESS DIFFERENTIAL

compensates perfectly in turning, and on straightaway locks to drive both rear wheels **positively** and **equally** on a **practically undivided axle.**

This equalized driving power, impossible with an ordinary differential, keeps the car from swerving at high speed or on slippery road, keeps one wheel from spinning while the other is embedded in sand, mud or snow, and therefore assures safe and sure passage on roads where a gear-differential-equipped car would skid or stall.

Obviously then, the equalized power distribution also makes steering easier, makes the car hold to the road better, protects tires from disastrous grinding and tearing, and by holding down the wheel travel to the fewest revolutions for given distance, reduces power waste and steadies engine speed.

Automobile and Axle Builders:

These strong selling arguments commend New-Process-Differential-equipped cars to favorable consideration and the motoring public will quickly grasp the possibilities from this improved construction.

You can equip with New Process Differential without changing your present axle housing or bearing layout, and you can be sure that the few simple strong parts will last better than the corresponding elements of a geared differential.

The cost is no more than for the less efficient type, and we stand ready to offer every reasonable assurance as to efficiency and long life.

Our twenty years of successful manufacturing, $1,500,000 invested in plants and equipment, and well established reputation for progressiveness and fair dealing, further make this device worthy of careful consideration.

Blue prints, costs, etc., submitted on application.

Licensed under patents of the
Gearless Differential Company of Detroit, Mich.

N.P.R.H. REG U.S. PAT OFF

NEW PROCESS GEAR CORPORATION

N.P.R.H. REG U.S. PAT OFF

SYRACUSE, N.Y.

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Is Your Car Top Heavy?

Why buy a light weight car burdened with a heavy top?

A low weight center means safer, easier riding. Unnecessary top weight means waste—increased vibration and side sway.

You pay for every additional pound with gasolene, oil, tires and general wear.

At the best the most efficient top material can only be a waterproof layer supported by cloth—the lighter, the better—but strong enough to stand the strain when up, and flexible enough to fold without cracking.

Extra layers of cloth and combiners only add weight, diminish flexibility and increase the possibilities of cracking in folding. Mohair tops absorb pounds of water during a storm and accumulate dust when dry.

DU PONT FABRIKOID
RAYNTITE
REG. U. S. PAT. OFF.

Single Texture Top Material

is ideal for the modern one-man top. It is made of a single thickness of light, strong cloth coated with a flexible, waterproof compound that sheds water like a duck's back. It can be easily washed, always looks well and because it is chemically inert will not oxidize nor disintegrate. **Guaranteed one year** against leaking but built to last the life of your car. Any top maker can replace your old dusty or leaky top with Rayntite.



Du Pont Fabrikoid Raynite will duplicate the remarkable success of Du Pont Fabrikoid Motor Quality—The Standardized Automobile Upholstery—used on 60% of 1916's entire output.

Write for samples and booklets and latest list of cars equipped with this modern top material.

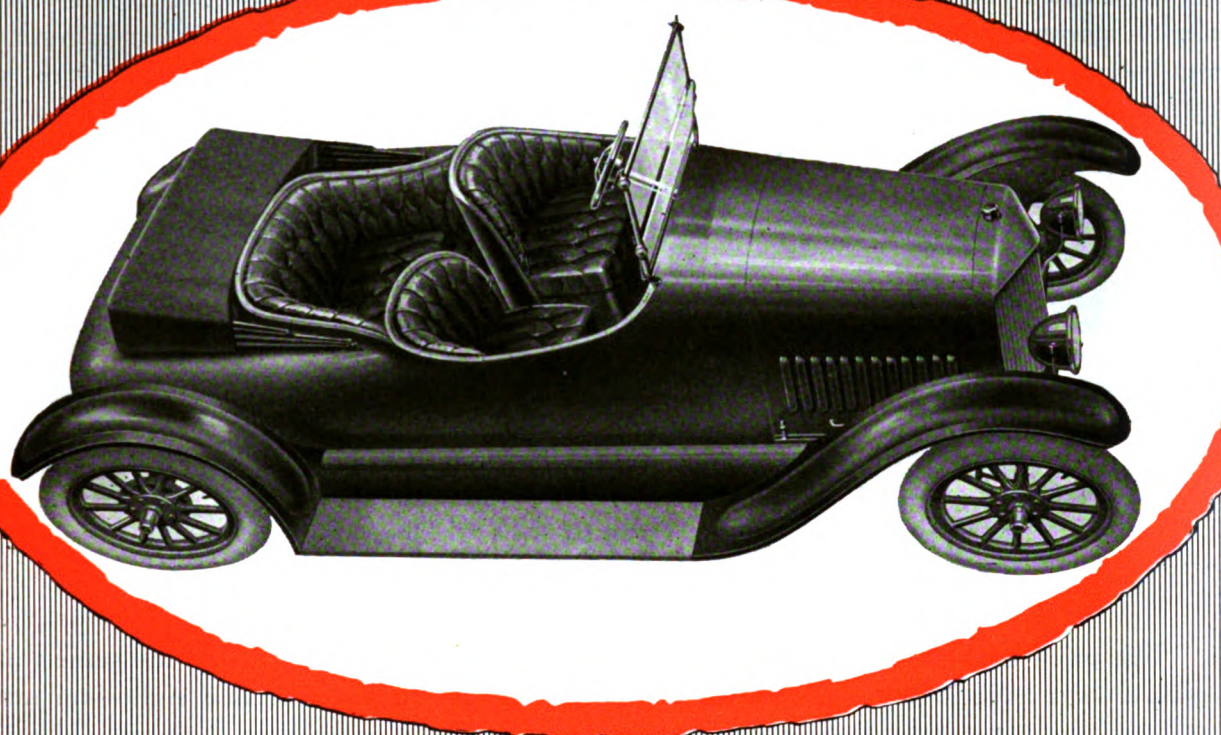
DU PONT FABRIKOID COMPANY
WILMINGTON, DEL.

Works at
Newburgh, N. Y.

Canadian Office and Factory:
Toronto

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Some Body For Fords



This Is Some Body

This Ames-built Cloverleaf 3-passenger Roadster Body is the "somebody" body that puts your Ford into the "somebody" class. It is class itself. Note its graceful, beautiful lines, novel design, its classiness from end to end. Compare it with that body you now have on your Ford or with any body on any other car. Would give your Ford that thousand-dollar look, wouldn't it? Everything throughout thoroughly up to the minute—top, upholstering, workmanship, material, style—all ready to mount on your Model "T" Chassis. Interchangeable; anybody can put it on. Crated complete for shipment.

$175
F. O. B.
Owensboro, Ky.

THE F. A. AMES COMPANY
INCORPORATED
CLASS CAR BODY MAKERS
OWENSBORO, KY.

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Give Your Engine a Chance

It's a cinch you won't get all the engine has to give—or get the full life of the engine unless it's properly lubricated. And you can believe it or not, but buying oil indiscriminately from barrels, pumps, etc., don't get you the oil that will lubricate properly. Make sure what you are getting—buy by name—from packages marked plainly

Tiolene

"The Oil That's Clean"

The price is high—but we have found (and you have probably found the same thing) —you always have to pay a good price for a good thing—an article that's right—an article that lives up to a standard—and that particular article in this case is Tiolene—"The Oil That's Clean."

Don't try to fool yourself—It don't pay in the end. Better order a drum from your dealer today.

M. W. 13

Kindly send price on Tiolene.

Drum.....

½ Drum.....

Name.....

Address.....

Car.....Year.....

TIOLENE DISTRIBUTORS

General Automobile Supply Co.	New York City
Cornplanter Refining Co.	Nashua & Manchester, N. H.
Richards & Conover Hdw. Co.	Kansas City, Mo.
Richards & Conover Hdw. Co.	Oklahoma City, Okla.
Western Merchandise & Supply Co.	Chicago, Ill.
Poughkeepsie Auto Supply Co.	Poughkeepsie, N. Y.
Jackson Motor Supply Co.	Pittsburgh, Pa.
Robertson Hardware & Steel Co.	Portland, Ore.
Detsch & Co.	Oregon, Washington, Montana, Idaho
Sangarsa & Co. (S. Am. Distribution)	New York City
Joseph Strauss & Son	Buffalo, N. Y.
Treman, King & Co.	Ithaca, N. Y.
H. L. Hadden Co.	Milwaukee, Wis.
Burhans & Black Co., Inc.	Syracuse, N. Y.
N. M. Townley, Jr.	Paterson, N. J.
Franklin Oil & Supply Co.	Rochester, N. Y.
R. McC. Bullington & Co.	Richmond, Va.
H. M. Rhea	Chambersburg, Pa.
The Columbia Auto Supply Co.	Washington, D. C.
The Chapin Co.	Calgary, Alta, Can.
Canadian Selling Co.	Montreal, Quebec, Can.
Standard Supplies, Ltd.	Ottawa, Ont., Can.

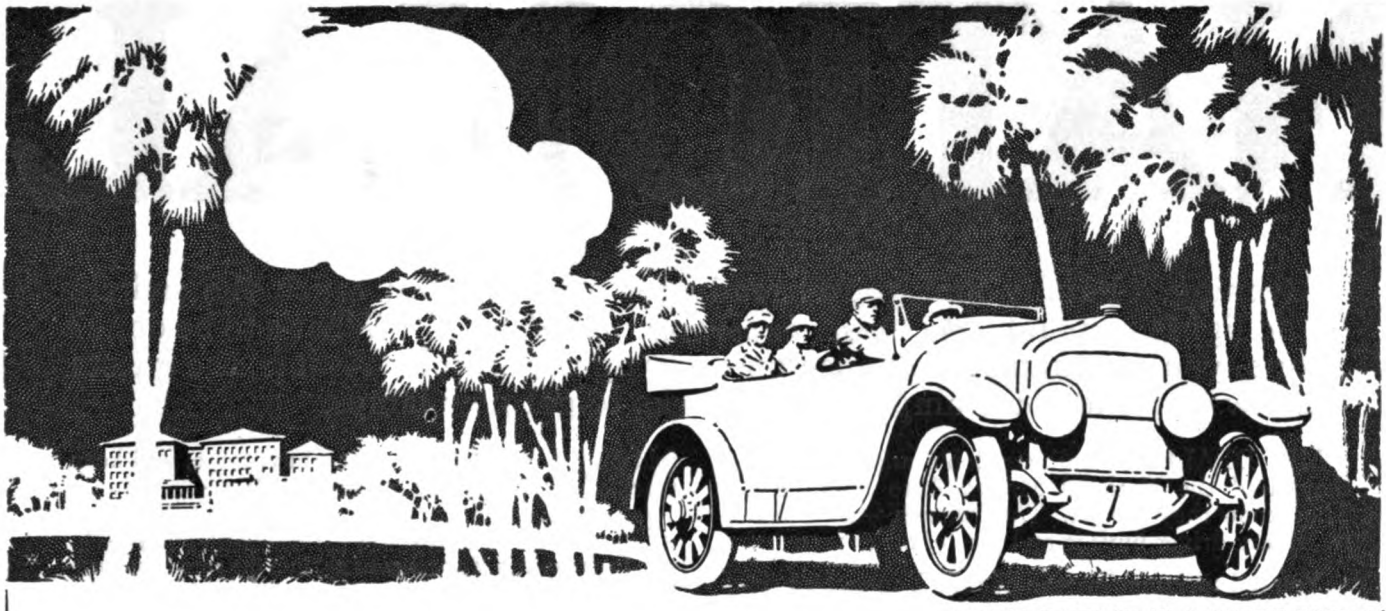
FOREIGN REPRESENTATION

Santiago A. Panzardi	San Juan, Porto Rico
W. A. Dettman	Rocky Point Road, Arncliffe, N. S. W.
Crystal Oil Co.	Madrid, Spain; Milan, Italy
Eddie E. Johnston	Belize, British Honduras
Handel En Industrie Mij. M. Adler	Amsterdam, Holland, Dutch E. Indies
J. Didier & Co.	Lyons, France
J. Roberts & Son	Newmarket, Auckland, New Zealand

DISTRIBUTORS

TIONA OIL COMPANY, Binghamton, N. Y.

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AT PALM BEACH IN A WHITE FORTY

BOSCH

MAGNETO IGNITION COSTS MORE BUT BOSCH-EQUIPT MOTOR CARS DON'T

THAT'S an important statement, Mr. Dealer and Mr. Owner. It means just this—that the extra care, the use of the best materials Bosch can buy, the employment of only expert workmen, make possible the production of an ignition system second to none in its service-giving qualities, and, quite naturally, a trifle higher in its selling price.

But the maker of a Bosch-Equipt Motor Car is willing to absorb that extra cost and charge it up to "+ SERVICE," that is, a little more efficiency and reliability than you expect, but only as much as you are entitled to.

There is no reason why your motor car should not be equipt with the best ignition system obtainable—it costs you no more and you are better served at a point which is most vital to your engine and to your comfort.

Be Satisfied The motor car you buy or sell can be Bosch-Equipt — insist. Specify Bosch

BOSCH MAGNETO COMPANY

224 West 46th STREET NEW YORK CITY, N. Y.

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NATIONAL

Evening. Family and guests ready for a ride. You touch the switch. Some lights respond—*the most important one doesn't!* What's to be done? Alone, you might take a chance on dodging the officers. As it is, the guests must wait while you tramp a dozen blocks to get new lamps.

MR. DEALER! Autoists don't argue whether they need the National MAZDA Auto Lamp Kit. They know they need it. They want it—must have it. Every driver buys it and *glad of the chance.*

You sell six lamps instead of one! You make a six-fold profit! With less stock to buy, store, and keep track of, you sell more, make more!

If you're now selling auto lamps, here's the way to multiply your profit—and if you're *not* now getting this profitable business, this is the way to get into the auto lamp business, *with the least investment of time and money.*



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MAZDA AUTO LAMPS



Complete for Any Car

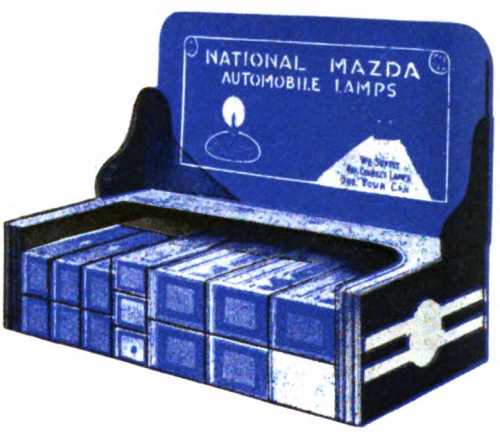
The National MAZDA Auto Lamp Kit contains a complete set of six lamps—head, side, rear and instrument lights—for any car. Includes a pair of the new, much-sought-after MAZDA C Headlights!

Eight Lamp Kit assortments fill the requirements of nearly all the cars.

The new "National Guide to Proper Lamps" tells every LAMP needed on every American made car for 1916, '15, '14, '13, and the "National Guide to Auto Lamp Kits" shows at a glance which KIT supplies the proper lamps for any car. Either Guide sent free on request.

The Auto Lamp Cabinet

Here's a Cabinet of 100 National MAZDA Auto Lamps, so elected that they care for the wants of 90% of American made cars! Maximum assortment—minimum stock. The Cabinet itself is a salesman. On counter, in window, it's a persistent auto lamp advertiser. For selling individual lamps and for refilling the kits, you need this 100-lamp Cabinet.





The Flashlight Lamp Case

Contains 100 lamps for flashlights and electric hand lanterns. Display the case on counter, in window, and get this easy lamp renewal business! It comes without effort and is easy to fill, for a simple index system helps you to produce instantly the proper lamp for any regularly manufactured flashlight or single-cell hand lantern.

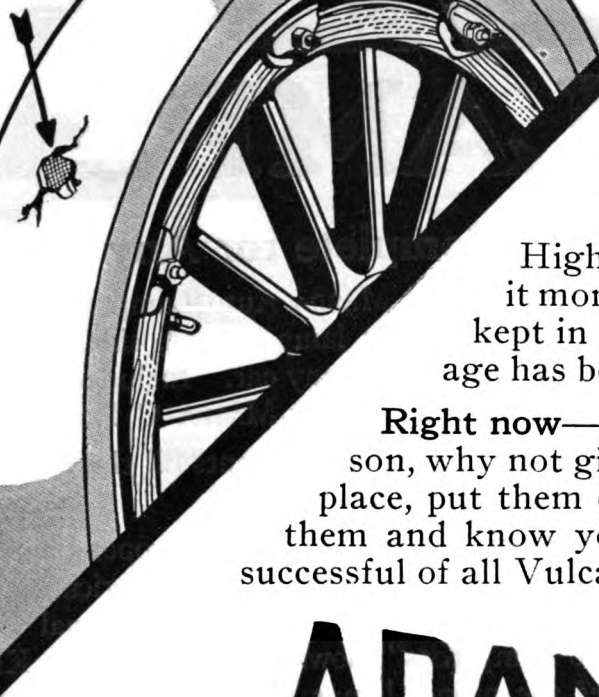
NATIONAL LAMP WORKS
OF GENERAL ELECTRIC CO.
28 Nela Park Cleveland, Ohio



When writing advertisers please mention Motor World

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THE START



Every Car Owner Must Have a Vulcanizer

Higher prices for tires this year make it more imperative than ever that tires be kept in good repair till the last bit of mileage has been taken out.

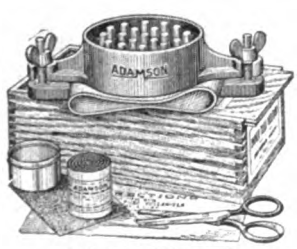
Right now—just at the start of the selling season, why not give "Adamson" Vulcanizers a good place, put them out where your customers can see them and know you sell this best-known and most successful of all Vulcanizers.

ADAMSON VULCANIZERS

You don't have to use any strong-arm sales tactics to convince anyone of the merits of "Adamson" Vulcanizers. An army of more than a million satisfied users of "Adamsons" boost for them and continually send new, profitable business to you.

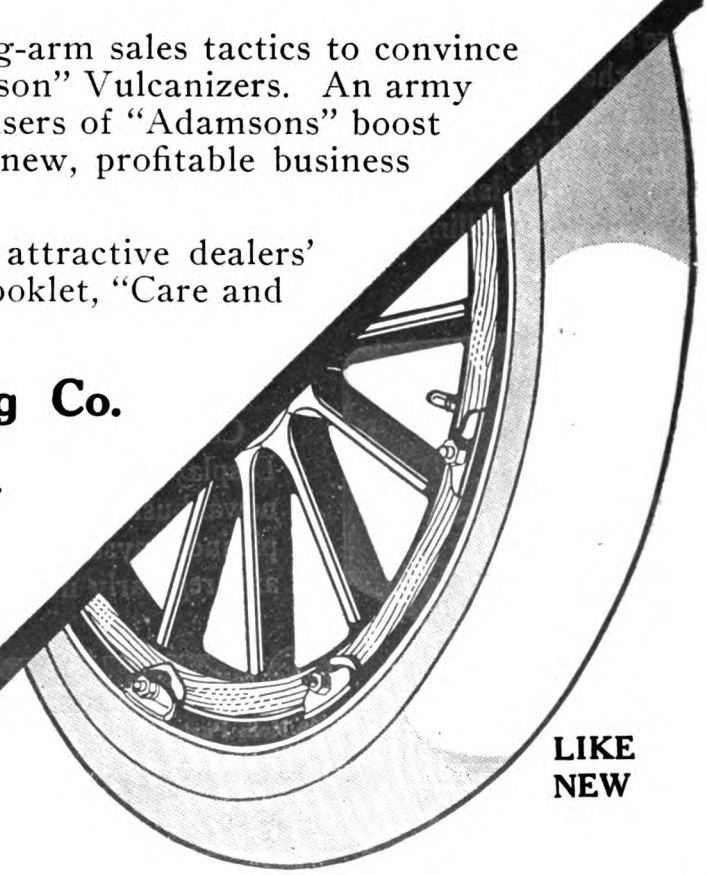
If you haven't written for our attractive dealers' proposition and copies of free booklet, "Care and Repair of Tires," do it today.

Adamson Manufacturing Co.
East Palestine, Ohio



MODEL "T," $2.00
For all sizes of inner tubes

Recommend "Adamson" Repair Gum for best results. Write us for prices.



LIKE NEW

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Mid-Year Model

Mitchell SIX

$1325 F. o. b. Racine
With 127-inch Wheelbase

Mitchell Prestige

One result of our advertising, up to this writing, is a trebled demand for the Mitchell. Even with this 45-acre plant we are running 24 hours a day.

Another is conspicuously new prestige. A new class of buyers are coming for Mitchells. The car is coming to be recognized as a masterpiece of fine engineering.

A New Career

The Mitchell car is 13 years old. The Mid-Year Mitchell is our 17th model. But the car is just starting to enter the limelight as an efficiency production. It is now for the first time enormously advertised. So it this year enters a new career.

But we want you to know what solid foundations have been laid for this coming era.

A Bate-Built Plant

We have here now a model plant, all designed by John W. Bate. Every machine has been selected by this famous efficiency expert.

It represents an investment of $5,000,000. It has a capacity for 25,000 cars per year. And that capacity can be easily expanded.

We believe that no other plant in the country could build a car like the Mitchell at anywhere near our cost. We know that Mr. Bate, in the past six years, has reduced factory costs 50 per cent.

700 Improvements

Mr. Bate and his staff have also worked out 700 improvements in the car itself. They have attained utter simplicity. They have made a car that is almost trouble-proof. They have made it a safe car, extra staunch, despite a remarkable lightness.

They have displaced countless castings with drop forgings, and with parts stamped from toughened steel. They employ a wealth of Chrome-Vanadium steel.

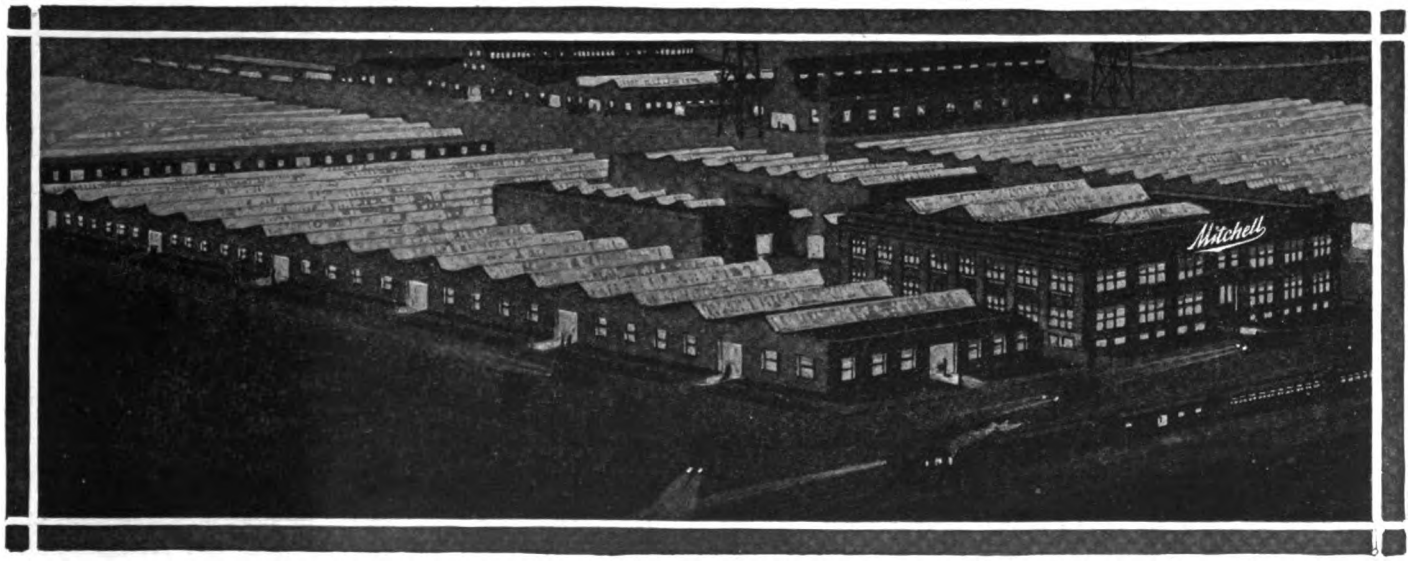
For ease of driving they use a ball-bearing steering gear. For ease of riding they use Bate cantilever springs. Not one of those springs has ever yet been broken.

30-Year Service

As one result, we are able to advertise that one Mitchell car has run 218,732 miles. Six Mitchell cars have averaged 164,372 miles each—or over 30 years of ordinary service.

As another result, we are able to supply every Mitchell dealer with a list of great engineers—men of nation-wide fame—who selected the Mitchell as their personal car.

A ONE-HALF VIEW OF THE MAMMOTH MITCHELL EFFICIENCY PLANT



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257 Cars in One

Mitchell SIX

26 Extra Features

Mitchell Attractions

In the Mid-Year Mitchell we combine more attractions than any other car can show.

In design and equipment it brings out 73 new conceptions. It embodies all the best features exhibited at the January Shows. It combines in one car all the popular new touches we found in 257 Show models.

26 Wanted Extras

In addition, this Mid-Year Mitchell has 26 extras, each of which forms an attraction. Each is a feature which men want. Each is something which most other makers omit.

These include a power tire pump, a new-type control, an extra-cost carburetor, reversible headlights, an engine primer at the driver's hand. They include a light in the tonneau, a locked compartment, springs which need no shock absorbers.

There are 26 of those extras, very few of which are found in any other car.

New Comforts

In a demonstration one will find this the easiest riding car ever known. That is due to the Bate cantilever springs.

One will find this the easiest car to drive. That is due to oversize steering gear, fitted with ball bearings, and to the cane control.

One will find it a wonderful performer. No car can out-match it. And owners will report a long mileage per gallon.

A Solid Alliance

There are many sections where dealers may yet obtain a Mitchell franchise. And they will find it a solid alliance.

We have the factory and we have the car to meet all the coming conditions. We have the age, the experience, the managerial ability.

We have the advertising—$500,000 this season—to let all men know the facts. And the men who know them are bound to respect us.

We believe that no other car in this class offers a like opportunity.

$1325 F. o. b. Racine

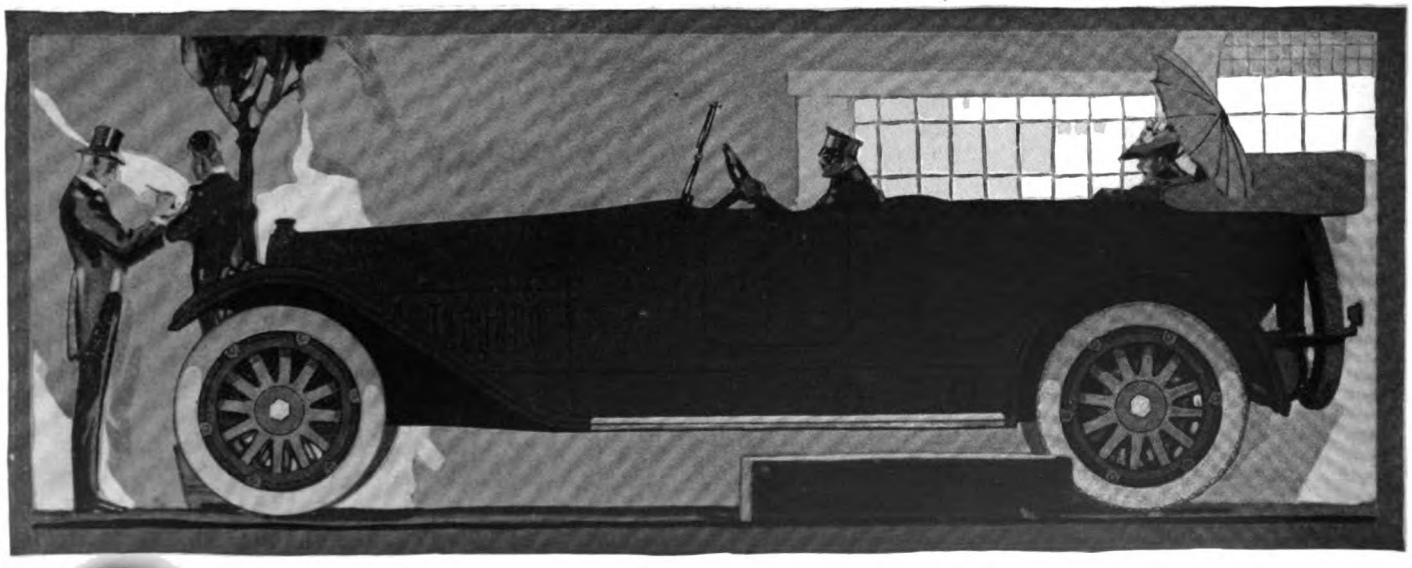
For 5-Passenger Touring Car or 3-Passenger Roadster

7-Passenger Touring Body, $35 Extra

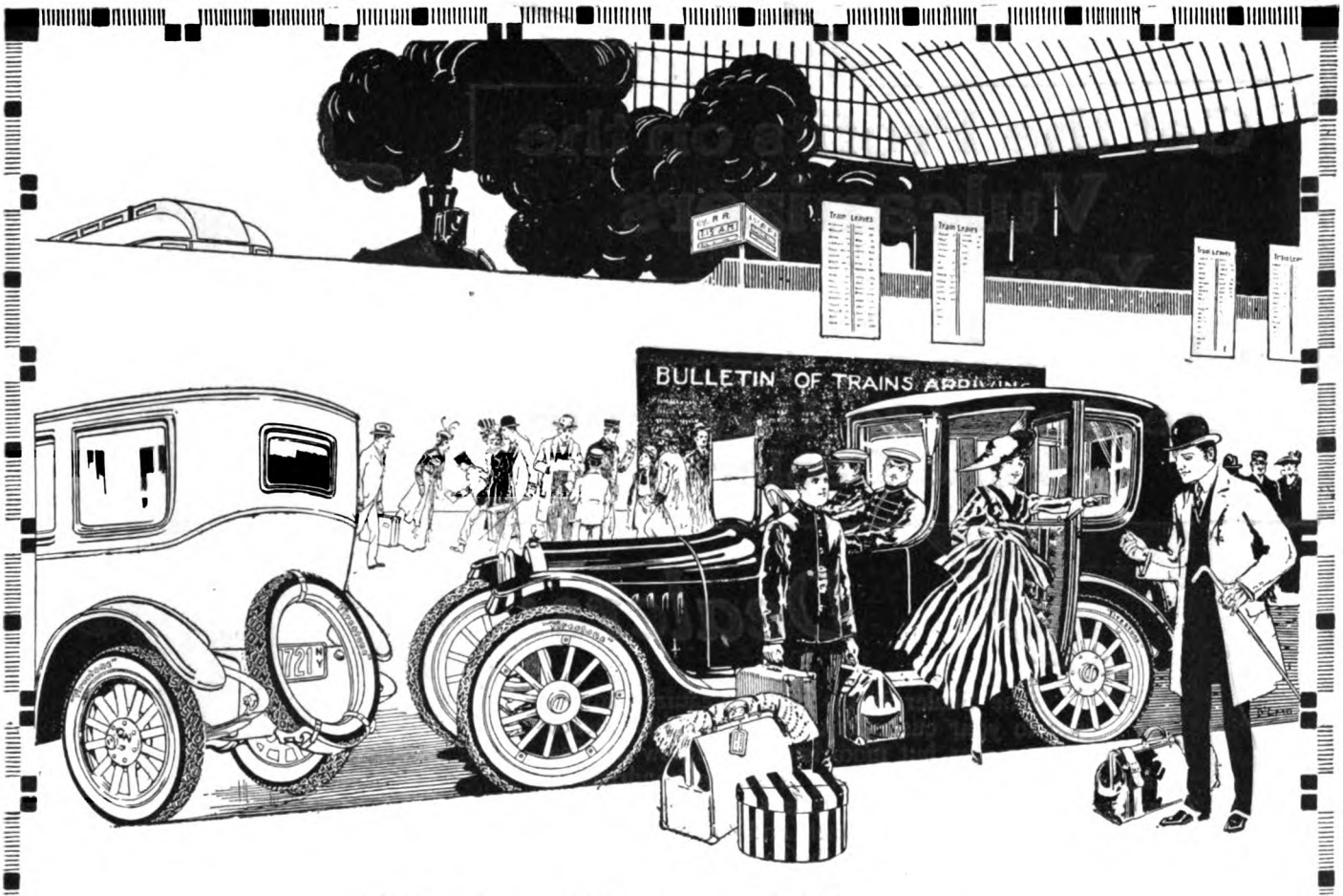
High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features.

In territories still open we invite prospective dealers to investigate the facts. We are very particular. We want and deserve men of the highest grade. But to such men we have something to offer which will surely arouse their enthusiasm.

Mitchell-Lewis Motor Company
Racine, Wisconsin



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Make Travel Sure With Firestone Equipment

TRAIN and Boat, like "Time and Tide," wait for no man. Tire-delay and trouble have spoiled many a touring trip. When demands of travel are imperative—then is the time you should have the ever-reliable service of

Firestone

RED Side Wall BLACK Tread Tires

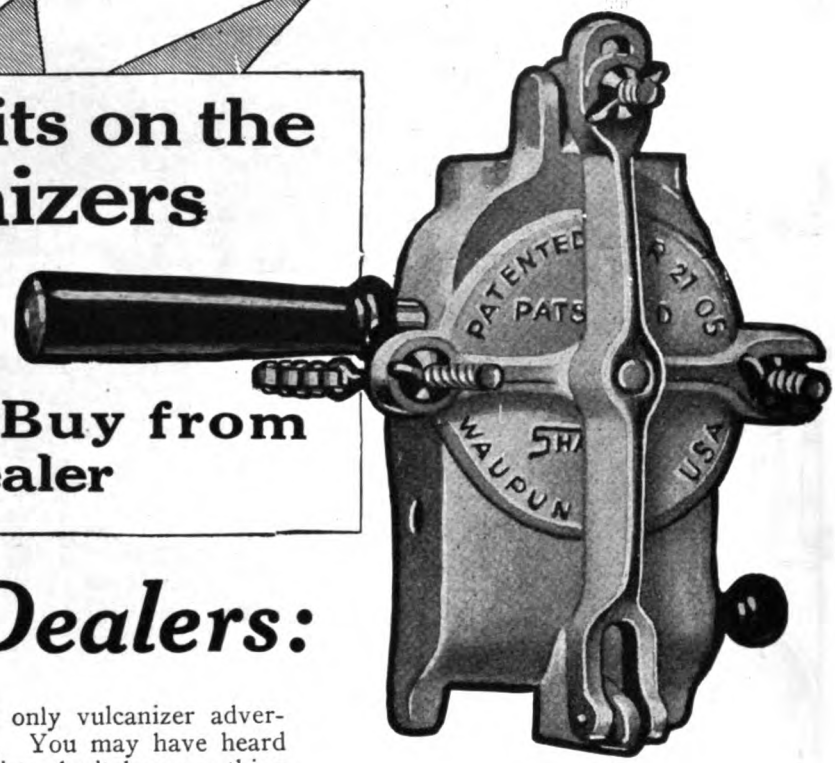
For cross-country work or spin along boulevard—for hot weather, when the road grinds like an emery wheel, or rain that makes the boulevard glassy, Firestone Non-Skid Tires are the answer.

DEALERS—Firestone gives quality in product to begin with and sales-helps without end. Send for latest book of Dealer Helps.

Firestone Tire and Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere

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Get the Profits on the Vulcanizers Your Customers Are Going to Buy from Some Dealer



Dealers:

The Shaler is the only vulcanizer advertised to your customers. You may have heard of other makes but motorists don't know a thing about them. Our advertising is selling hundreds of vulcanizers every day—for dealers who carry them in stock. There is good profit in the vulcanizer itself and you make as big a profit on the repair material necessary as you do on the patches and gums you are selling.

Your customers are going to give these profits to some dealer. Why not you? Remember, no car is equipped with a vulcanizer, so the motorist must BUY one somewhere.

SHALER Vulcanizers

They are designed to be carried in the tool box for making emergency tube repairs that are permanent. In addition they mend small casing cuts, which if neglected would let in dirt and water to rot the fabric and cause blowouts. Your reputation for selling good tires will be increased with every customer who cares for his tires with a Shaler.

Every Shaler you sell helps you sell more, because the user tells his friends about the successful results it gives him.

Shaler vulcanizers retail from $2.00 up. There are models for every need, heated by gasoline, alcohol, steam or electricity.

We also make vulcanizing plants for repair shop use.

Write To-day for Catalog and Terms

Send coupon for our new complete catalog—dealers' discounts, terms for handling Shaler Tourist Vulcanizers.

C. A. SHALER CO.
421 Fourth St., Waupun, Wis.

Canadian Distributors:
JOHN MILLEN & SON, LIMITED
Toronto, Winnipeg, Montreal, Vancouver

Mail Coupon for Catalog!

C. A. SHALER CO.,
421 Fourth St., Waupun, Wis.

Please send me new Catalog Shaler Vulcanizers—Dealers' Prices, Terms, etc.

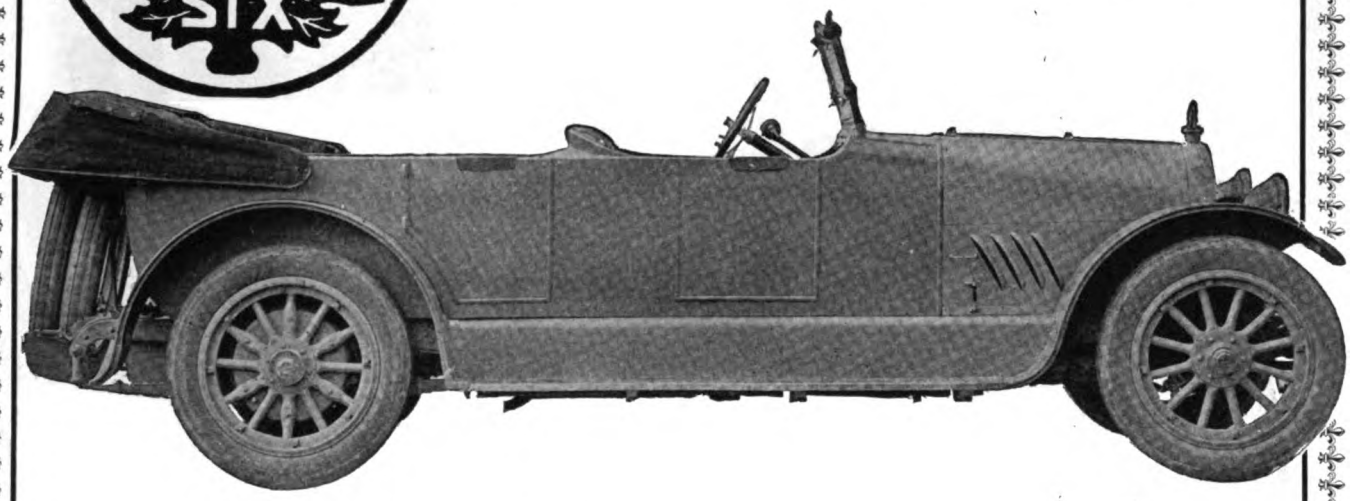
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McFARLAN SIX

ANOTHER NEW NINETY



THE McFARLAN MOTOR COMPANY offer you the result of another year's tireless effort to produce a high-powered, six-cylinder motor car of the highest efficiency, greatest dependability and the most correct design. Following their rigid policy of improving motor car construction wherever possible, but of adopting no change that has not been under close observation for many months, the McFarlan engineers have felt that they could best serve the public by directing all their thought, care, skill and energy to one chassis.

The new type cars are unusually low in appearance, immediately responsive to the call for speed or power. They are silent, restful and dependable.

The McFarlan body designs which have been much sought for many years are more distinctive than ever before. For the coming season we offer the most correct designs for every requirement both in open and closed models.

These luxurious cars are not expensive when the exclusive design and fine materials are considered.

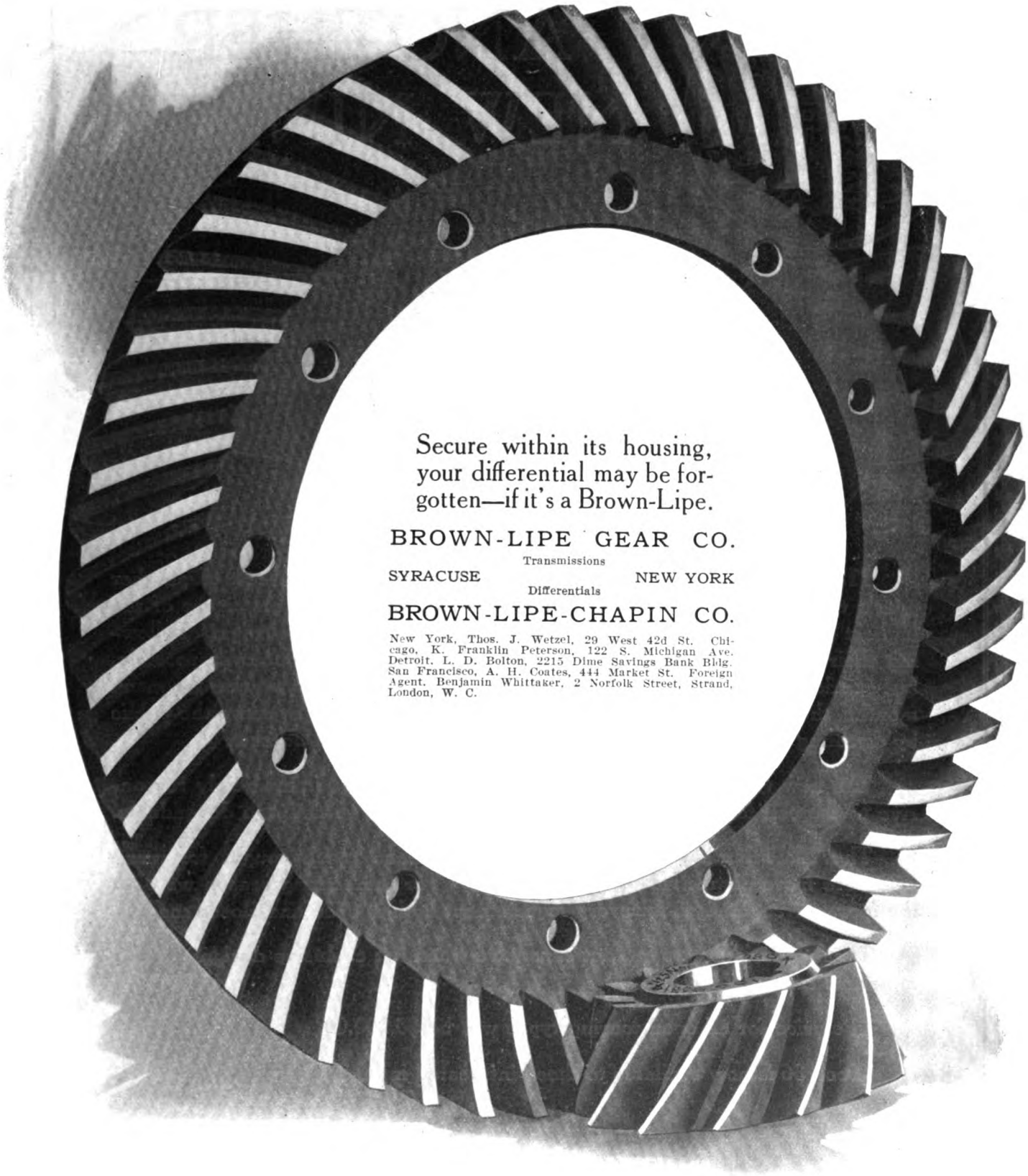
The price for all open touring types will be $3,200.00.

(Book 36 is now available to those interested in luxurious cars.)

McFARLAN MOTOR COMPANY

CONNERSVILLE INDIANA

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FEDERAL

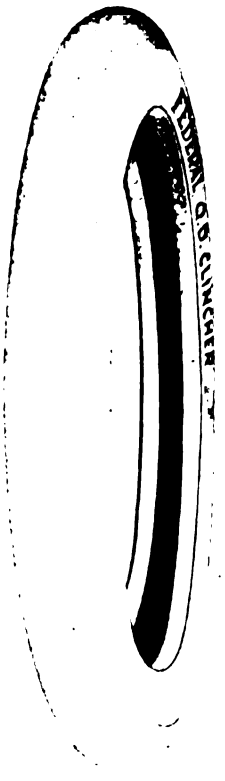
(DOUBLE-CABLE-BASE)

TIRES

RUGGED (White) TREAD



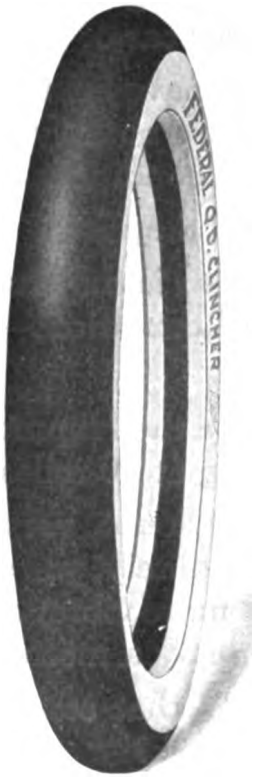
PLAIN (White) TREAD



TRAFFIK (Black) TREAD



PLAIN (Black) TREAD



BUILT FOR EXTRA SERVICE

Attractive Sales Proposition for Jobbers and Distributors

THE FEDERAL RUBBER CO.

OF ILLINOIS

FACTORIES: CUDAHY, WISCONSIN

Mfrs. of Federal Automobile Tires, Tubes and Sundries, Motorcycle, Bicycle and Carriage Tires, Rubber Heels, Horse Shoe Pads, Rubber Matting and Mechanical Rubber Goods

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The Mark of Superior Motor Car Service

What About Vibration?

When you ask about Hupmobile vibration, you are probably thinking again of some multi-cylinder car of higher price.

You have heard that some of them are notably steady under certain conditions.

And they are.

But so is the Hupmobile, under *all* conditions—at any road speed.

Take the Hupmobile when it is going at 50 miles an hour.

We doubt very much—we put it politely, you see—if it registers more vibration than many and many a motor at 25 miles.

Does that sound like rather "tall" talk?

It is, we will grant you—but fortunately it is capable of demonstration.

Our dealers freely invite prospects to ride in the Hupmobile at fifty miles an hour, and then try some other cars at half that speed.

They do not say what will happen in the other case.

They leave the whole question for the prospect to settle on the score of performance.

The result of this, and other phases of the Hupmobile's wonderful performance, is that Hupmobile dealers are not feeling multi-cylinder competition. It is the other way about, as a rule.

If you would like to be in such a fortunate position, get in touch with us with reference to your territory.

Courtesy First—Safety for others in Motoring



Hupp Motor Car Corporation, Detroit, Mich.

Five-passenger Touring Car	*$1185*
Roadster - - -	*$1185*
7-passenger Touring Car	*$1340*

F.O.B. Detroit.

Write for particulars of Hupmobile free-coupon service representation

When writing advertisers please mention Motor World

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When there's no chance to pump as you use

In tight corners, with no elbow room—that's where the J-M Fire Extinguisher proves itself. You can operate it as a pump where there is room, but it has this ***additional*** and ***exclusive*** advantage over all other hand type extinguishers—the contents can be discharged by air pressure, created by a few quick strokes with nozzle closed. Opening the nozzle releases a powerful steady stream, deadly to all incipient fires, whether of gasoline, grease, oil, kerosene, or electrical origin. The J-M Fire Extinguisher is the only one-quart type with this invaluable ***two-way*** operation.

Inspected, tested, and labelled by the Underwriter's Laboratories, Inc., and listed as an approved fire appliance by the National Board of Fire Underwriters.

Entitles car owners to a 15% reduction in auto fire insurance.

J-M Fire Extinguisher Liquid for recharging is sold in cans at $1.00. This is the only liquid recommended and guaranteed for use in the J-M Fire Extinguisher.



H. W. JOHNS-MANVILLE CO.

Executive Offices, 296 Madison Ave., New York

Boston	Cleveland	Philadelphia	St. Louis	Seattle
Chicago	New York	Pittsburgh	San Francisco	Toronto

$8.00
Brass or Nickel Finish Bracket Included

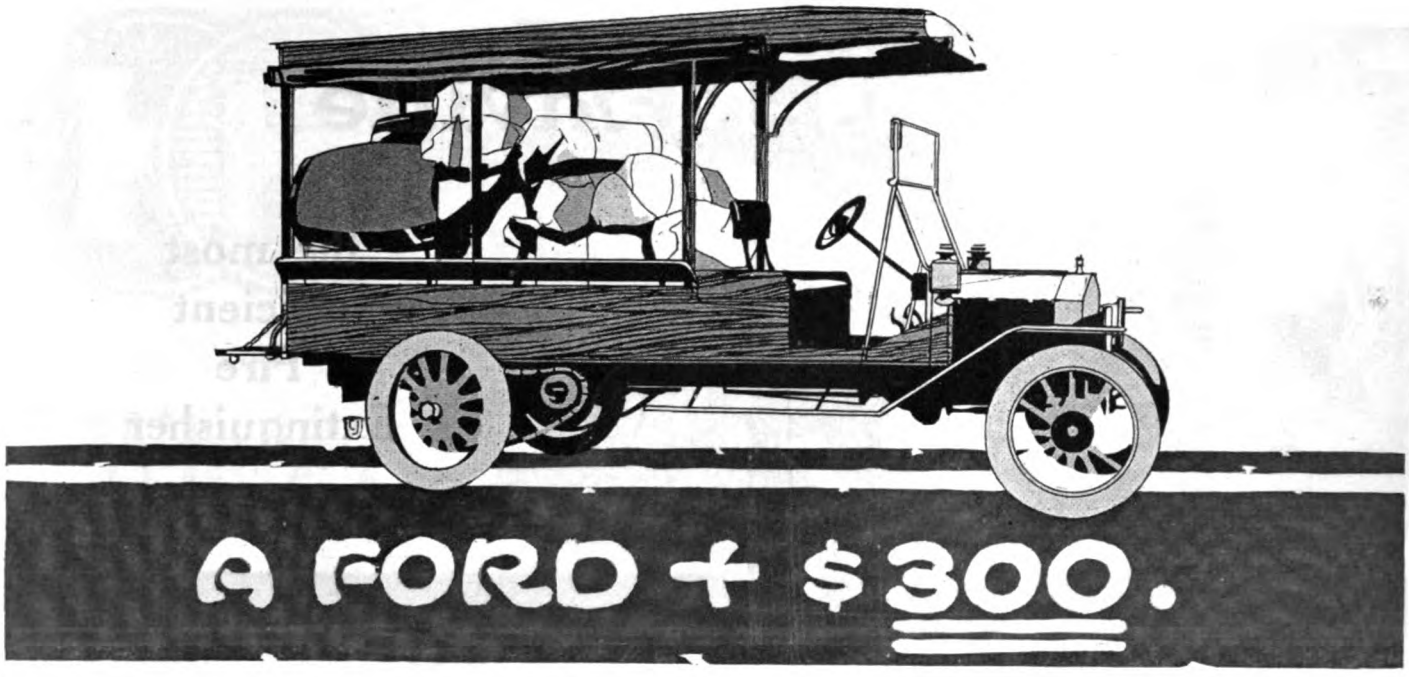
TO THE TRADE:

Discounts are generous, rigidly maintained and uniform, regardless of size of order. Quick turnovers and protected profits are assured.

Write the nearest J-M Branch for full details of the J-M Trade Policy—a policy that protects the legitimate trade.



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—gives the merchant this 1-ton truck.

WE KNOW YOU DEALERS

—can sell it fast because it stands alone in Service as well as Price—so we do not ask you to contract for a quantity—just get a demonstrator, let your customers see it, and do the biggest light truck business in your community.

That's what others are actually doing NOW! Look at the PRICE! Study the make-up of the

RAYFORD
COMMERCIAL CHASSIS

and be convinced of its logical, unequalled appeal to the truck buyer.

Then fill out and mail attached coupon asking for our Unique Dealer Proposition. It will surprise and please you.

The Rayford Method

leaves the Ford chassis absolutely untouched except that sprockets are attached to Ford rear hubs displacing Ford rear wheels which are placed on front to utilize the ½-inch larger tires.

The Ravford load-carrying solid rear axle carries 90% of the dead load, and scale tests show that front axle carries no more weight than it did on the Ford touring car.

Our standard gear ratio is 2 to 1 (in addition to 3.63 to 1 of Ford), reducing speed to 20 miles per hour, and increasing tractive power of Ford motor to easily pull over a ton dead load in high gear on any hill which an unconverted Ford can take.

Guaranteed for 50% overload—body extended 10 ft. back of front seat—attached in 2 hours—fits any model T Ford.

Rayford Company

Palethorp and Indiana Aves.
PHILADELPHIA, PA.

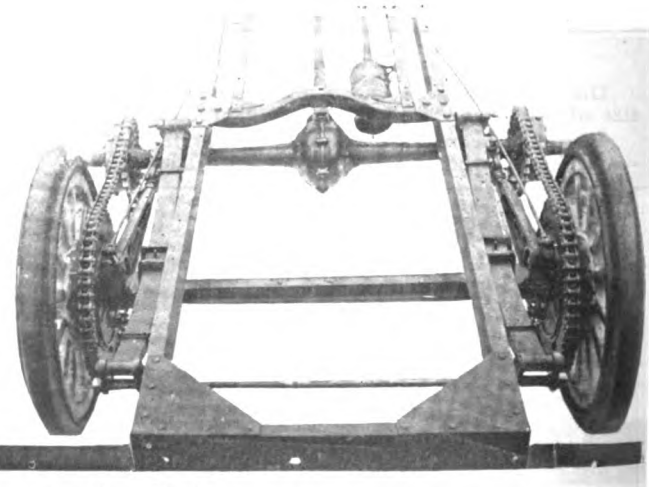
Rayford Company,
Palethorp and Indiana Aves.,
Philadelphia, Pa.

Dear Sirs:—

Kindly send me details regarding your Unusual Distributor's proposition.

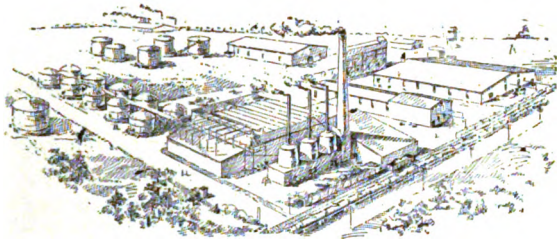
Name .....

Address.....

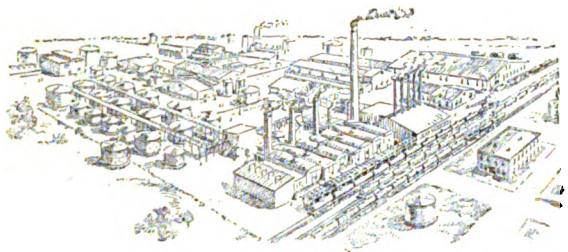


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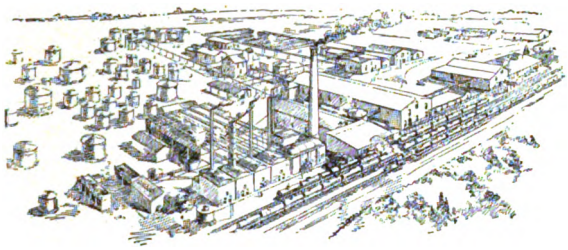
An Announcement



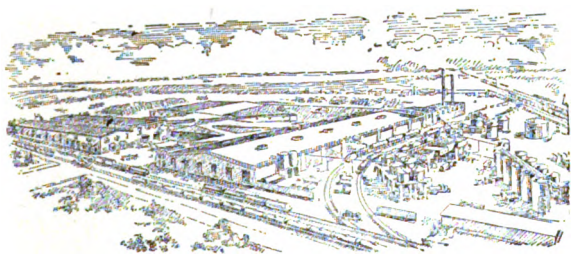
TITUSVILLE, PA.



TITUSVILLE, PA.



WARREN, PA.



PHILADELPHIA, PA.

THE Crew Levick Company, the oldest and one of the major refiners and distributors of petroleum products of the world have completed plans for marketing a most comprehensive line of automobile lubricants and specialties.

Most of the products that will constitute this line are not new, but their distribution, which has heretofore been confined to an exclusive patronage in a limited section of the country will be extended nationally.

This extension of territory has been made necessary by a constantly widening circle of demand growing from the reputation for high quality enjoyed by Crew Levick products for over half a century.

[SEE ANNOUNCEMENT TO ACCESSORY JOBBERS AND DEALERS ON THE REVERSE SIDE OF THIS SHEET]

GENERAL OFFICES
LAND TITLE BUILDING, PHILADELPHIA, U. S. A.

REFINERIES
PENNSYLVANIA PARAFFINE WORKS
BESSEMER REFINING COMPANY
GLADE OIL WORKS
SEABOARD OIL WORKS

PRODUCING COMPANIES
MUIR OIL COMPANY, COMBINATION OIL COMPANY } PENNSYLVANIA
WARREN COMPANY, ILLINOIS, OKLAHOMA

CABLE ADDRESS "CREW" PHILADELPHIA
A.B.C. LIEBER, WESTERN UNION & PRIVATE CODES
FOREIGN OFFICE, LIVERPOOL, ENG.

ADDITIONAL BRANCH OFFICES IN EUROPE, ASIA, AFRICA, AUSTRALIA AND SOUTH AMERICA

CREW LEVICK

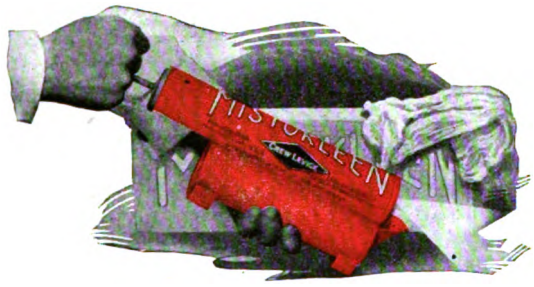
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An Opportunity for the Accessory Dealer



GREASE IN TUBES

Serviceable, cleanly and economical method for carrying cup, spring, transmission and differential grease. Three tubes to a carton—LINCOLN HIGHWAY KIT.



MISTOKLEEN

Instant body cleaner, sprayed on and wiped dry with MISTO-KLOTH, giving high, lasting lustre. Extra quart, gallon and five gallon cans.

THESE Crew Levick products will be distributed only through dealers, supply houses, garages and jobbers of the highest order, and those willing to co-operate and take advantage of a most comprehensive sales and advertising plan.

We would like to communicate with all such distributors at once, as, owing to the extensiveness of these plans, complete distribution will be arranged more promptly than is usual.

In writing we suggest that you give us an outline of your organization and facilities, as the ability to maintain a high type of service will be the important factor in the selection of Crew Levick distributors.

Crew Levick Company

2203-2231 LAND TITLE BUILDING
Philadelphia, U. S. A.



OTHER CREW LEVICK PRODUCTS

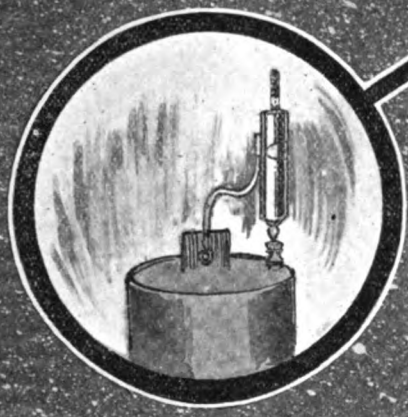
MISTOKLEEN IN SPRAYERS and in quart, gallon and five gallon cans. MISTOKLOTH: cleaning cloth in packages. GREASE IN TUBES. Lincoln Highway Kit (assorted). Cup Grease, Transmission and Differential Grease, Spring Grease, MOTOR OILS AND GREASES for every purpose. PENNSYLVANIA GASOLINE.

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Indestructible

No matter what abuse you give them they **stand up.**



Accurate

After smashing them around they come up smiling and register with absolute correctness.



Handy

As convenient as a fountain pen in the pocket —or a tool in your kit—as useful as a watch.

BENFORD

BATTERY TESTERS

The illustrations show that in addition to positive service which we absolutely guarantee for five years, they will stand up under any abuse or accident, be accurate always and that their convenience makes it easy to carry them around—which a car owner must do to know the condition of his Batteries at all times.

STORAGE BATTERY TESTER - $1.50 **DRY BATTERY TESTER - $1.00**

DEALERS—Are you in line with the profit procession? Get in—the parade is under way

Benford Mfg. Co.

Mt. Vernon, New York



Testing a Storage Battery



Testing a Dry Battery

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"Burford" MOTOR TRUCKS

Internal-Gear-Drive
Two Ton
Chassis, $2250.00

Sheldon Worm Drive
Four Ton
Chassis, $3600.00

Standardized as to Parts—Perfected as to Workmanship



FOUR-TON WORM DRIVE

Burford Designed—These commercial vehicles embody principles of construction that deliver the road service the successful business man today demands.

Some Two-Ton Units—Buda Motor—Warner Transmission—Ross Steering Gear—Eisemann Magneto—Zenith Carburetor—Firestone Tires—Burford Internal Gear Drive.

Some Four-Ton Units—Waukesha Motor—Sheldon Axles—David Brown Worm Drive—Perfection Springs—Brown-Lipe Transmission—United States Tires.

A Real Distributor's Proposition For Real Distributors

— Wire or Write —

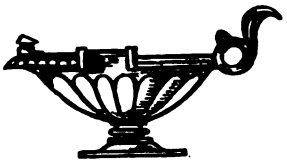
THE BURFORD MOTOR TRUCK CO.

General Offices: 351-359 Spitzer Bldg. - - Toledo, Ohio

FACTORY: FREMONT, OHIO

W. M. LEACH—Director Of Sales

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"The Light That Failed"

Many dealers and garage owners throughout the United States have suffered defeat in business, because they did not adopt some adequate accounting system to direct them into profitable channels, and take them from the broad and too easily traveled path of loss—at the end of which was failure.

How much did you make in June?

Maybe you think so—but do you know?

How much will you make in 1916?

Does your repairshop gain or lose?

How much do you make when you charge a customer for an hour of labor?

How do your May and June collections compare?

If you don't know these things you are not on the road to business success. You should have an accurate and timely record of all parts of your business. You should have a simplified and easy to operate accounting system that will light up the dark corners of your business—that will make your business road safe to travel.

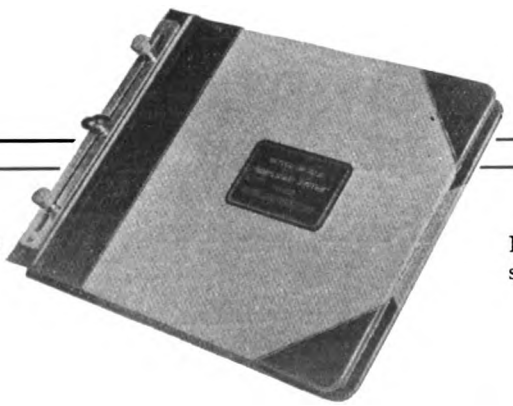
Motor World has devised such a system. It costs $12 complete. Everything in one book. We advise you to get SOME kind, whether it is Motor World's or some other. But if you want this one (which is designed by experts who have made a careful study of the various problems of YOUR business) send $12—check or money order—and plan to get started on the right track August 1st.

Booklet with a complete illustrated description of the system (price $1.00) will be sent complimentary with each system. Send your order at once. Address:

The Motor World Publishing Co.

System Department

239 West 39th Street New York City



This is the only book required—size 11 x 14 inches—canvas, leather corners.

Includes 100 income sheets—100 expense sheets—500 customers' sheets.

When writing advertisers please mention Motor World

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Look for the name SPLITDORF on the Green Jacket, which is hexagonal in shape. Refuse imitations or "just as good" substitutes. The SPLITDORF Trade Mark appears on every SPLITDORF PLUG, and the Trade Mark carries the SPLITDORF GUARANTEE

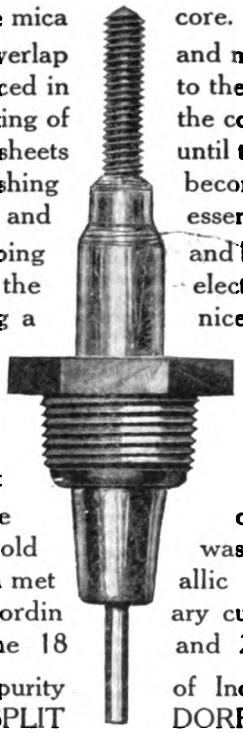
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The laterally wound mica core is the dominating feature of SPLITDORF SPARK PLUGS from the actual usage standpoint. The distinguishing green jacket, while adding a finish to the plug, really serves as a protection to the mica core — and it is the mica core insulation that places SPLITDORF PLUGS in their position of supremacy.

Automatic machinery accounts for the conversion of sections of solid round steel into finished shells, and likewise the bushings and spindles, but the human equation enters more strongly into the most interesting and important process of wrapping and completing the mica core.

The sheets must overlap and must be built up preparatory to being forced in to the bushing. Machinery takes care of the setting of the core in the bushing and compressing the mica sheets until the mica between the spindle and the bushing becomes as solid as though it were one sheet and essentially homogeneous.

Trimming and shaping and boring for the electrode and riveting home the electrode, are all precise operations, demanding a nicety of exactitude only possible with the most complicated automatic machinery, but the lateral packing of the mica cores in SPLITDORF Spark Plugs is a feature that gives them their pre-eminence in the hardest usage.



The Laterally Wrapped Mica Core

There is no chance of oil seeping through, as in the case of the old washer process, and even were it possible for a metallic substance to get between the layers, no ordinary current could possibly puncture through the 18 and 20 layers used.

Flexibility and purity of India ruby mica are great points in SPLITDORF Plug construction. Skilled operators scale it to sheets of marvellous thinness — the process is long and costly, but the results achieved in manufacture and usage warrant the outlay.

It is never necessary to throw a SPLITDORF Plug away — the whole core and bushing can be easily removed. The whole plug, as a matter of fact, is simplicity itself in the taking apart for inspection, renewal or cleaning.

There are no acute angles in the shell, and this enables it to be easily and thoroughly scoured. A little gasoline and a piece of coarse cloth will invariably remove all carbon and renew the mica core.

Look for the name SPLITDORF on the Green Jacket, which is hexagonal in shape. Refuse imitations or "just as good" substitutes. The SPLITDORF Trade Mark appears on every SPLITDORF PLUG, and the Trade Mark carries the SPLITDORF GUARANTEE

High H-S Service

H-S Repair Parts

400 of them for the Ford Car

You know—Everybody knows

That our successful fight for a generous share of the Repair Parts Trade has been won by convincing the Repair Man that H-S Quality exists not merely in the hypnotism of advertising. It is a reality apparent to all who have handled and used our parts and compared them with others.

Send for No. 10 combination order blank and price list.

Are you interested in Repair Parts for Overland? Our list of these is nearly ready. Send for it.

HILL-SMITH METAL GOODS COMPANY
88 Pearl Street, corner High Street
BOSTON, MASS.

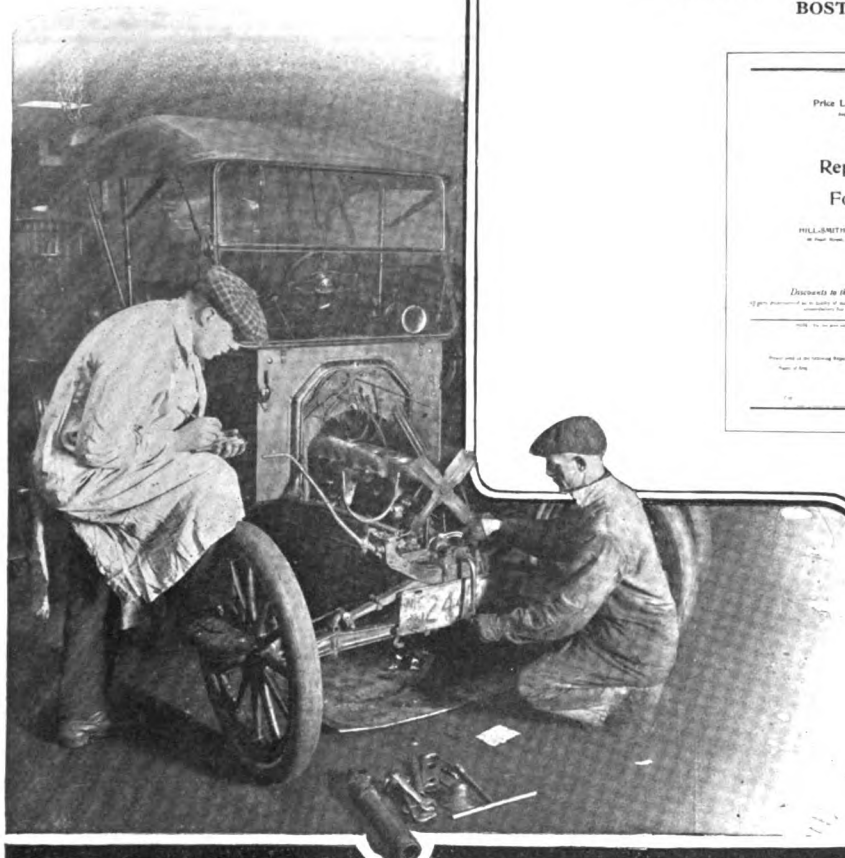

Price List and Order Blank

Repair Parts
for
Ford Cars

HILL-SMITH METAL GOODS COMPANY

Discounts to the trade quoted on application

ORDER



HILL-SMITH METAL GOODS Co
88 PEARL ST, COR. HIGH ST. BOSTON, MASS.

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Little Giant Spiral Fluted Taper Reamer Sets

The Spiral Fluted is the Only Smooth-Cutting Reamer

We have discontinued manufacturing straight-fluted reamers, because of the superiority of the spiral flute.

The left hand spiral flute gives a shearing cut, reducing the strain on the cutting edge. The reamer has a double support in the hole, which steadies it in action regardless of faults or defects in the metal.

Our Reamer Sets Are Complete with Bit Brace or Straight Shanks.

These sets contain all the sizes generally used in automobile repair work.



No. 705—5 sizes.
No. 709—9 sizes.

Spiral Fluted Taper Reamer Sets for Automobile Kits

Put up in substantial leather rolls, or wooden cases. Send today for our bulletin, "Tools for the Automobile," showing automobile tap and die sets and other indispensable tools for the garage and repair shops.

We are the largest manufacturers of screw-cutting tools and solve screw-cutting problems for automobile manufacturers.

Greenfield Tap & Die Corporation

Greenfield, Mass.

New York
Chicago
Philadelphia
Detroit
Galt, Ont.



No. 1423—6 sizes.

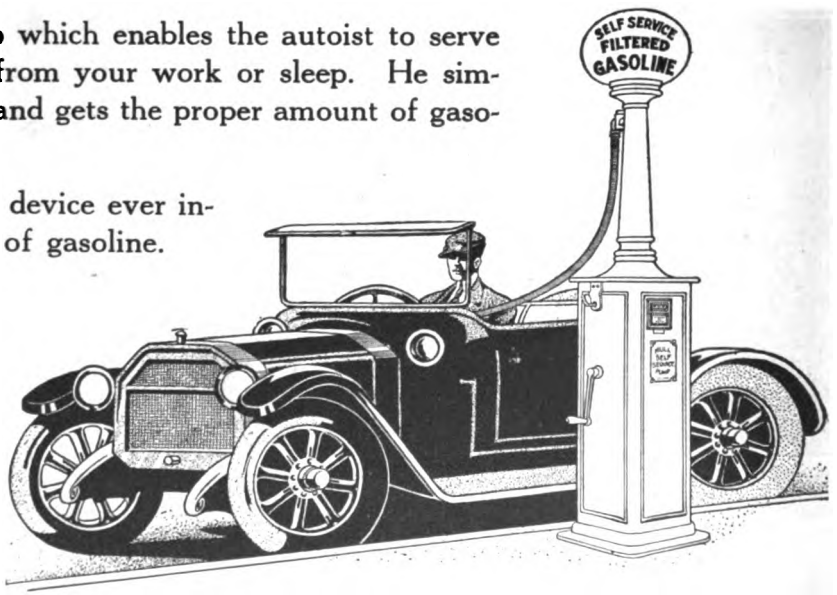
Start *This* To Work For You Day and Night

"The Help Yourself Way To Gasoline"—

The new vending gasoline pump which enables the autoist to serve **himself without disturbing you** from your work or sleep. He simply drops required coin into slot and gets the proper amount of gasoline to the very ounce.

Most convenient and economical device ever invented for the handler and user of gasoline.

Write today for particulars regarding this and other Hull Garage Service devices.



Hull Pump & Tank Co.
INCORPORATED
Box 2001 Owensboro, Ky.
"Salesman Wanted Everywhere"

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A Mighty Big-Little Line

Nowadays when betterment is the order of the day, and the old adages are obsolete, it can't be truthfully claimed an article of so much importance as "Platinum" Spark Points cannot be improved upon. The fellow who so claims is a skeptic or back number.

If *all* jobbers and dealers *knew*

What some jobbers and dealers *know*—from two years' experience, about all would be cashing in on the New Era Indestructible Sparking Points (contacts), besides serving their customers better, and would know *why* we can positively guarantee to replace at *any time ever* returned for any reason.

Why it is more feasible for *every* garage and repairman to carry at least *ten of our three sizes.*

They can the very same day fit *every* make vibrator spring or screw and most magnetos—instead of perhaps having *some* kind of vibrator springs and not the right make—thus causing two or three days' hang up of owner's car.

The dealer makes *more* profit for his quicker service to customer.

The jobber can quickly supply in small linen envelopes, of ten of each three sizes, and *all* will be *better* satisfied.

Platinum and precious metals are now so expensive that most contact points have only a *thin* shell or surface of the real stuff and *soon* wears through.

The New Era Indestructible Sparking Points are the same clear through, and if ever worn or filed down until through good service we will replace any returned. *Not even all platinum* dare do this.

Is it not worth while to credit what other jobbers, manufacturers and garagemen say of their experience and *try them thoroughly?*

Take two minutes to read the convincing letters on border.

Why not help stop too frequent ignition troubles by selling New Era Indestructible Sparking contacts?

If your jobber hasn't them catalogued, order of us and give their name.

Beware of anything "just as good" or not in little "New Era" linen envelopes.

Better order trial package ten of three sizes, discount double what is given on platinum, etc.

NEW ERA SPRING & SPECIALTY CO.

871 Woodward Avenue, Detroit, Mich.



Stock No. 1 ..... $1.00
Size No. 9 Ga. wire 10/64" deep

Stock No. 2 ..... $0.75
Size No. 12 Ga. wire 7/64" deep

Stock No. 3 ..... $0.75
Size No. 9 Ga. wire 3/64" deep

Read the Following They Speak for Themselves

Kansas City, Mo.

Gentlemen:—Replying to yours of October 25th, will say that our experience with the New Era Indestructible Sparking Points on what we have sold has been very good as we have had no complaints and of course have not had to replace any of them.

Yours truly,
MOTOR & MACHINISTS SUPPLY CO.
J. W. Barnhisel.

Toledo, Ohio, Jan. 22.

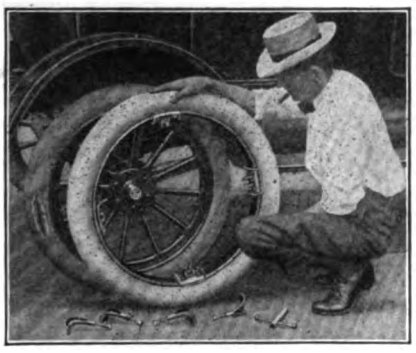
Gentlemen:—The Sparking Points you gave me to try out last October were put in a vibrator and attached to a motor which has been running steadily in the factory a sufficient length of time to cover 3,000 miles. I have not made one adjustment of the points and they are not pitted in the least. This demonstration of durability and efficiency satisfied me absolutely that the points are all you claim, and we are using them regularly.

Yours truly, S. J. CHUBUCK,
Assistant Supt. The Consolidated Mfg. Co.

Hillsdale, Mich., Dec. 17.

Gentlemen:—Yours of the 12th just received. Would say in reply that the points are giving excellent service and I am more than pleased with them. We are using them on our rectifier, and they are giving the best of satisfaction. We run them almost continually. About the only time that they are shut off is when we change the storage battery that we are charging. The points that we put on magneto and Ford Coils are doing just as good work. Could not do any better.

Yours respectfully, JUDSON LEWIS GARAGE.



METHOD OF MOUNTING

TWIN-RIM

PATENTED FEB., 1916

A Demountable Rim for FORD CARS

AND ALL OTHER 30"x3½" OR 30"x3" CLINCHER RIMS

IN CASE OF TIRE TROUBLE the Twin-Rim with inflated tire is placed beside the damaged tire, the four bolts tightened and you are ready to run again. Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is "They would not be without the TWIN-RIM."

You Don't Have to Remove Damaged Tires

It is strong and durable; looks well on your car. Fits either front or rear wheels. An absolute necessity for Doctors, Salesmen, Tourists, Taxicabs and Deliveries.

TWIN-RIM $5.00

SPECIAL TIRE HOLDER FOR $2.00

DEALERS—Through our advertising campaign we are reaching the Ford Car Owners all over the United States. Get your share of this business. Write now for our dealer proposition.

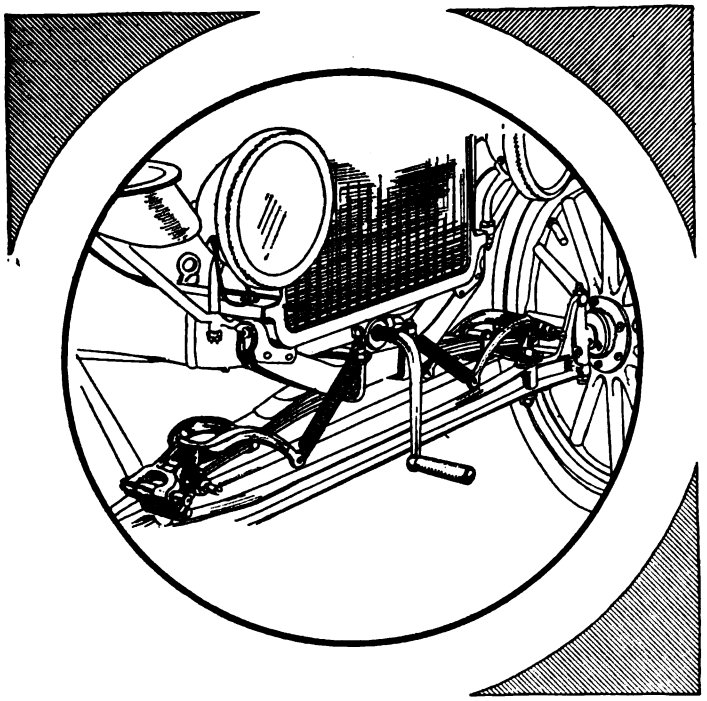
TWIN-RIM CO., INC.

103 Massachusetts Avenue Boston, Mass.



MOUNTED READY TO RUN

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The Aristocrat of Shock Absorbers for Fords

The Volcano Stables and Transportation Company of Hilo, Hawaii, came to America to buy Shock Absorbers. They bought W & C's. Why?

Because the W & C Shock Absorber is above the ordinary in workmanship, material, appearance and riding qualities. Because the W & C. with the malleable castings, milled surfaces, hard oilers, steel bolts, bronze bushings, and special alloy springs, are Guaranteed.

W & C

Original Double Arm

SHOCK ABSORBER

The price of the W & C Shock Absorber No. 1 as described above is $10.00 per set of four. W & C No. 2 is identically the same as W & C No. 1, with the exception of hard oilers, steel bolts, and bronze bushings. The price of W & C No. 2 is $5.50.

Price $10 Set of 4

Convince yourself of the easy riding qualities by equipping your Ford today.

Dealers: We grant exclusive territory to thoroughly high-grade dealers. Wire or write today.

Manufactured by

Philip H. Webber Company
Hoopeston, Illinois

A GOOD DRINK ICE COOLED

The Fountain is Cork Jacketed 15½ Coils of ½ in. Brass Pipe and Keith Bubbler; Capacity—Continuous Line of Users



Attach to Municipal Supply

Drink right from the fountain without cups or contamination. The water is cooled as it flows from the municipal supply pipe through the cork-jacketed ice tank to the Keith Bubbler.

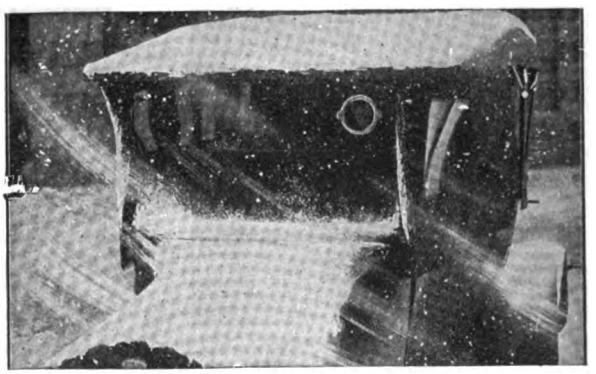
One supply of ice lasts through the hottest day and cools all the water ever required.

Everybody likes the bubbler because it's sanitary.

Get Our Catalog

Send for our complete catalog, showing our Wash Bowls, Metal Lockers, All Steel Stools and Chairs with Inset Wood Seats, Stock Storage Racks, Metal Shelving, Metal Vault Fixtures, Improved Soda Kettles, 40 and 60 gallons, Water Heaters and Instantaneous Mixers, Bubbling Drinking Fountains, Work-Benches and Bench Legs, Drawing Stands, etc.

Manufacturing Equipment and Engineering Co.
136 Federal Street
Boston, Mass.



Dealers, Here's Your Chance

to make good profits in a line in which there is absolutely no competition.

The "CAPITOL" Windshield Device

always gives the driver a clear view of the road ahead, no matter how rainy, snowy or sleety the day. Any good glazier or windshield man can install it in a few minutes. It is light and non-breakable, smart in appearance, costs only $1.50 and is worth ten times that sum as an accident preventer. Our proposition means profit for you—and our discounts are interesting. Write today for details.

Capitol Windshield Device Co.
355 Trumbull Street, Hartford, Conn.
82-3

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A NEW INSPIRATION TO

"Holbrook", New York
"Kimball", Chicago
"New Haven", New Haven
"Thompson", Pittsburg
and others in the building of

CLOSED BODIES

The bodies we have designed for the Marmon 34 chassis represent the best that we have in us—in fact we feel that the advanced design of the chassis itself, being so admirably suited to closed-body construction, was an extraordinary inspiration that enabled us to do unusual work in this particular instance.

NEW HAVEN CARRIAGE CO.

Treasurer

When the floorboard of a closed car may be placed only twenty-five and one-half inches from the ground and the height of the roof therefore need not be more than eighty-one inches, the body designer is particularly fortunate, for the usual limitations in design are thus at once eliminated and the designer is not forced to use his craftsmanship to bring out lines so that they *seem* to be long and low—but can use in his design lines that actually *are* long and low. That makes a great difference.

The Marmon 34 chassis is particularly adaptable to the most excellent closed body work.

THE HOLBROOK COMPANY

President

We want to call your attention to the special Limousines in Berlin, Cab-side, and Town patterns which we are now building for your new 34 model.

Your engineers have fortunately supplied us with a chassis basis that insures splendid proportions and low, simple lines—thereby meeting the demands of those who appreciate the best in Motor Coach work.

C. P. KIMBALL & CO.

President

The fact that no sills are required to obtain structural strength in attaching a closed body to the Marmon 34 chassis is partly responsible for the very distinctive, long, low-hung effect achieved in the bodies that we have designed for this chassis.

A closed car only eighty and one-half inches in height in which the usual inside headroom is possible is certainly very desirable.

The Marmon chassis is the ideal type for closed body construction.

E. J. THOMPSON CO.

President

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MARMON 34

Now A Permanent Closed Body Department

THE Nordyke & Marmon Company announces to the public and to the trade the permanent establishment of a closed body department in which limousine, landaulet, town car, and sedan bodies by such famous custom coach builders as Holbrook & Co. of New York, Kimball & Company of Chicago, New Haven Carriage Co. of New Haven, Conn., E. J. Thompson Co. of Pittsburg and others, will regularly be produced from now on.

Formerly Marmon chassis were furnished with closed bodies only on special order. We will, of course, continue to supply special bodies built to order, but the demand for such work, we believe, will practically be eliminated in view of the character, distinction, and exclusive style obtainable in the new designs by the above named well-known custom coach builders. Marmon representatives will gladly furnish further details or you may obtain them by writing to the factory.

Note: We will reproduce in this publication next month, pictures of the Marmon 34 fitted with the new bodies

Nordyke & Marmon Company

Established 1851

Indianapolis, Indiana

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SHERIDAN

1000 Pound Commercial Car

THERE is a great big profitable market—a ready-made, eager, buying market—waiting right now for the wide-awake, progressive dealer who will get busy and show—yes, that's all—just show—the SHERIDAN LIGHT DELIVERY TRUCK.

This is the day of the Light Truck and here is a light truck that fits and serves more lines of business at a lower first cost and at a lower upkeep than any other truck in the half-ton field.

This truck is the ideal size, not too big to be handy, nor too small to be efficient—but just right to get the truck business of your community with.

ONLY $540

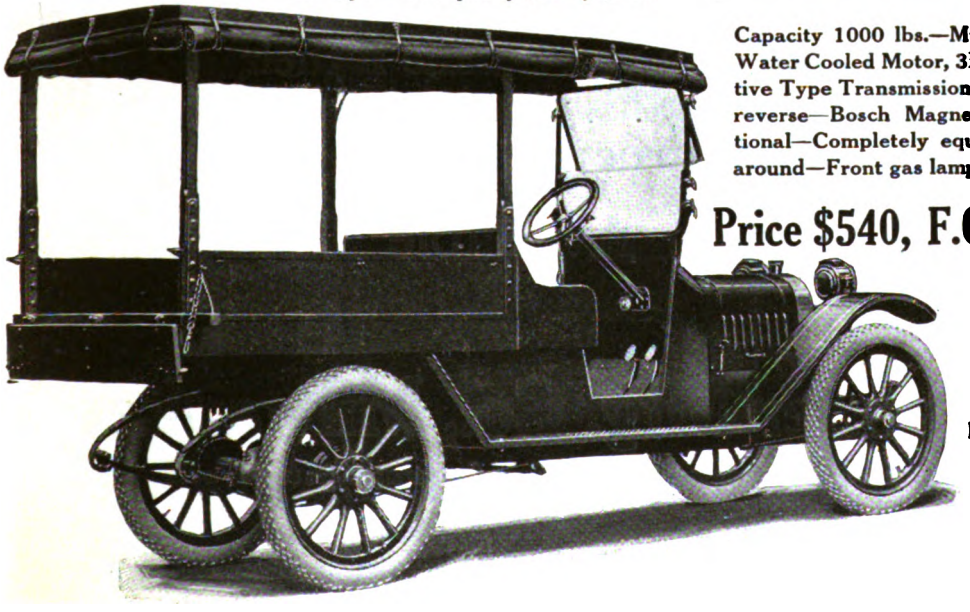
It is the greatest, biggest and best value in the entire truck field—the SHERIDAN COMMERCIAL CAR, one thousand pounds capacity at only $540.

This is the truck that makes it possible for merchants everywhere to modernize their business. This is the truck that is bringing you your opportunity to lead in local truck sales. It's the greatest chance of the year to make big money quick.

No matter whether or not you have ever handled trucks, *you can sell this Truck.*

You can count up now a dozen or more sales within a few minutes from your door. For the SHERIDAN is, at only $540, the truck your prospects can afford to pay for and then can afford to run.

Read the following brief Specifications, then wire or write QUICK for generous Dealers' Proposition. ACT NOW!



Capacity 1000 lbs.—Multiple Disc Dry Plate Clutch—Water Cooled Motor, 3½ x 4—Unit Power Plant—Selective Type Transmission with 3 speeds forward and 1 reverse—Bosch Magneto—Wire or wood wheels optional—Completely equipped with storm curtains all around—Front gas lamps and rear light.

Price $540, F.O.B. Harvey, Illinois
FULLY EQUIPPED

Price for Chassis Only—$490

For Prompt Attention Address Dep't 6

Sheridan Commercial Car Co.
GENERAL SALES OFFICES
1509 Michigan Ave., CHICAGO
Factories, Harvey, Illinois

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THE BIG SELI
OF THE NEW MODE

EVERY prospect you have on your list wants a car that has the approved new features. He doesn't want to shift gears wi the old hand lever, when he knows that the most modern cars a equipped with the

C-H
MAGNETIC
Gear Shift



Ask the manufacturers of the cars you handle if their new models will be equipped with this most important improvement in automobile construction.

Such Cars Are Now Available

The Cutler-Hammer Mfg. Co., Milwaukee, W

Largest Manufacturers of Electrical Controlling Apparatus in the World

Factories: Milwaukee and New York

BRANCH OFFICES: New York, Boston, Philadelphia, Pittsburg, Cleveland, Cincinnati, Chicago, San Francisco

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ING FEATURE
LS



An interesting 32-page booklet describing and illustrating the C-H Magnetic Gear Shift will be mailed free on request

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A NEW BOOK

—in handy size, that will enable you to find and repair your starting and lighting troubles.

Keep it in your car, for ready reference.

It will save you time and repair bills.

Size 5 x 8 inches—36 pages.

Two bindings:

Flexible leather—75 cents

Heavy cardboard—50 cents

Book Department

MOTOR WORLD

237 W. 39th Street New York

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The Standard Spark Plug of America

Automobile Advancement Defies All Speed Laws

Pessimists who said "it can't be done" are pushed aside by optimists who are actually "doing it." The AC—the one Standard Spark Plug of America — is an accomplished fact. The Champion Ignition Company, of Flint, Michigan, has made it so.

You may buy plugs which cost but little—you may buy plugs which are really good plugs. But the combining of maximum efficiency at minimum cost in a single plug is such a task that today there is only one single make of plug wherein the feat is actually accomplished. That—

AC Spark Plugs

The fact that AC Spark Plugs are regular equipment in 60 leading American cars marks them at once as the standard—the ones recognized, tested, best of their kind—assuring maximum performance at minimum expense for the motor or which they are used.



60

Builders of Automobiles virtually stake their prestige upon the absolute dependability of performance of AC Plugs.

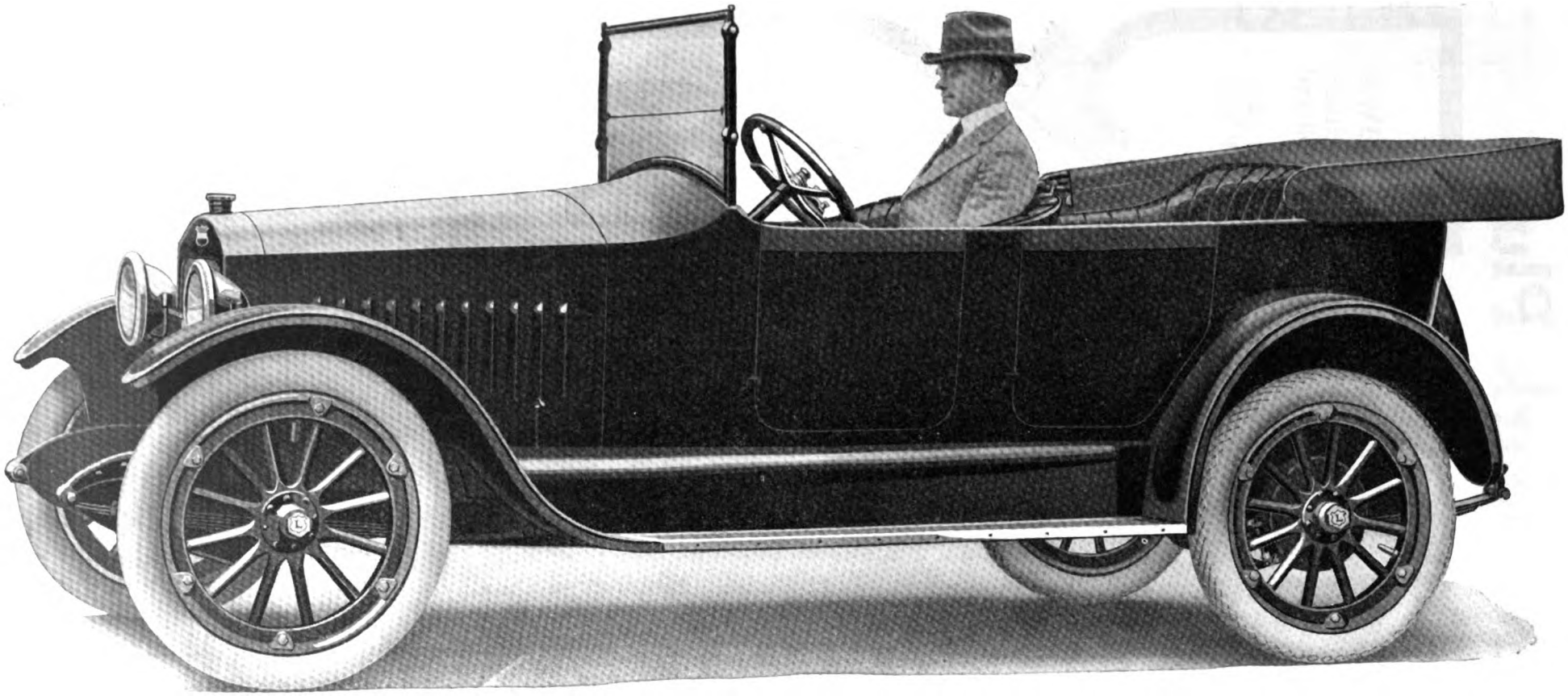
Packard	Hupmobile	Buick	Oakland	National		
Pierce-Arrow	Chandler	Dodge Brothers	Oldsmobile	Velie		
Cadillac	Haynes		Stearns-Knight	Jackson		
Marmon	Chevrolet	Reo	Saxon	Apperson		
Hudson	Dort	Paige	Stutz	Davis		
Chalmers	Cole	Peerless		Detroiter		
Paterson	Glide	Case Tractors	G. M. C.	Knox	Monroe	Singer
Moon	Lexington-Howard	Chase Truck	Gramm Trucks	Lambert	Pilot	Stephens
McFarlan	Austin	Daniels	Jeffery	Maxwell	Sayers-Scovill	United Truck
Westcott	Brockway Truck	Empire	Kissel Kar	McLaughlin (Canada)	Crane-Simplex	Wilcox Trux
Enger		Federal		Mercer		Palmer-Moore

We also make a special spark plug for Ford, Overland and Studebaker cars that insures the highest efficiency for these motors. You cannot make any mistake by choosing the standard plug of America—used and overwhelmingly endorsed by these leading manufacturers. There's a difference —it will be appreciated by car owners.

CHAMPION IGNITION COMPANY

Flint, Michigan

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THE LIBERTY SIX

-- $1095 --

A CAR YOU WILL WANT TO SELL

By concentration of serious engineering on the OWNERS' COMFORT, we have accomplished in the Liberty the unusual in a motor car.

When writing advertisers please mention Motor World

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DOMINANT LIBERTY FEATURES

You will not find all of them in any other car

Brakes A pull with one finger operates an alert powerful emergency brake worthy of the name, and brings the car to a firm stop. Smooth acting and powerful foot-operated service brake. Both adjustable in an instant.

Cluch Soft but never slips; a 200-pound clutch spring, so perfectly balanced that your finger will operate it. A brand new idea of extreme ease in operation and positive engagement, wished for but not before attained.

Gear Shifting Without fear of contradiction, we believe the Liberty has the easiest and most silent gear shift. An instant and silent change at any car speed with no clashing of gears.

Steering A feather touch lightness that makes a day's driving a pleasure—no violent pulling at the steering wheel ever necessary.

Performance The Liberty will excel in any comparative road test for acceleration and power at any speed. Improved design that delivers a feeling of superiority to the driver.

Driver's Comfort A new weather-proof Liberty windshield with rubber strips all around keeps out any rain or wind. A roomy front compartment, well ventilated, wide seat and every control in easy reach and easy acting, brings the driver home without a feeling of being "beaten out."

Cradled Springs The Liberty car rides easy and goes straight over any road. The cradled comfort of Liberty spring suspension creates a new ideal of **straight line driving.** Try it!

Oil Cups Grease cups eliminated—all spring shackle bolts and steering spindles are fitted with oil cup lubricators, insuring unfailing velvety spring action and easy steering.

Because of its compelling attraction to motor-wise buyers, the LIBERTY will sell in your territory. It will not conflict with any car you are now selling, as there is no car like it.

SPECIFICATIONS

Wheelbase, 115 inches. Liberty-Continental six-cylinder motor, 3⅛ x 4½. Thermo-syphon cooling system. Special type Liberty-Timken axles with spiral bevel and driving gears. 14 gallon gasoline tank at rear with 3 gallon reserve tank incorporated. Delco starting, lighting and ignition system. Single dry plate clutch. Frame section, 5 inches. Steering, worm and full gear, irreversible. Tires, 32 x 4. Front seat 42 inches wide, rear seat 47 inches wide—genuine leather upholstering. **Touring car weight with water, oil, gasoline and spare tire—2550 pounds.** Prices—Five passenger touring car, $1,095; four passenger close coupled car, $1,095.

Exclusive types of demountable tops for open cars together with closed car bodies of distinctive styles for particular buyers. Give dealers a splendid all-year-round line.

Price and discounts are right

When in Detroit, call and see the Liberty—see it being finished and shipped. Ride in it. Phone us and we will send a car to bring you to the factory.

We propose to select good dealers—and stick by them.

Roy D. Chapin

President

LIBERTY MOTOR CAR COMPANY, DETROIT

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GARAGE EQUIPMENT WITH MERIT

PROFIT MAKERS FOR THE REPAIRMAN



Style A Welding and Carbon Removing Outfit With Truck (Tanks Not Included)

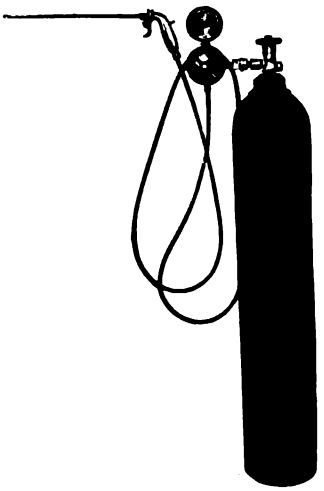
WELDING and Carbon Removing Outfits

That are Standard in the Trade

DIFFERENT SIZES AND PRICES
LEAD BURNING
ACETYLENE BRAZING
GAS PREHEATING
STEEL CUTTING APPARATUS

Reasonable in Price
Economical in Operation
Simple in Design

EVERY OUTFIT GUARANTEED



Style A Carbon Removing Outfit (Tank Not Included)



Pistons for the

FORD

STANDARD and OVERSIZE
GROUND FINISH
COMPLETE $1.00 Each

REAMER

For FORD

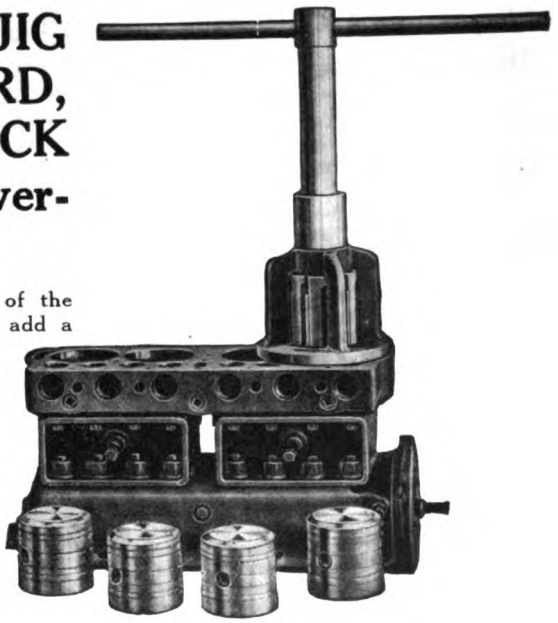
Connecting Rod and Main Bearing

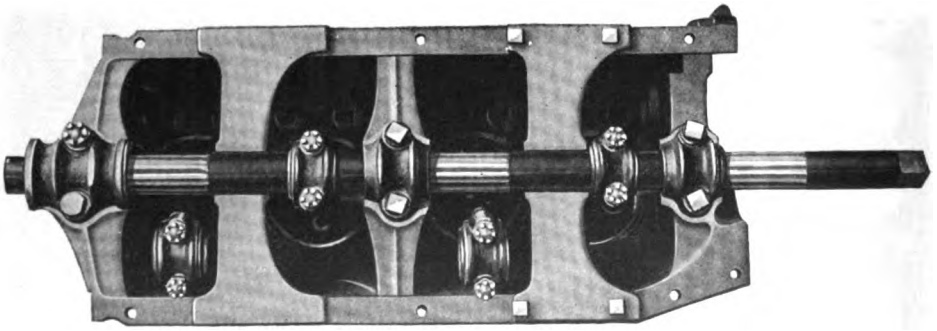
Two adjustable guides to line bearings perfectly true are furnished with each tool.

REAMER and JIG for reboring FORD, METZ, and BUICK cylinders 1-32" over-size.

A tool that will widen the field of the repairman, insure big profits and add a large number of satisfied customers.

The engine is the vital part of an automobile and reboring 1-32 of an inch with this Reamer and fitting new pistons and rings makes the motor run better than when new.



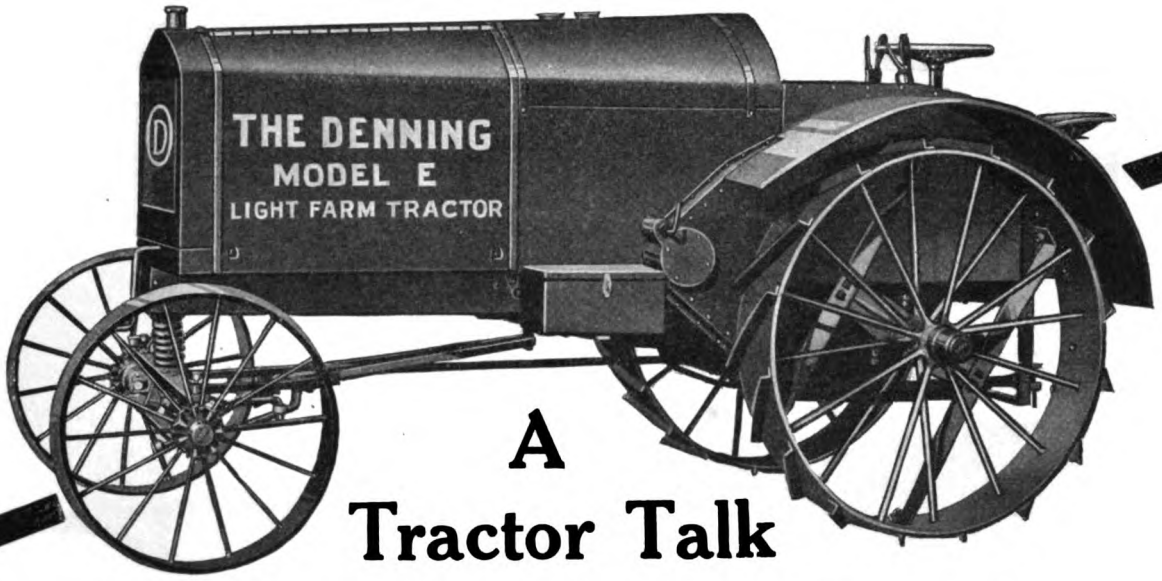


This tool does away with the tedious method of scraping the bearings by hand, and with it can be done much more accurate work. Connecting rods are made to line perfectly with the cylinders

WRITE FOR GENERAL CATALOGUE AND PRICES

THE G. H. DYER COMPANY, Cambridge, Mass.

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A Tractor Talk To a Tractable Dealer

We shall begin our "Talk" by assuming that you know the value of a line that fits in so well with your other line—the automobile—and that both interest the same class of customers—viz., the farmers.

The farmer has quit driving horses for pleasure and he is rapidly coming to see that it doesn't pay to drive them for business, either.

The tractor does more work at less cost—less stable room and less feed.

Your customers are in a receptive mood. It is up to you to gird up your loins and go after this paying business.

The tractor to place before him is known from one end of this country to the other as

THE DURABLE DENNING

A Light Farm Tractor

The selling features of this machine are almost too numerous to mention, but in advance of our catalog which we will send you if you will signify in the usual manner, we shall name a few—

The Durable Denning's

The motor is the famous Waukesha, 4 cylinder, long stroke, special tractor type—guaranteed to produce 10 h.p. at the draw-bar—more than sufficient to make two 14-inch plows cut a 28-inch furrow through any land fit to cultivate; 18 h.p. at the belt—great over-capacity, perfect balance between power of high speed motor, weight of tractor and the duty it is called upon to perform. Will deliver maximum power on two gallons of gasolene per tractor hour. Average farm work 1½ gallons per tractor hour.

Power Plant

A feature that never fails to interest intending buyers is the Denning plan of running *all gears in oil* and all bearings in dust-tight casings. No more "sand cut" gears. They are all in oil, safe from mud, sand and dust. This one Denning feature should add to the life of the machine four fold. The equipment includes all high grade units. Bennett Carburetor for kerosene, gasolene or both. Perfex Radiator. New Departure Ball Bearings. Lavine Irreversible steering gear. (Patent applied for.) Tractor weighs 3800 lbs.

The Durable Denning will do the work of many horses. Its scope of service is broad.

Every sale is a repeat. One sells two—or ten, depending on how much you work your follow-up. No reason why you should limit your sales. Our literature will help you. It's ready to do so. We are carrying on a continuous advertising campaign in big farm papers—creating interest.

Today—now—would be the best time to send for our interesting proposition to dealers.

We are going to take it for granted that you are a charter member of the Live Wire Club—and that your motto will be "D.D." (Don't Delay).

THE DENNING TRACTOR CO.

CEDAR RAPIDS, IOWA

The Denning
Tractor Co.
Cedar Rapids, Iowa.

Send full particulars of your exclusive territory proposition and selling plan.

Name .....

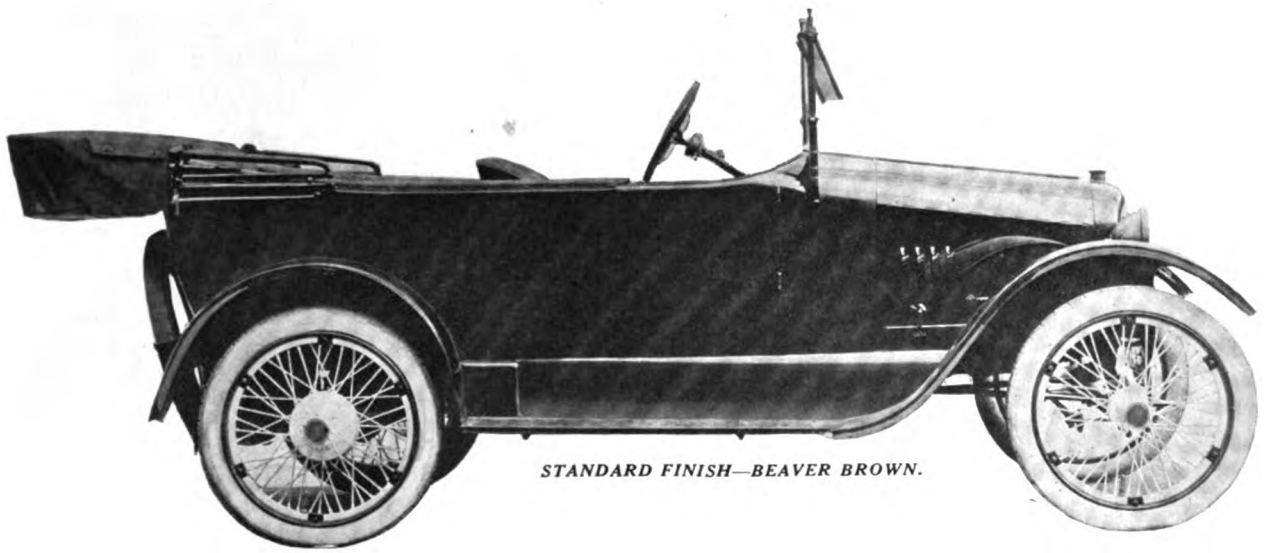
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"DeLuxe" Bodies—



STANDARD FINISH—BEAVER BROWN.

"DeLuxe" Touring Body for Fords—$260 f. o. b. Detroit

The Touch of Distinction

Never in the history of Ford accessories has such an instantaneous success been scored as has been won by the distinction of "De Luxe" Bodies.

The country is clamoring for "De Luxe" Bodies. They make the Ford car "class up" in appearance with the highest priced cars.

They have special features that all owners want. No body as fine and as convenient as this has ever been designed for Fords.

Either or both of the "DeLuxe" front seats, which are divided as in the highest priced cars, may be removed at will. Either of these seats may also be revolved to face the rear, if you wish to hold a comfortable conversation while stopping. This also permits setting a table in the car so that you may enjoy a pleasant meal at picnics, fairs, games, etc.

But perhaps the most important feature of the "DeLuxe" front seat construction lies in the fact that the *seats are adjustable forward and back.* One great trouble with the ordinary small car body is that it has too little leg-room for many people.

"DeLuxe" front seats may be moved back eight inches, or any part of eight inches, thus providing proper and ample leg-room for all drivers. All of these adjustments are easily and quickly made by the simple operation of two nuts.

Read these specifications carefully and see how complete "De Luxe" bodies are.

BODY—Pressed steel.
ONE MAN TOP—Black mohair. Top fastens to windshield.
WINDSHIELD—Black enamel. Nickel trimmed, with double glass, both adjustable.
RADIATOR—Slightly pointed, with zig-zag tube and finn.
HOOD—Black enamel. Ventilators in each side, with handles and fasteners.
CROWN FENDERS—Enameled, nine inches wide with seven-inch crown.
STARTING CRANK—Forging long enough to clear radiator.
FRONT SPLASH PLATE—Gives handsome finish to front end of car, covering axle, shackle bolts, etc., under radiator.
DUST SHIELDS—Enameled to match fenders and carry out streamline effect perfectly.
RUNNING BOARD HANGERS—Provide for lowering the running boards.
LAMP BRACKET EXTENSIONS—Fit into the original sockets and raise lamps three inches.
FOOT ACCELERATOR—For controlling throttle with foot.
TIRE HOLDERS SUPPORTING IRONS—These irons are attached to body for supporting tire holder.
Single tire holder for 3 1-2" tire, included in touring body price. Double tire holder for 3 and 3 1-2 or 2 and 3 1-2", $3.50 extra.
STANDARD FINISH—Beaver Brown, with black fenders. An extra charge of $10 for other than the standard finish. Fenders are done in extra colors for $10 a set.
CHANGES EASILY MADE—Does not require an expert mechanic. All parts made to fit, and all bolts and nuts are in place when the parts leave our factory.
STEWART VACUUM GASOLINE SYSTEM—Ford tank used. We provide enameled steel tank to cover it. Only on touring body.
EXTRA—Four wire wheels, demountable rims, one extra rim, $35 extra.
Roadster Specifications same as touring except as to gas tank, tire holders and color

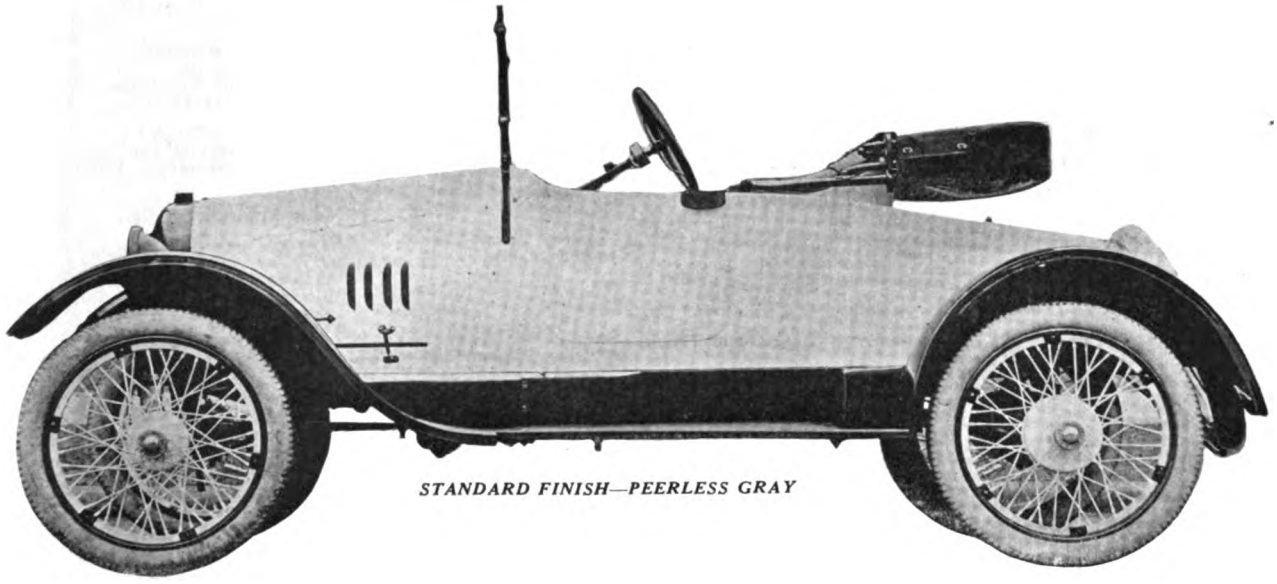
DETROIT AUTO PRODUCTS CO.

31 Sherman Street, Detroit, Mich.

When writing advertisers please mention Motor World

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-for Ford Cars



"DeLuxe" Roadster Body for Fords—$197.50 f. o. b. Detroit

The Prestige of Class

Doesn't this beautiful "DeLuxe" equipped Ford Roadster appeal to you?

And has it ever occurred to you that heretofore there has not been a single car on the market to meet the demand for a *light, powerful,* inexpensive roadster with a *distinctive, commodious, up-to-the-minute body?*

Here it is at last!

Thousands of FORD owners will welcome this opportunity to put their cars in a class with the more exclusive roadsters. They are perfectly satisfied with the efficiency of the Ford chassis. But they want something a little different in appearance.

It is a fact that the costlier cars sell largely on appearance. Keen competition has forced the makers to pay particular attention to this factor. In the Ford market, lack of competition has made unnecessary the development of the body design.

The DeLuxe Roadster Body makes your Ford compare favorably with any car on the road, regardless of price. It was designed by a famous body expert and is built by men experienced in custom body work. Nothing has been spared to make it the neatest roadster that can be produced.

Get a DeLuxe Body and transform your FORD car into an entirely new model.

DEALERS: Write for our proposition. These bodies are making money for live dealers and there is a big opportunity here for you. Get in on it at once.

DETROIT AUTO PRODUCTS CO.

31 Sherman St., Detroit, Mich.

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Atlantic Refining Co.
Atterbury Motor Car Co.
Available Truck Co.

Barker, C. L.
Bessemer Motor Truck Co.
Blair Motor Truck Co.
Bowling Green Motor Truck Co.
Brockway Motor Wagon Co.
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Witt-Will Co.

Zeitler, Lamson Co.

They all Use Worm Drive

Why?

Certainly not because of its price, for its initial cost is higher than any other type of drive.

Not because it was the easy thing to do, for it necessitated changing from another type.

No! The plain, undisguised fact of the matter is that these manufacturers—the very cream of the trade, as you can see by looking over the list—changed to Worm Drive because it is the most efficient under any and all circumstances—and for no other reason in the world.

SHELDON

How quickly they changed, once having seen the light, is illustrated by the fact that, in 1913 only 1% of American trucks were worm driven, while in 1916 over half of the cars actually produced used the worm drive.

Now, is it reasonable to suppose that all these manufacturers—comprising the most successful in the industry—are wrong?

The Sheldon Axle and Spring Company

Wilkes-Barre **Pennsylvania**

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STEVENS & CO. NEW YORK

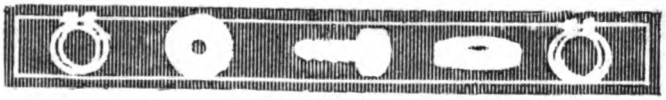
Pumps and Pump Connections

For 15 years we have been making tire pumps that have given universal satisfaction to car owners and garagemen. Jobbers and dealers have found it to their advantage to see STEVENS on pumps and pump connections before tying up with any other manufacturer—for

The STEVENS line is *complete* in every detail.

Our Ideal pump connection is standard with a number of pump manufacturers and jobbers. Esco hose bands, pump hose, cup leathers, pump packing sets, unions, couplings, etc., assure dealers of a supply of guaranteed parts for all standard makes of pumps.





Stevens Compound Pump No. 99

(here shown) is the ideal pump for a garage. It is a genuine compound pump, of highest quality, with brass cylinder, bases and ground valves, best hose and No. 2 Acorn Connection, and will pump to 180 pounds pressure or more.

Acorn Pump Connection



Will fit any valve, as a perfectly air-tight connection is made instantly by pushing it on over the valve.

Holdfast Pump Connection

The most successful connection on the market—can be instantly attached or removed—its sturdy construction makes for long service. The ideal connection for garagemen or car owners.



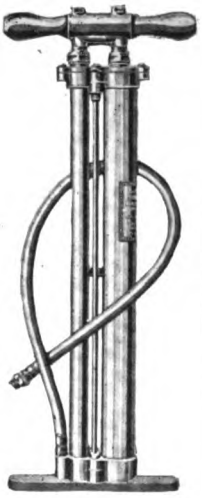
Acorn Pump Connection Rubbers



These are absolutely the most durable rubbers you can buy. BY TEST they give 10 times the service of ordinary rubbers, and incidentally save owners and garagemen many hours in the labor of replacement. They are so much better because we use RED RUBBER CORES, vulcanized by a spccial process that makes them everlastingly tough. *You cannot afford to sell any others.*

The Carver Pump

Compound double-acting. Gives same result as *two* compound pumps operating together. Decreases both time and effort needed to inflate tire. As effective as a larger pump—as easy to operate as a smaller one.



Service is the great commercial law as it is the great social law. Only insofar as a business serves its clients does it finally prosper. True, there are mushroom business growths that seem to thrive otherwise—but like mushrooms they are quickly gone and leave no trace. Louis Schmab

STEVENS & COMPANY

375 Broadway

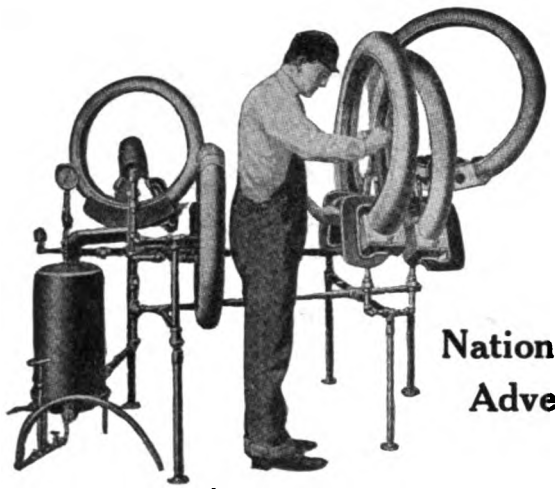
New York, N. Y.

MANUFACTURERS OF

Automobile Parts & Accessories

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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.
1042 N. Cap'tol Ave., Indianapolis, Ind.

Haywood Tire & Equipment Co.,
1042 N. Capitol Ave., Indianapolis, Ind.

Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

Name .....

Address .....

.....



$16 Is Enough to Pay for Streamline Equipment for Your Ford Car

There's nothing wrong with the body that comes on your Ford car.

No need to throw it away and buy a new one, at half the price of the entire car.

$16 is a moderate investment you can afford to make for the—

For All Ford Cars

Detroit Streamline Hood and Scroll Type

Radiator Shell

—that brings your car up to date in appearance. To spend more is unnecessary, and out of proportion to the value of your car.

DETROIT Equipment is **for all Ford cars**—not just cowl dash models. Built of substantial sheet steel, with concealed, waterproof hinges. Finished in black enamel that lasts.

Ask your dealer, or write us for free illustrated literature telling how to keep your Ford car in style, with DETROIT Streamline Equipment.

SPECIAL DEALERS' PROPOSITION

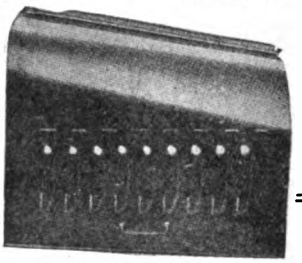
The Harry Svensgaard Sales Corporation
124 Jefferson Ave., W. Detroit, Mich



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IONIA, MICH.

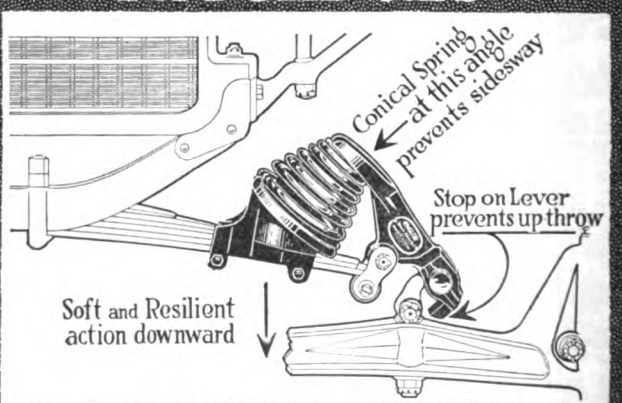
Warehouse, Windsor, Ont., for Canadian deliveries.

We will protect users and dealers against infringement suit.



HASSLER

Shock Absorber
For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

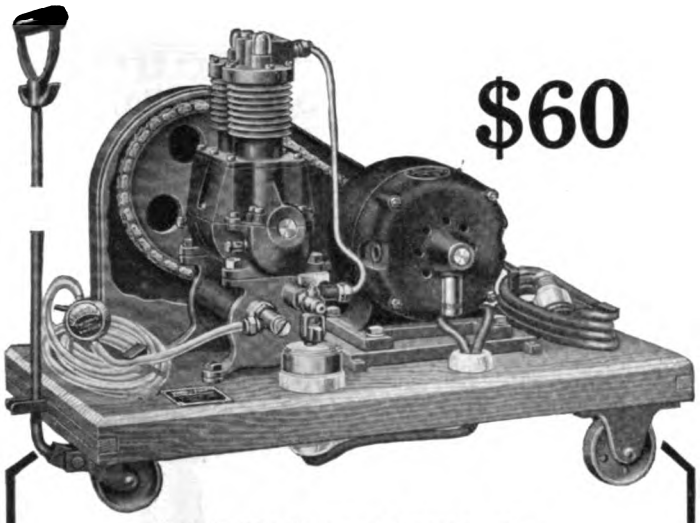
—100000 FORD OWNERS RECOMMEND IT—

WRITE FOR DEALERS TRIAL SET PROPOSITION

Robert H. Hassler, Inc.
Indianapolis, Ind.

$15 for a Set of Four

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$60

MAYO ELECTRIC GARAGE PUMP

A MAYO Electric Garage Pump attracts enough new trade and transient customers to shortly pay for itself. Statistics show that the most successful and prosperous garages and repair shops are "Free Air" garages. "Free Air" Garages attract trade for miles around.

The MAYO Pump will assist you in getting the volume of business in your town. Portable or wall equipment. Price, $60 complete. Sold on 30 days' trial. In ordering, state current and voltage. Write today for full information.

MAYO MANUFACTURING COMPANY
65 E. 18th Street Chicago

FREE ROAD MAPS

Check Maps desired and mail to

GULF REFINING COMPANY
Dept. 1879
Frick Annex
Pittsburgh, Pa.



MAIL THIS COUPON TODAY

Gulf Refining Co., 1882 Fricke Annex, Pittsburg, Pa.— Gentlemen: Please mail me FREE as per your special offer the maps as I have checked:

- ☐ Middle West
- ☐ Transcontinental
- ☐ New England
- ☐ New Jersey
- ☐ Pittsburg to Philadelphia
- ☐ Pittsburg-Buffalo
- ☐ Southern States
- ☐ Pennsylvania
- ☐ Texas
- ☐ Allegheny County

Name .....
City ..... State .....

Price $14



It's Easy to Sell
The Startford Mechanical Starter For Ford Cars
Because It's Ford Car Size

Everything about the STARTFORD Starter for Ford cars is in proportion to the size of the car and its value. The strength of the STARTFORD is in proportion to the strength required to turn over the Ford motor. Its simplicity and efficiency are in proportion to the simplicity and efficiency of Ford car mechanism. And finally its price—**only $14**—is commensurate with the original investment in the car itself.

SOLD ON ONE WEEK'S TRIAL

The best point in favor of quick and wide sales is a STARTFORD trial. Easy to get owners to put it on "for a week." Easier to get them to keep it on once they know its tremendous value. Sells hands down in competition with high-priced complicated starters. The only mechanical starter near its price that motor-wise owners consider.

Neat, easy to operate, simple and efficient. **Priming device included.** No bearings running to oil or collect dust. **Absolutely backfire-proof.**

Mail the coupon today for full details and liberal dealers' discounts. Take advantage of the easiest sales by being first.

Symons Brothers Co.
Winnetka, Illinois

Symons Brothers Co.,
Winnetka, Illinois.

Send me complete details, literature and dealers' discounts allowed on the STARTFORD.

Name .....

Address .....

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Meet Your Motor Half Way!

Any good motor will give you what you want if you give it what it needs.

Not one of its needs is more vitally important than a sure, dependable, red-hot spark—the kind that guarantees complete, rapid combustion—the kind the motor always gets, at any speed, from the

EISEMANN MAGNETO

The test of a Magneto is its low speed efficiency—the quick pick-up, the responsiveness of the motor. The superiority of Eisemann Ignition is as apparent at low speed as at high.

Durable
Dependable
Powerful

EISEMANN MAGNETOS are made in a range of types and sizes to meet every requirement of gas or gasoline engines.

THE EISEMANN MAGNETO CO.

Sales and General Offices:
32-33rd Street, Brooklyn, N. Y.
Indianapolis, Ind., 415-417 N. Capitol Ave.
Detroit, Mich., 802 Woodward Ave.



Type G-4

The "Berkshire One-Piece" Spark Plug



PITTSFIELD TRADE MARK

A combination of all the good points a porcelain plug can possess. The result of long experience in designing and manufacturing spark plugs by skilled workmen, it embodies perfection of design, supreme quality and excellent service. The porcelain, imported Kaolin of a quality superior to any other clay obtainable, is proof against heat or cold. After-pressure expels carbon from porcelain and points, thus making it a *self-cleaning plug.* The steel shell and porcelain form one compact unit, exceptionally rugged and gas-tight, thus *eliminating necessity for check nut.*

The "Jewell" Mica Spark Plug



for strength and durability, cannot be excelled. It is, under working conditions, *indestructible.* It consists of heavy pure-mica tube covering electrode over which mica washers are assembled under heavy compression. If you prefer a Mica Plug, your logical selection is the "Jewell." *Specially suited to high speed engines and racing cars.* Single-point or double-point types.

PITTSFIELD SPARK COIL CO.
PITTSFIELD MASS., U. S. A.

Hotel Marie Antoinette

Broadway, 66th and 67th Sts.
NEW YORK CITY

SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

Restaurant of Unusual Excellence

H. STANLEY GREEN
Managing Director

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A STYLE FOR EVERY BUSINESS

International Motor Trucks, in three sizes, 1000, 1500 and 2000 lbs. capacity, are now furnished in styles to meet the needs of every business.. Two or four cylinder motors; chain drive, or shaft; solid tires or pneumatic; high wheels for country road driving or low wheels for work on city streets; any desired style or size of body—all the advantages which a great organization give are at the service of International Motor Truck purchasers.

New Models—Attractive Prices

M—1000 lbs. capacity, complete with express body	**$710**
E—1500 lbs. capacity, complete with express body	**950**
H—1500 lbs. capacity, internal gear drive (chassis)	**1225**
F—2000 lbs. capacity, internal gear drive (chassis)	**1500**

Any model can be equipped with pneumatic tires for $50 more than the above prices. All prices are cash f.o.b. factory.

International Motor Trucks may be seen at any one of the 87 completely equipped service branches scattered throughout the United States. This network of gratifying service has contributed not a little to the popularity and success of the International. Write for catalogue and any special information you may desire.

INTERNATIONAL HARVESTER COMPANY OF AMERICA

155 Harvester Building (INCORPORATED) **Chicago U S A**

THE

ACME



Ford Steering Controller

PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

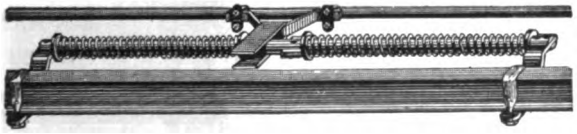
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this, not 1 per cent of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs. 400 Windsor Bldg. Philadelphia, Pa.

Your Customers Know EVERLOC

Best Advertised Tire Patch and the Best Seller

Consistent advertising in leading motor car papers makes EVERLOC the best known patch on the market. Not something for dealers to introduce. Over 300,000 in actual use—and one has never come off.

A quick and permanent repair that should be in every tool box. **Absolutely guaranteed** to be permanent on the smallest puncture or largest blowout. Big profits from reorders. **Send coupon for sample.**

When customers ask for "a patch," give them **EVERLOC.**

Three Sizes, 50c



W. C. WOOD COMPANY
40 N. 10th St., Minneapolis, Minn.

W. C. WOOD CO.,
140 N. 10th St.,
Minneapolis, Minn.

Enclosed find 10c. for sample EVERLOC Patch, sufficient for several normal repairs.

Name .....

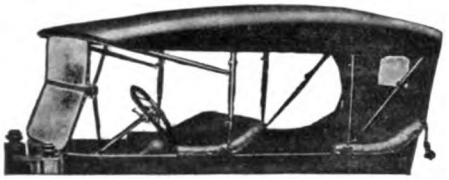
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Cray Slip Roof For Old Fords

MAKES THE OLD TOP NEW



$7.50

Makes the old top new at about one-third the price of the complete top. The outfit consists of a new heavy, rubber roof, quarters, back curtain and back stays, with celluloid light, stitched and ready to slip over the old top frame. Furnished with necessary tacks and welt. Easily put on by any car owner. Made for 1912, 1913, 1914, 1915 and 1916 Ford Cars. State year of car when ordering.

PRICES.

Outfit "A" for Touring Car, each, $7.50. Per Doz.....$79.50
Outfit "B" for Runabouts, each $6.00. Per Doz..... 63.75

CLEVELAND ONE-MAN MOHAIR TOP FOR FORD TOURING CAR.



Made to fit 1913, 1914, 1915 and 1916 Model T Ford Touring Cars.

In ordering state year of car.

Price, with regular curtains, $19.20.

Price, with Jiffy curtains, $21.60.

WE WANT to SEND YOU OUR 512 PAGE MONEY MAKING BOOK

Write for a copy today, sending business card, letterhead or some other evidence that you are in the trade.

CRAY BROTHERS

Jobbers and Manufacturers of Auto Accessories

1129 W. 11th Street, Cleveland, Ohio



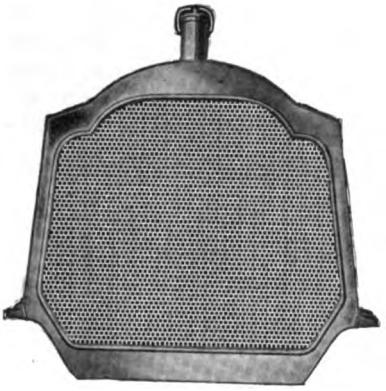
JUMBO SPARK PLUGS

are built to stay on the job under the hardest conditions. We show here our big leader

JUMBO "MOLITE"
Price, $1.25

Guaranteed for the Life of the Car. Other types for Fords and other cars. $0.75 and $1.00. Ask your dealer.

Gibson-Hollister Mfg. Co.
3380 Washington Street,
Jamaica Plain, Mass. 69-36



Fedders Radiators

Fedders quality is largely the result of 18 years' specializing in radiator production.

Fedders Manufacturing Co.

Buffalo New York

SCRIPPS-BOOTH

Luxurious light cars which in their first season have found the way into America's and Europe's most refined society. Scripps-Booth stands out as the most attractive motor car in the roadster class. A car of beauty, possessing comfort heretofore unknown in a motor car. Roadster $825 — Coupe $1450 Dealers wanted



Scripps-Booth Company
Detroit. Mich



Mosler VESUVIUS Plug

PRICE $1.00 AT ALL DEALERS

Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
New schedule of trade prices.

A.R.Mosler & Co. New York, U.S.A.





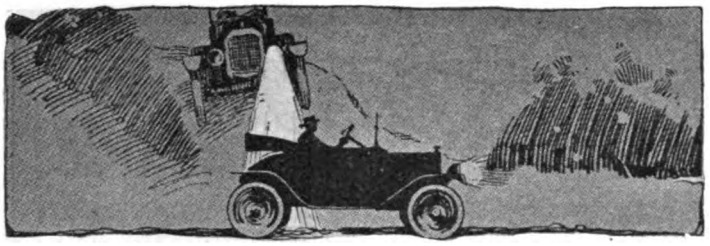
Miles Cheaper

Users Report Records of

8,000
10,000
12,000
15,000
Miles

Quaker City Rubber Co.
Philadelphia

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A Safe, Certain, Bright Light at Slow Speeds for FORDS

The VAN SICKLEN Concentrator assures such a light at slowest engine speed, when you need it most.

At 5 m. p. h., 10 m. p. h. or 15 m. p. h. with a VAN SICKLEN Concentrator you always have sufficient light for every driving purpose. $2.00—the price of the Concentrator—is a very small price to pay for so necessary a convenience.

$2



VAN SICKLEN AUTOMATIC **HEAD LIGHT CONCENTRATOR** FOR FORD CARS

The VAN SICKLEN Concentrator at all speeds below 15 m.p.h. automatically disconnects the right headlight, shunting double current into the left headlight. At 10 m.p.h., for instance, the left headlight burns as brightly as it ordinarily would at 20 m.p.h. Above 15 m.p.h. the regular Ford 2-lamp system automatically re-asserts itself.

Price, $2.00 complete, ready to put right on. Easily installed. Full instructions with each order. Installed under hood on dash. Guaranteed not to injure magneto or bulb. Neat, compact, handsome.



Note simple installation

Obtainable from most good dealers or sent prepaid direct upon receipt of price.

Dealers: Some desirable territory still open. Over 600,000 prospects. 40,000 sold in last two months. Wire or write.

The Van Sicklen Company
14 Chicago Street, Elgin, Illinois

Why Don't You Start

——a steady stream of profits coming in by hooking up with us?

We believe in our distributors making good profits and we do everything we possibly can to help them. Let us start you off **now** with a line of

VULCAN QUALITY

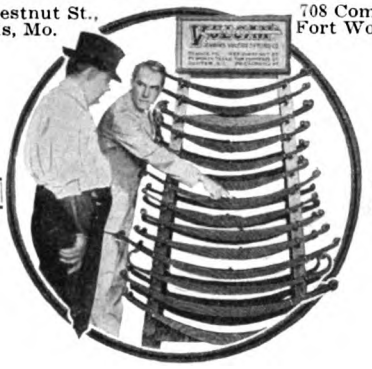
SPRINGS and give you this handsome rack to display them.

Their **Quality, Price** and the **Service** behind them make friends that stick. We advertise for **new** dealers and customers; our **old** ones do not desert us—they **know** our Springs and the quality of our service.

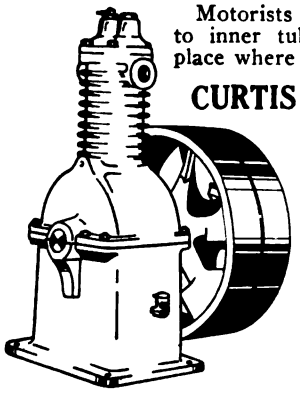
Complete assortment always in stock for 90% of all styles of American cars.

JENKINS VULCAN SPRING CO.,
29 Caldwell Street, Sumter, S. C.

1402 Chestnut St., St. Louis, Mo.
708 Commerce St., Fort Worth, Texas.



"TRADE GETTERS" FOR THE GARAGE

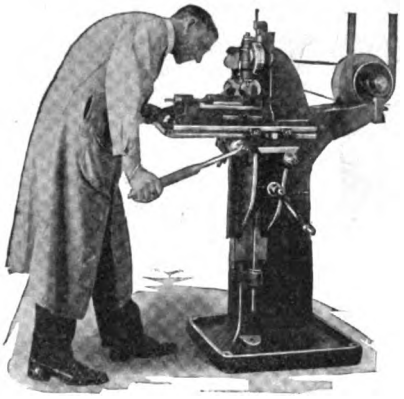


Motorists realize what a great menace oil is to inner tubes and, therefore, look for the place where they can fill their tires with

CURTIS AIR—FREE FROM OIL

Five different sizes of compressor.
125 different combinations of outfits.
In stock at most jobbers.
Price is right.
A result of 25 years' experience in compressor manufacturing.
Send for Bulletin C-5.

CURTIS PNEU. MCHY. CO.
1546 Kienlen Avenue, St. Louis
531-B Hudson Terminal, New York



Here's What You Need in Your Garage or Repair Shop

because it is an all-around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling where small cutters and high speeds are necessary.

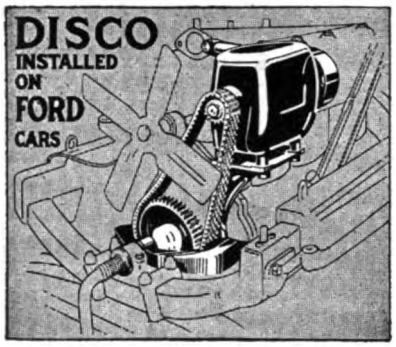
Simply drop a postal for our Miller Bulletin.

The Whitney Mfg. Co. Hartford, Conn.

Chains—Keys—Hand Milling Machines.



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ELECTRIC
STARTING
AND
LIGHTING
SYSTEM
FOR FORD CARS

The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

$75 Complete

Dealers Write for Agency
DISCO ELECTRIC STARTER CORPORATION
Detroit, U. S. A.



"Eklips" SPARK PLUGS

Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

Write for full description, prices and discounts.

THE FULTON CO.
72 1-23 National Ave. Milwaukee, Wis.

SPARTON
Safety Signals

Have the far-reaching call for country roads—the quick, snappy shriek for city traffic. Use the Sparton on your car.



Model "F"
$4.00

Finish in satin black and nickel or all black.

The Sparks-Withington Co.
Jackson
Michigan



Style C

MARTIN TIRE COVERS

Will fit any tire on any bracket on any car

An easily attached, water, dust, and mud-proof cover for tires with or without demountable rim. Made of selected high grade leather cloth. In all sizes and four styles. Send for literature.
The Martin Bucket holds a gallon, stows under seat cushions or can be rolled and carried in your pocket.
Sent prepaid for 50 cents.
Send for liberal proposition for Jobbers and Dealers.



The Martin Manufacturing Co.
Lancaster, Ohio.

HYATT
Roller Bearings



THE ECCENTRIC RING

is held tight at the joint by the Concentric Ring, which enables it to conform exactly to the diameter of the cylinder.
It positively prevents leakage, saving power, fuel and oil.
You can prove this at our risk.
Send for Catalog and Price List. Big Opportunity for Dealers.
Manufactured by
Hope Machine Co., Philadelphia, Pa.

THE EDWIN T. CRAVEN CO
Sole Distributors
2310-12 North Second Street Philadelphia, Pa



STANDARD For FORDS

Used as factory equipment on Ford cars until a short time ago, and fully indorsed by the Ford Motor Company's engineers. Built on the tried and tested centrifugal system which does not alter. Hand steady as a rock at all speeds.

Guaranteed country-wide service assures your lasting satisfaction. Dealers, write for proposition.

List, $12

Standard Thermometer Co.
65 Shirley St. Boston, Mass.
73-22

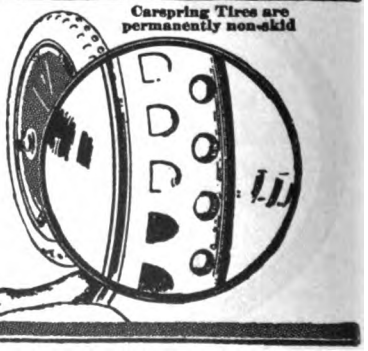
CARSPRING TIRES
BEST UNDER A CAR BEST ON EARTH

Will establish you in business on a permanent and profitable basis.

Our Policy:

One good dealer in each territory, backed by the best goods and unlimited co-operation.

New Jersey Car Spring & Rubber Company
Jersey City, New Jersey



Carspring Tires are permanently non-skid

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Empire Tires

RED WEAR LONGEST

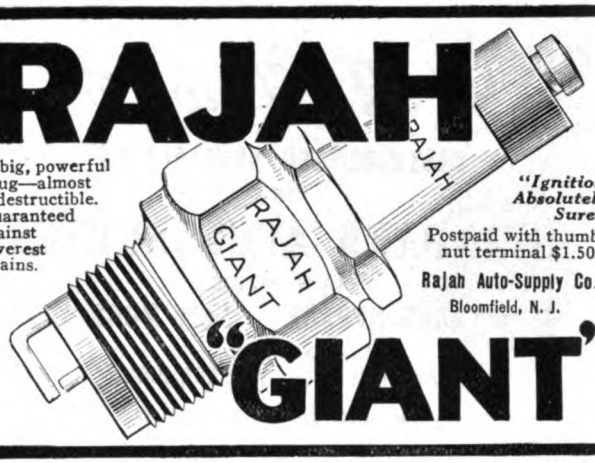
Longest Mileage — Longest Profit

The first and only all red tire

Write for Special Proposition

EMPIRE RUBBER & TIRE CO., Trenton, N. J.

RAJAH



A big, powerful Plug—almost indestructible. Guaranteed against severest strains.

"Ignition Absolutely Sure"

Postpaid with thumb-nut terminal $1.50

Rajah Auto-Supply Co.
Bloomfield, N. J.

"GIANT"

★Hartford SHOCK ABSORBER

Makes every Road a Boulevard



EDWARD V. HARTFORD, Inc.
Heretofore Known as Hartford Suspension Co.
142 Morgan St., Jersey City, N.J.
Branches: New York, Boston, Chicago
Distributors in Principal Cities, Dealers everywhere

MUNCIE Inter-State INDIANA

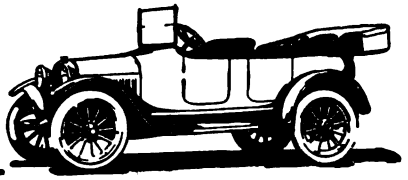
OWNER-PROVED VALUE

Every Inter-State has proved its value definitely and conclusively in the hands of owners.

If you want to know about *proved value* and *actual assets* for either the man who buys or sells cars, write to-day.

Powerful, high speed, long stroke valve-in-head motor. Beautiful streamline body, seating five passengers comfortably. Two unit Remy electric Starting, Lighting and Ignition. Over-size tires, both front and rear. Aluminum running boards. Heavily braced crown fenders. The most accessible medium-priced car on the market.

Touring Car..... $850
Roadster $850
Sedan Touring...$1000
Coupe $1000



INTER-STATE MOTOR CO.
MUNCIE IND.

LONG HORN

INVENTED BY G.F. LONG

"Always Warns"

The ONE perfectly made—the highest priced mechanical horn. Pleases user and *doubly* satisfies dealer. $5 Retail. Send for our new 1916 Sales Plan.

G. P. Muffler Cut-Out

"Tells the Motor's Secrets"

Manufacturers
THE G. PIEL CO., Inc.
Long Island City, N. Y.

Sales Managers
EDWARD A. CASSIDY CO., Inc.
30 East 42d Street, New York City

HORN and FAN Combined

MOTOR DRIVEN



$5

Oakes

Gets the Roads

No gears, motor, batteries or wires to give trouble. Gives warning signal by merely pushing the button at driver's seat. Increases efficiency of fan and motor. Keeps radiator cool. Never fails to sound. Long life. Is easily interchangeable with fan on any Ford in a minute's time. Most reliable and safest horn. Write for dealer's proposition.

Also Oakes Kranklock 50c. and $1.00

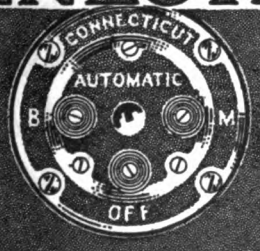
The OAKES COMPANY
***Dept. A* Indianapolis**

Beartone for FORD

Sounds Thru Radiator

AUTOMATIC · IGNITION CONNECTICUT

Gives the most effective spark at every speed for four, six or eight cylinder motors.



Delivers hottest spark at low speeds and a better spark than the magneto at high speed.

Connecticut Telephone & Electric Company, Inc.
Meriden, Conn., U. S. A.

CYLINDER REGRINDING and PISTONS FOR ALL MAKE MOTORS

Butler's Semi Cast Iron Light Weight High Efficiency Pistons

Give Light Weight the Great Motor Improvement with Close Clearance
Special Price on Ford Pistons
Standard Cast Iron Pistons of Improved Design and Engineering
Butler's Special Alloy Pistons are a Proven Quality
Strictly high class work and material

BUTLER MFG. CO., Est. 1897

1120-24 E. GEORGIA ST. INDIANAPOLIS, IND.

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J. H. Faw, Inc.

DISTRIBUTING SPECIALISTS
IN
STANDARD ACCESSORIES
MAIN OFFICE:
41 WARREN STREET NEW YORK CITY
BRANCHES:
ATLANTA PHILADELPHIA
Our Literature on Request.

Saves Gasoline
Increases Power
Gives Greater Speed



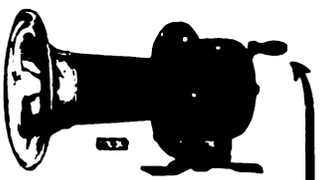
This valve is the best selling accessory of the season. Every dealer should get in touch with our proposition for selling the well-advertised

BRUGAN $4
Economy Valve

It automatically admits air to the intake manifold cutting down fuel consumption 15 to 35 per cent. It improves combustion, gives greater power, quicker response, and less cylinder carbon.
Write for our proposition. 84-3
The Brugan Company, Bangor, Maine

S. J. R.
Boulevard Roadster
$995
Four-cylinder Motor, 3¼ bore and 4½ in. stroke, en bloc.
Cantilever Springs.
110-in. Wheelbase.
Houk Wire Wheels.
Dealers: Write for our proposition
S. J. R. Motor Co. 126 Massachusetts Ave. Boston, Mass.
f9-6

$4. SEISS
Double Acting Horn



Operated by touch of hand either to right or left—for short, sharp blast—or for long, continuous sound, same as a motor-driven Horn. This is the only horn on the market having these features.
Guaranteed for 10 Years
Positive in action—no ratchets—no spring pressure to go against—simplicity—nothing to get out of order.
Write for Literature
The Seiss Mfg. Co., 455 Dorr St., Toledo, O.

Add to Garage Profits by Oxy-Acetylene Welding
Savings made please your patrons and pay good substantial profits
PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)
adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high-grade welding apparatus for $60.00 (Canada, $75.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.
Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



THE PREST-O-LITE CO., Inc.
The World's Largest Makers of Dissolved Acetylene
287 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario

Russel
Internal Gear Drive Axles
Let us send you the history of the Internal Gear Drive Axle and tell you how the RUSSEL has been a big factor in its success.



UNIQUE JACK No 2



Built with a double leverage and will lift easier than any ratchet jack. Lifts on both up and down strokes.
Strong, compact and durable; will last for years.
By far the most efficient jack made.
Write for circular.
Heavy car type for cars weighing over 2500 lbs.
No. 1 is for light cars.
U. S. Manufacturing Co.
Mansfield, O.

Gould
STORAGE BATTERY
***The* Strong Right Arm *of a* Starting-Lighting System**
GOULD STORAGE BATTERY CO.
General Offices, 30 E. 42nd St., New York
Write for our Agency Proposition

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"American"

AXLES

Made by the Pioneer Motor Axle Builders of America

Licensed under The Kardo Company Patents

THE AMERICAN BALL-BEARING CO.
CLEVELAND, OHIO

The Ideal Hose Clamp

The only clamp that closes perfectly round over a hose. It cannot buckle or cut hose. Will always form back to the original shape by tightening screw.

Can be slipped over a pipe no matter in what position pipe may be.



THE OLD WAY
Note escape of water



THE NEW WAY
No chance for leakage

Manufactured by the
Ideal Clamp Mfg. Co.

Distributed by J. H. FAW, Inc.
41 WARREN ST., NEW YORK Branch—ATLANTA, GA.

O-SO-EZY

THE PERFECT CEDAR OIL POLISH

O-SO-EZY CEDAR OIL POLISH
is made by

O-So-Ezy Products Co.
264-268 Jefferson Ave., Detroit, Mich.
Pacific Coast Branch:
Phil. B. Bekeart Co., San Francisco, Cal.

"FASCO" RACING BODIES



Models
H $115.00
L $85.00
f.o.b. Peoria

A Racing Body that will make your Ford the classiest looking car in town. Well built. Best materials and workmanship. Rides without noise. Sold complete. Easy to mount. THE PRICE THIS YEAR IS ONE-THIRD LOWER.
Write for descriptive literature.

FRIED & STONIER CO.
Peoria Dept. 20 Illinois

"Clero Horns"
is the other name for
"Dealer Profit"

Every live dealer in this country realizes that the only successful business is a profitable business.

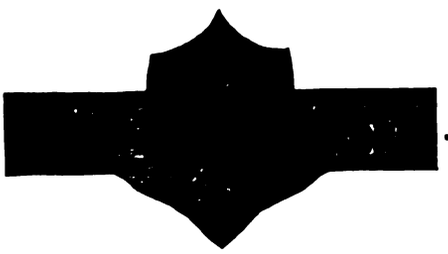
We want to aid in making your business more profitable—and *we can do it.*

Clero Horns are manufactured by a big organization with unexcelled facilities for putting highest quality into large production, and thereby *insuring* low list prices, liberal discounts—and consequent good profits. We want every dealer who handles accessories to write us at once. We will send our irresistible profit making proposition by return mail.

Don't put it off until a later time, but write for our "AA" dealer proposition *at once.*

Most Liberal and Livable Discounts to the Trade

THE FITZGERALD MANUFACTURING CO.
Department C Torrington, Conn.



Write for our New Catalog

Moline Knight "40" 7 Passenger Touring Car—$1450

Thousands of Knight-Motored cars are being bought—before you buy get our catalog. Special Proposition to Dealers.

MOLINE AUTOMOBILE CO. EAST MOLINE, ILL.





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The Hampton Blowout Patch Is Guaranteed To Hold

You can guarantee any HAMPTON Blowout Patch to hold and become part of the tire it repairs, at our risk. The quickest and easiest selling patch on the market. Made of the best materials, by superior workmen. Holds like vulcanizing. Sells at the right price. Write for full details and discounts for big Spring and Summer profits.



Hampton-Campbell Co.
Indianapolis Indiana



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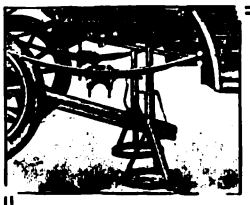
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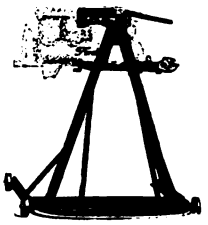


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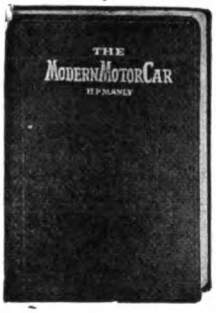
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32x4	14.10	14.85	2.75
33x4	14.65	15.45	2.85
34x4	14.95	15.75	2.90
35x4	15.55	16.50	3.00
36x4	15.80	16.60	3.10
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Advertisers' Index

A

Acme Steering Device Co. 105
Adamson Mfg. Co. 68
Ahlberg Bearing Co. 121
Allen & Curtiss Co. 112
Aluminum Mfg. Co. 112
American Ball Bearing Co. 111
Ames Co., F. A. 63
Atwater Kent Mfg. Works 112
Auto Brokerage Co., Inc. 55

B

Benford Manufacturing Co. 81
Bosch Magneto Co. 65
Brown-Lipe-Chapin Co. 74
Brugan Co 110
Burford Motor Truck Co. 83
Butler Mfg. Co. 109

C

Capitol Windshield Device Co. 90
Cassidy, E. A. 109
Chalmers Motor Co. 48
Champion Ignition Co. 93
Chicago Auto Supply House 121
Combination Rubber Mfg. Co. 112
Connecticut Tel. & Elec. Co. 109
Craven Co., E. T. 108
Cray Brothers 106
Crew-Levich Co. 79-80
Curtis Pneumatic Mchy. Co. 107
Cutler-Hammer Mfg. Co., The ..... 92B and 92C

D

Denning Tractor Co. 97
Detroit Auto Products Co. ..... 98 and 99
Disco Electric Starter Corp. 108
Du Pont Fabrikoid Co. 62
Durkee-Atwood Co. 122

E

Ekern Bros 113
Eisemann Magneto Co. 104
Empire Rubber & Tire Co. 109
Engineering Tube Bending Co. 121
Evapo Mfg. Co. 112

F

Faw, J. H. 110
Fedders Mfg. Co. 106
Federal Rubber Co. 75
Firestone Tire & Rubber Co. 71
Fitzgerald Mfg. Co. 111
Ford Motor Co. 113
Fried & Stonier Co. 111
Fulton Co 108

G

General Electric Co. 58
Gibson-Hollister Mfg. Co. 106
Goodrich Accessories Corp. 2
Gould Storage Battery Co. 110
Gray & Davis, Inc. ..... Front Cover
Greenfield Tape & Die Corp. 88
Grossman Mfg. Co., Emil 111
Gulf Refining Co. 103

H

Hampton-Campbell Co. 112
Hartford, E. V. 109
Hassler, Inc., Robt. H. 102
Haywood Tire & Equip. Co. 102
Hill-Smith Metal Goods Co. 87
Holmes & Bros., Robt. 121
Hotel Marie Antoinette 104
Houk Mfg. Co. 106
Hull Pump & Tank Co. 88
Hupp Motor Car Co. 76
Hyatt Roller Bearing Co. 108

I

Ideal Hose Clamp 111
International Harvester Co. of America 105
Inter-State Motor Co. 109

J

Jenkins Vulcan Spring Co. 107
Johns-Manville Co. 77

Digitized by Google

Advertisers' Index

L

Laird & Lee 113
Lehne Aluminum Solder Co 113
Liberty Motor Car Co 94-95
Long Mfg. Co 82

M

Mack Mfg. Co 122
Martin Mfg. Co 108
Mayo Mfg. Co 103
Maxwell Motor Co 52
McFarlan Motor Company 73
McQuay-Norris Mfg. Co ..... Third Cover
Mfg. & Equipment & Eng. Co 90
Michelin Tire Co 47
Michigan Auto Trailer Co 121
Mitchell Lewis Motor Co 69-70
Moline Automobile Co 111
Moon Motor Car Co 56-57
Morse Twist Drill Co 123
Mosler & Co., A. R 106

N

National Lamp Works 66-67
National Rubber Co 113
New Departure Mfg. Co 111
New Era Spring & Specialty Co 89
N. J. Carspring & Rubber Co 108
New Process Gear Corp 61
Nordyke & Marmon Co 91-92
Norma Co. of America 3

O

Oakes Co 109
Oakland Motor Car Co ..... Back Cover
O-So-Ezy Products Co 111

P

Peter & Herron Dash Co 112
Pittsfield Spark Coil Co 104
Prest-O-Lite Co 110

Q

Quaker City Rubber Co 106

R

Rajah Auto Supply Co 109
Rayford Co 78
Royal Equipment Company 50-51
Rubber Products Co 124
Russell Motor Axle Co 110

S

S. J. R. Motor Co 110
Scripps-Booth Co 106
Seiss Mfg. Co 110
Shaler Co., C. A 72
Sheldon Axle & Spring Co 100
Sheridan Commercial Car Co 92A
Silvex Co 121
Sparks-Withington Co 108
Splitdorf Electrical Co 86-86
Standard Thermometer Co 108
Stevens & Co 10
Stewart-Warner Speedometer Co ..... Second Cover
Studebaker Corp 1
Svensgaard Sales Corp., H 102
Swinehart Tire & Rubber Co 113
Symons Bros. Co 103

T

Tiona Oil Company 64
Twin Rim Co 89

U

United Eng. & Mfg. Co 123
U. S. Mfg. Co 110

V

Van Sicklen Co 107
Velie Motor Vehicle Co 49

W

Warm Hand Steering Wheel Corp 113
Warner Auto Top Co 107
Webber & Co., P. H 90
Whitney Mfg. Co 107
Willys-Overland Co 4
Wonder-Mist Co 112
Wood Co. W. C 105

Z

Zenith Carbureter Co 113



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is the rock on which all good manufacturing is founded. To be sure that every lot of

"MORSE" DRILLS

is all it should be we take no chances with poor material. Every shipment of steel passes a chemical analysis before going into "Morse" Drills. Does it pay? Their use will prove that to you by the amount of work they will do.

Catalog on Request

MORSE TWIST DRILL & MACHINE COMPANY
NEW BEDFORD MASS.



Extraordinary Lift And Overhang

—has the Hilite Portable Floor Crane

With light steel superstructure and heavy cast iron base, its center of gravity is near the floor, preventing top-heaviness and giving it the high lift and deep overhang required in Garages and Shops.
The only crane possessing these features, it is lighter, easier to handle and stronger than other cranes. Its trussed Cantilever (bridge type) construction is the strongest known. It is a necessity and a big labor saver in every garage.

No.	Cap.	Lift	Over-hang	Base high	Base wide	Wgt.	Price
66	1-ton	6 ft. 6 in.	33 in.	6 in.	30 in.	425	$64.00
76	1-ton	7 ft. 0 in.	33 in.	6 in.	30 in.	445	$66.00
80	2-ton	7 ft. 6 in.	36 in.	7½ in.	36 in.	575	$82.00

($14.00 less without lifting device)

The United Engine & Mfg. Co.
"Pioneers in Garage Equipment"
Hanover, Penn.

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Fortify Yourself with "Stronghold"

YOU get thousands of excess miles **out of** "Stronghold" tires because we build thousands of excess miles **into** them at the factory. "Stronghold" tires are built by hand, under the personal supervision of experts trained for 18 years in producing wear-resisting rubber.

And they are cured under an improved process that has no equal for preserving all the strength and durability of which high grade rubber and fabric are capable.

Stronghold TIRES & TUBES

"Stronghold" tires are liberally guaranteed by us, and sold only by Dealers who are thoroughly Reliable, and equipped to give you the best attention and service.

Try **just one** "Stronghold" next time—the other three will follow in due time.

Tire Dealers

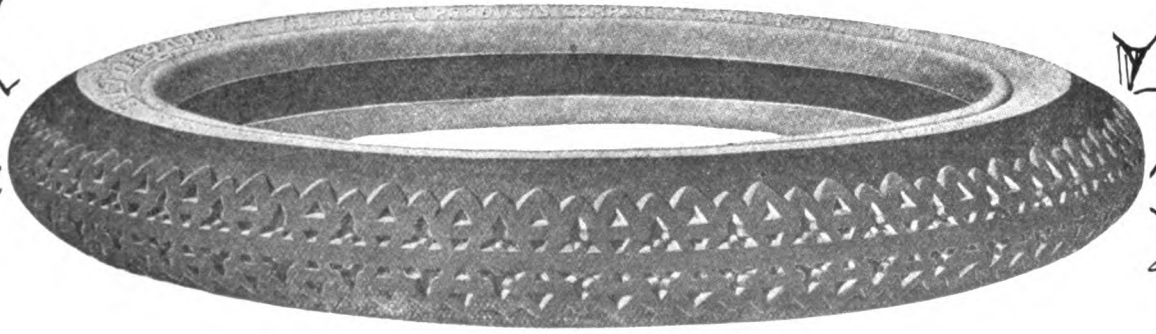
"Stronghold" tires and tubes are making good everywhere. Put them on the cars of a few of your Best Customers and compare results. Fortify yourself by taking on this specially good tire and going after the trade of car owners who demand The Best in tire service.

Write for open territory and our proposition
of Exclusive Sale and Distributor Prices

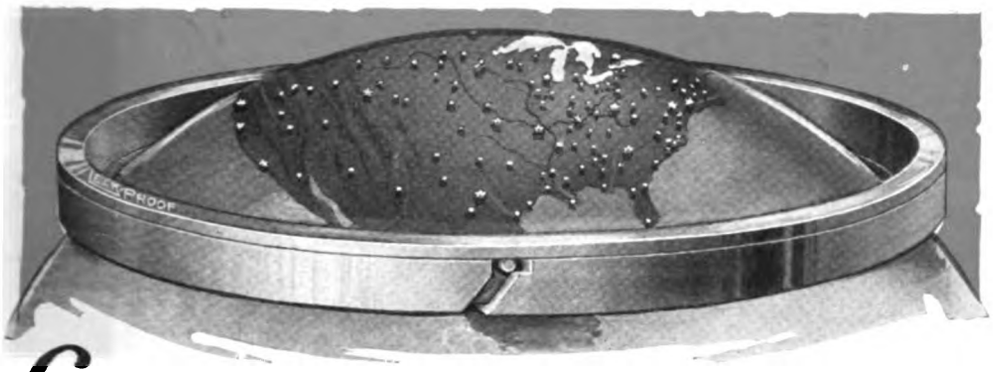
THE RUBBER PRODUCTS COMPANY

18 years of experience in making wear-resisting rubber

BARBERTON, OHIO



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from Coast to Coast

LEAK-PROOF Piston Rings are available everywhere, in all sizes and diameters.

Over 250 Jobbers, located in every center, carry complete LEAK-PROOF service stocks covering every ordinary need. No matter where you are, there is a stock close at hand. You don't have to keep your customers' cars torn down for days while rings are being made and shipped from the factory.

Use the McQuay-Norris Dimension Book to learn the size required, then order LEAK-PROOF Rings from your jobber. He'll send them from his stock. That's the way to get and give piston ring service.

If over-size or over-width rings are required, there is a stock of 2000 sizes constantly ready at the St. Louis factory from which to supply you.

The leading jobbing houses carry the Original and Genuine LEAK-PROOF Piston Rings because time and experience have proved them the best. The best in design, material and workmanship—and ***service.*** You cannot afford to use any other.

Send for FREE booklet:—"To Have and to Hold Power"—the standard hand-book on gas engine compression. It tells what LEAK-PROOF efficiency means. Write Department K.

Manufactured by

McQuay-Norris Mfg. Co., St. Louis, U. S. A.

Canadian Factory: W. H. Banfield & Sons, 372 Pape Ave., Toronto.

BRANCH OFFICES:

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Pittsburg	San Francisco	Los Angeles
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	Dallas	

McQUAY-NORRIS

LEAK-PROOF PISTON RINGS

—the original and genuine

This angle-to-angle interlocking construction identifies LEAK-PROOF. Insist.

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Oakland

eights sixes fours

Motoring luxury at sensible cost—for car and upkeep

Oakland "Six" at $795 has brought the supreme satisfactions of motoring within the reach of modest pocketbooks.

Time was—and not long ago—when men paid $2500 or more to secure the 6-cylinder power and smoothness, the streamline beauty, the full electric equipment, and even a *few* of the refinements which Oakland "Six" now offers.

And you can afford to *maintain* an Oakland "Six." Tire wear is light—the "Six" weighs but 2100 pounds. Gasoline bills are small—owners make 20 to 25 miles per gallon. Repair costs are low—depreciation is little. It is indeed a sensible "Six."

Oakland "Eight" $1585. A car for those who want the maximum in pull and speed, in passenger capacity and size. Its long French type yacht-line body with double cowl effect, its slanting windshield, its V-type radiator—all give it an exclusive style and distinction.

Oakland "Four" $1050. Generous size, ample power, and amazing simplicity make this a splendid value for those who prefer a "Four."

OAKLAND MOTOR COMPANY, Pontiac, Mich.

(21)



Oakland Six $795

"Sturdy as the Oak"

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 2

New York, July 12, 1916

Ten cents a copy
Two dollars a year



Champion
"TOLEDO MADE FOR THE WHOLE WORLD'S TRADE"
Dependable Spark Plugs

THE *official estimate* of the AUTOMOBILE CHAMBER OF COMMERCE on automobile production this year is—

One million four hundred thousand cars.

Of these, over a million will be Fords, Overlands, Studebakers and Maxwells, equipped with Champion Dependable Spark Plugs.

The manufacturers of *over one hundred other cars* will equip this year *exclusively* with Champions.

Their production will exceed 120,000 cars.

So of all the automobiles produced this year it is apparent that more than four out of five will be dependably equipped—with Champions.

Successful dealers are making their spark plug stock exclusively Champion. Our extensive advertising keeps Champions moving. They will not collect dust on your shelves.

The Champion Guarantee

Absolute satisfaction to the user, free repair, replacement or your money back.

Champion Spark Plug Co., 1412 Upton Avenue, Toledo, Ohio

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Stewart

Speedometer

Are the 5% Right or Wrong?

America's largest automobile manufacturers could never have reached their present position of leadership without plenty of foresight, good judgment, common sense and a sincere effort to give the best dollar for dollar value they could.

95% of them use the Stewart Speedometer!

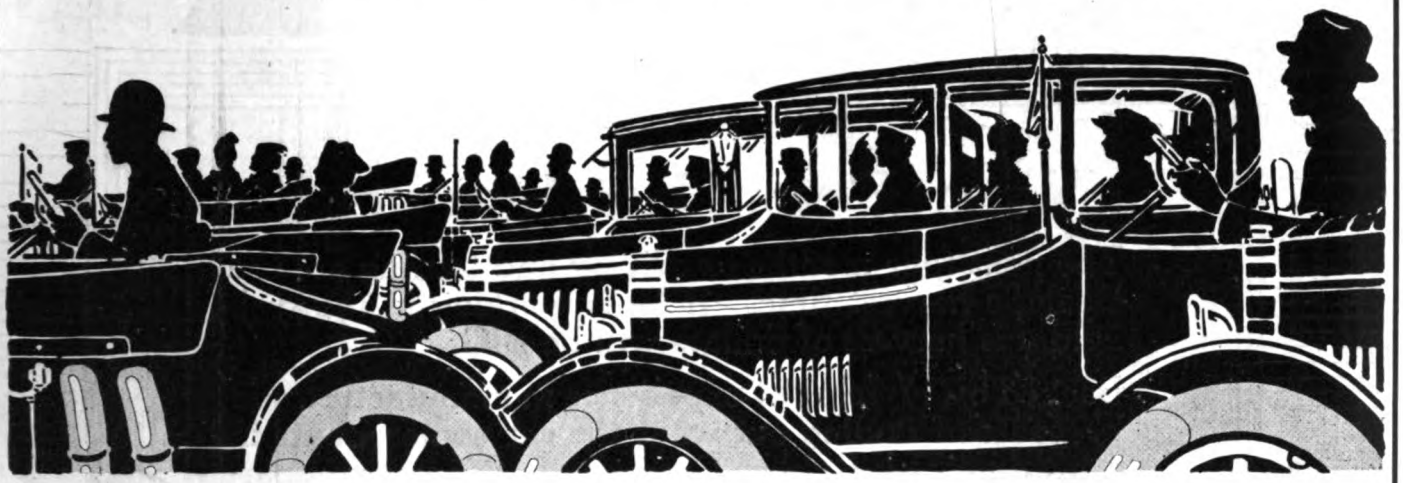
"No car is better than its accessories"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

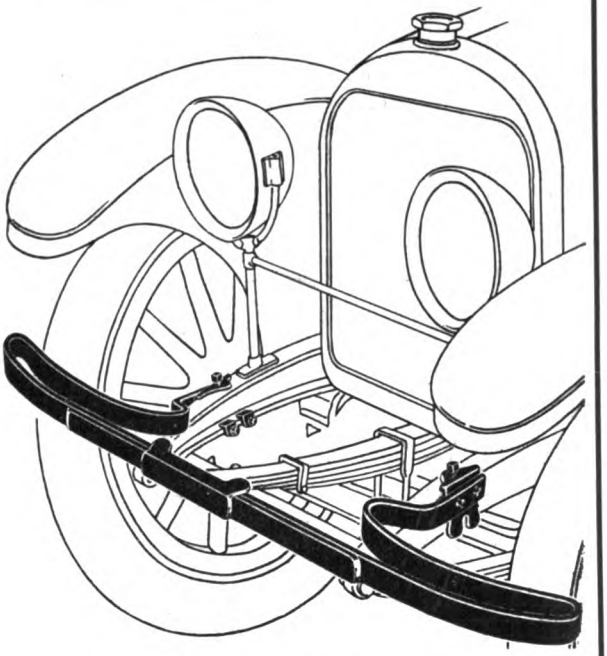


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They'll All Be Coming for It!



Hartford BUMP ABSORBER
—more than a Bumper



To be announced to the public at once. An absolutely new car protection—with all the reliability, reputation and assurance of Hartford behind it. Nothing else to compete with it. Every car not equipped with a "bumper" can be sold a Hartford Bump Absorber, for the Hartford appeals at once to the owner who could never quite appreciate the mere "bumper." Every car already equipped with a "bumper" can be sold a Hartford Bump Absorber, for the owner who saw the need for a "bumper" can see the absolute necessity of the Hartford Bump Absorber.

Big Advertising Campaign Coming

"More Than a Bumper"

The Hartford Bump Absorber does all that a mere "bumper" is supposed to do, and then it does more—it not only protects the car with the strength of finely tempered steel, but in its powerful double-loop, double-leaf spring construction it absorbs and nullifies the bump and shock of collision. It is not a mere "bumper" with a spring-action added—it is a real bump absorber.

Probably even before this magazine reaches you the first announcements in big, powerful advertisements will have reached the public. In addition to this advertising of our own, we furnish dealers with effective, forceful, sales-making advertising help—a "silent salesman" with miniature model, counter hand-outs, etc. Send the coupon today for complete details of this new, fast-selling proposition. Don't wait while some other dealer gets the cream of the sales—send the coupon now.

Edward V. Hartford, Inc.
Heretofore Known as Hartford Suspension Co.
142 Morgan Street, Jersey City, N. J.

Makers of the Hartford Shock Absorber, Hartford Cushion Spring, Hartford Electric Brake, Hartford Auto Jack, Red Rack Jack.

BRANCHES:
New York, Boston, Chicago
DISTRIBUTORS IN PRINCIPAL CITIES

Send me full details of the new Hartford Bump Absorber and your proposition to dealers.

Name .....

Address .....

City and State .....

Mail to Edward V. Hartford, Inc., 142 Morgan Street, Jersey City, N. J.

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FISK

Now For The Harvest!

The next four months of driving and touring are the Dealer's harvest time. If he is working in the Fisk field, his harvest of dollars will be BIG.

Backed by 17 years of experience in manufacture and **17 years of finding out what the car owner wants in a tire,** the Fisk Rubber Company is this year preparing the way to sure and steady profits for the wise and fortunate dealer who sells Fisk goods.

They have made the harvest ready with an honest product, widely advertised. YOU will reap the profits.

The Fisk Grey Non-Skid is a better tire than it ever was.

The Fisk Red Top is a big mileage tire and gives you the most attractive, easiest selling answer to the strong demand for color in tires.

The Fisk Tubes, both the Grey and the tough Red Gold Bond, are quick sellers.

You can get re-orders quickly at one of the 125 Fisk Branches, one of which is sure to be conveniently near you.



And beyond all this, you have the greatest selling argument in the tire world today—**The Fisk Service Policy.**

We Are Always Looking for Good Dealers. If Interested Send to Dept. 23 for Our Dealer Plan.

THE FISK RUBBER COMPANY

of N. Y.

Chicopee Falls **Mass.**

Fisk Branches in All Principal Cities

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DEALERS, JOBBERS AND GARAGEMEN
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Editorial Contents

Do Time Payments Help Sales?.....6-7
Some dealers say they do and some say they don't. Motor World asked several hundred dealers to tell what they think and this is their answer.

New Cars for 1917—
Paige Detroit.....10-11
Overland 12-14
Ross Eight.....18-19
Day Elder Truck..... 38

Motor World at Tractor Demonstrations..... 9

Five Fire Extinguisher Windows..... 35

President Wilson on Salesmanship..... 37
Service, he says, is the backbone of the nation's prosperity.

Daniels Dressed Up..... 15
He is in Manistee, Mich., and he says much of his success is due to Motor World ideas.

Dealers' Legal Status..... 16

There Is No Best Car..... 17
At least, that's what Reilly says—and he has a corking reason for saying it, too.

That One Poor Job..... 21
It may hound your footsteps like a mangey cur. Watch out for it!

Simplified System..... 20
Some questions that probably have been worrying you.

Scientific Garage Construction.....22-23
Questions Answered.....24-25
Repairshop Short-Cuts.....26-27
Newest Accessories.....28-29
Editorial Observation..... 30
Retail News.....32-33
Association News..... 40
Regular News Department.....40-44
Coming Events..... 44

Advertisers' Index on pages 106-107



It's Better All Around

—in the long run or in the short run, on rough roads or smooth roads, in sun or rain, heat or cold, day after day, mile after mile, trip after trip —whichever way you take it, it's better—the

CORBIN-BROWN SPEEDOMETER
"The Speedometer of Absolute Accuracy"

And this isn't because we say so, but because it has proved it so; actually proved it through service. This is the kind of speedometer you want.

SPECIFY IT!

Your dealer will show it to you. Catalog on request.

THE CORBIN SCREW CORPORATION
THE AMERICAN HARDWARE CORPORATION, Successor
NEW BRITAIN, CONN.
BRANCHES: New York Chicago Philadelphia
Makers of Corbin Duplex Coaster Brakes for Bicycles

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Overland

TRADE MARK REG.



This Building in Albion, Michigan Was Erected on Overland Profits

Here is a new building erected by the Albion, Michigan, dealer on profits from Overland and Willys-Knight cars sold in just twelve townships.

It contains 15,000 square feet of floor space and over $5,000 worth of machinery and equipment—all paid for July 1st—and paid for out of Overland profits.

The Albion dealer up to June 1st this year had sold 125 cars.

—An indication of the possibilities that are open to *any* Overland dealer.

The Willys-Overland Company - - Toledo, Ohio

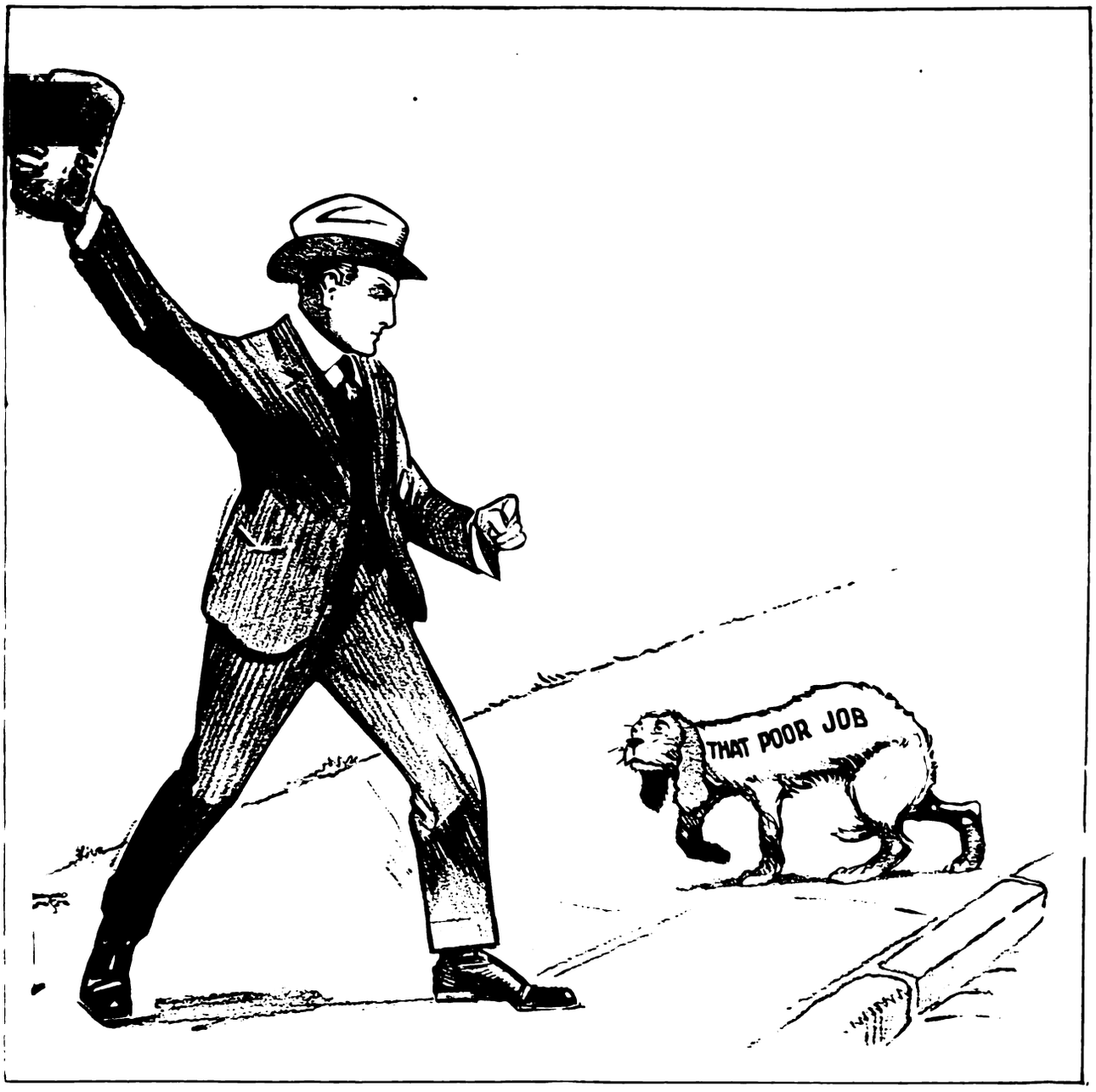
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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII New York, U. S. A., Wednesday, July 12, 1916 No. 2

That One Poor Job



(*Read the story on page* 21)

"The evil that men do lives after them; the good is oft interred with their bones." One slip-up, one poor job, will follow you around like a mangy cur

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Is it easier to sell cars on time than for cash? Have time payments increased sales? Has the so-called factory plan had an effect? Are time payments a new thing in the motor car trade?

A Half Hundred Dealers from Widely Separated Towns of the United States Express Opinions on

Time Payments

They State That It May or May Not Help a Sale to Offer Time Payment. They Say Time Selling Is Not Essentially New in the Motor Car Trade. And Many of Them Have Not Been Affected by the New Factory Plan

SAYS the Prospect: "I don't think I'll buy now. I haven't the money." Says the Dealer: "That's easily taken care of. We have a deferred-payment arrangement whereby you can take the car home with you and pay for it later."

Will this help the dealer sell the car? Will it or won't it?

THE range of answers by a half hun- leading dealers on this point is interesting. Some say Yes, some No, and some say Sometimes. In considering the time-payment plan, the plan referred to here is that which recently attained prominence because of its widespread advertising and which is commonly known as the "factory plan." Some are factory-promoted and some are not, but they are known by that name.

With the advent of the recent time-sale agitation, caused by the upspringing of time-payment companies, there has arisen a belief that an important change was being effected in the trade and that dealers generally were finding a possible new method for the conduct of business.

In order to ascertain the status of the time-sale proposition, Motor World sent inquiries to several hundred dealers in the $700-$1,500 car class. These dealers are distributed over the whole United States and are in both large and small towns.

Their answers indicate that:

1. *The deferred-payment offer sometimes, but not always, helps sell cars.*
2. *Time selling is not a new factor in the motor car business, although the so-called factory plans are more or less new.*
3. *The majority of dealers sell cars on time, many always have, and the average percentage of time sales is 37 per cent of the dealer's business.*

Is It Easier to Sell on Time?

A surprising feature of the data is the number which states that an offer of time payment does not necessarily help the sale. One dealer said it was far easier to sell this way; out of forty-four nine came out with a flat No; twelve said Sometimes, and twenty-three said Yes.

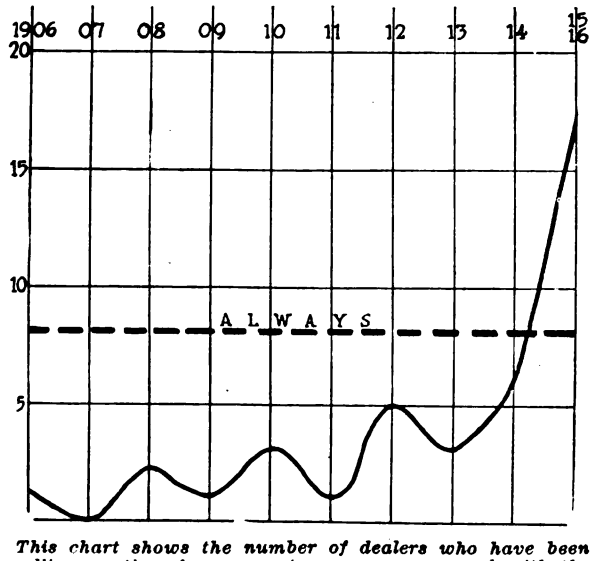
The location of the dealer and the price and type of car he sells are influential factors in determining the value of time payments in his business. The dealers who furnish this data also develop an interesting point in stating the classes of prospects who are influenced by time sales. The scale runs all the way from laborers to bankers. The salaried class generally is specified as being appealed to by the time plan, and while some dealers state that men with money are not influenced other dealers explain that their sales are to some of the wealthiest people in their territory.

A study of the data given does not reveal any one class as the big buyer of $700-$1,500 cars on the deferred-payment plan, although the salaried class without doubt has the preference. Two dealers in widely separated towns classify instalment buyers as "those who cannot afford to own a car."

The younger element, the young fellows who want a car but haven't the ready cash, are also good buyers on this basis, and in their case the deferred-payment method is influential in swinging the sale. One dealer does not advertise his plan, because he prefers to hold it until the end as an added inducement to the buyer.

In those sections where the farmer element is the heavy buying class, time payments have always been more in vogue than in other sections, because of previous existing conditions; the farmer in a lean year—or for several of them—is carried on the books of the grocer and implement dealer and others, and when the good year comes he pays up. This has made time buying a common practice. Also, many of the car dealers are old implement dealers and follow the practise they pursued in the implement business. The farmer, having bought his implements on time, expects to be able to get his motor car the same way, and doubtless the same factor will enter into the rapidly coming tractor business.

As to the second point, whether time sales are a new factor in the trade, the table that appears herewith lists more than fifty dealers, of whom some have sold cars on notes for 10 years. A few never have sold on time, but the others date the beginning of their instal-



This chart shows the number of dealers who have been selling on time from year to year as compared with the number that has always sold on time. The data are taken from the table on the opposite page

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ment—or note—business back for a considerable period.

One common expression of opinion is that it is better to keep the notes in the home town of the dealer and make the transaction local rather than to deal with a distant out-of-town corporation with which neither the dealer nor the customer is acquainted.

The reasons given for this vary. One dealer asserts that he wants to keep the business in his home town. Another states that he does not approve of the new time-payment systems. Another says it is a matter for the judgment of the individual dealer and that he prefers to handle the whole transaction himself. On the whole, those dealers who already have developed a note-sale business of their own prefer to stick to their old methods rather than make a change.

In cars of small price the time-sale plan may be more prevalent. And with some small dealers who are new in the business and who have not been adequately financed, the factory plans may perhaps be received more extensively.

Among the dealers there are some who are much in favor of the new factory plans. In cases where a dealer has not worked up a time plan of his own and where competing dealers have been taking sales from him which he might have sold if he would take a note or two, the new plan may prove his salvation. The Memphis-Overland Co. states not only that the factory time plan helps sales, but that all classes are reached by the plan, the banker buying on time because he can use his money elsewhere at better rates and the salaried employee paying in instalments because that best suits his mode of income.

The third point, the number selling on time, is merely statistical and the curve on an accompanying chart best brings out the situation. Out of thirty-nine answers, the years when the dealers began time selling are computed, and while the curve jumps up and down a trifle because of the scant data in certain years, a distinct upward trend is apparent. If this means anything it means that more dealers are selling on time each year and that the practice is spreading.

Note the line across the center of this same chart, indicating the proportion that has always sold on time, ever since entering the business. So far as this is indicative of any condition, it points out that the effect of the new time-payment propaganda on the trade is small when compared with the time business that has always been done.

There are a number of dealers who never have and probably never will sell on time, because, they aver, it cuts into the cash trade and is undesirable. They maintain that the dealer needs cash business more than he does business regardless of this phase, and they maintain that time selling is detrimental.

The table that accompanies this story shows a majority of the dealers as stating that the factory time plans have not increased their business. Where deferred payments have increased sales and where the factory method is used, the credit goes to this plan, to be sure, but many of the negative responses concerning the factory plan are due to the fact that the time plans used are those initiated by the dealers themselves.

In addition to the factors considered in this story others will be taken up later in Motor World. Many elements enter into the business, including the percentage of failures to pay and the procedure followed by dealers in those cases, also whether such sales result in a gain or loss.

There are thousands of dealers whom Motor World cannot reach in its investigation of the time-payment question and all readers are invited to express opinions on any phase of this important question.

Experience of 56 Dealers with Time Payments

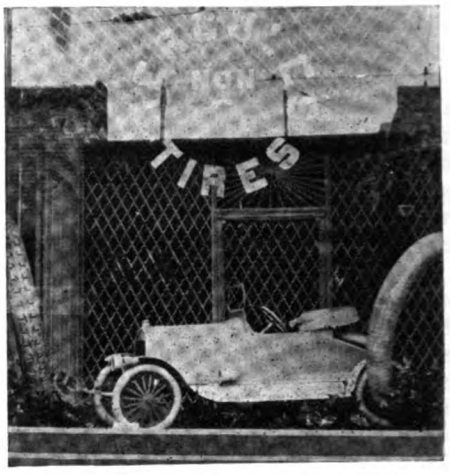
Name of Dealer—City	Since when Have You Sold on Time?	What Part of Sales on Time Since that Date?	Have Time Payments Increased Your Sales?	Has Factory Time Payment Plan Increased Your Sales?	Using Own Plan or Factory Plan?	Is It Easier to Sell on Time?
Asheville Garage Co., Asheville N. C.	Try not to					
Auto Repair Co., Winston Salem, N. C.	Oct., 1915	50%	33⅓ to 40%	10%		Sometimes
Bannock Motor Co., Boise, Idaho	Jan. 1, 1915	50%	Yes	No		Yes
Briscoe Motor Sales Co., Jackson, Mich.	Jan. 1, 1915	25%	25%	No	Own	Sometimes
Bennighof-Nolan Co., Evansville, Ind.	Jan. 1, 1916	40%	30%	35%		Yes
Bergen Auto Co., Rutherford, N. J.	Never					No
Birmingham Motor Co., Birmingham, Ala.	1910	50%		No	Own	No
Browning Auto & Supply Co., Salt Lake City	June 1, 1914	24%	Yes	4%	Own	Yes
Carler, Geo. B., Petersburg, Va.	1914	33⅓%	50%	No	Own	Sometimes
Chalmers Auto Co., Hartford, Conn.	Never					
Chalmers Motor Co. of Philadelphia	Always	Small	None	No	Own	Sometimes
Chalmers-Syracuse Co., Syracuse, N. Y.	Always			No	Own	
City Point Motor Co., Petersburg, Va.	Always	Small		No	Own	
Connell & McKone Co., Boston	1912	10%	Yes	No		No
Creeby Co., S. L., Bangor, Me.	1911	20%	10%	No	Own	Yes
Cummings-Rutherford MotorCarCo., Peoria, Ill.	Dec. 1, 1915		10%	No	Own	No
Curtice, E. S., Meridian, Miss.	Mar. 1, 1916		Yes			Yes
Elsen-Minnick Co., Cedar Rapids, Iowa	Never					No
Fifth Avenue Garage, Gary, Ind.	1914	65%	50%	No	Own	Yes
Gardner Auto Co. Gardner, Mass.	1913	75%	50%	No		Yes
Greer-Robbins Co., Los Angeles	1906				Own	
Hollywood Auto Garage, Hollywood, Cal.	1914	60%	25%	30%		Yes
Indian Head Garage, Nashua, N. H.	Never					No
Imes & Co.. W. H., Topeka, Kan.	1912	20%	Not lately	No	Own	About even
Judd Seacord & Son, Galesburg, Ill.	1908		Small	No	Own	
Ladd Auto Co., Augusta, Me.	Never					Yes
Lyons Auto Co., Grand Forks, N. D.	Always	Small		No	Own	
Memphis-Overland Co., Memphis, Tenn.	Aug., 1913	50%	50%	No	Factory	Far easier
Minot Auto Co., Minot, N. D.	Dec., 1915					
Mission Garage, Long Beach, Cal.	Oct. 1, 1915	60%	15%	10%		Sometimes
Medel Garage, Roanoke, Va.	1909	10%	None	No	Own	No
More Bros., Fargo, N. D.	Always	33⅓%	Some	No	Own	Yes
Motor Car Co., Baltimore	Jan., 1914	60%	25%	15%		Yes
Mutual Auto Co., Duluth	Sept., 1915	10%	5%	No		No
O. K. Auto Supply & Transit Co., Asheville, N. C	1910	15 to 60%	200%	40%		Yes
Ollinger Auto Co., Salina, Kan					Factory	Yes
Olympia Garage, Olympia, Wash.	1912	20%	20%	No		No
Overland Co., Topeka, Kan.	1908				Own	
Overland Buffalo Co., Buffalo, N. Y.	1910	75%		No	Own	Yes
Overland Louisville Co., Louisville, Ky.	Oct., 1915	Small	Small	Yes	Factory	Sometimes
Overland Ft. Dodge Co., Fort Dodge, Iowa	May 1, 1915	50%	25%	20%		Yes
Overland Madison Co., Madison, Wis.	Oct., 1915	40%	None	No	Own	Yes
Overland Motor Co., Wichita, Kan.	1912	12%	6%	No	Own	Sometimes
Overland Sales Co., Jackson, Mich	Jan. 1, 1916	15%	10%	10%		Yes
Overland Southern Automobile Co., Atlanta, Ga	July, 1913	75%	25%	40%		Yes
Overland-Syracuse Co., Syracuse, N. Y.	1912				Own	Sometimes
Paddock-Zusi Motor Car Co., Newark, N. J.	Never					
Park Automobile Co., St. Louis	Never					
Polk, Eugene, Little Rock, Ark.	Always	35%	Yes	15%	Factory	Yes
Rutland Garage Co., Rutland, Vt.	Always	4%		No	Own	Yes
Rybold & Weihaupt Auto Co., La Crosse, Wis.	Nov., 1915	Majority	Yes	No	Own	Yes
Seneca Motor Car Co., Rochester, N. Y.		Less than 10%	Small	No	Own	Not much
Starr, W. C., Decatur, Ill.	April 1, 1916				Factory	
Walnut Auto Co., Muncie, Ind.	Jan. 1, 1916	Small	Small	No	Own	Yes
Waterloo Overland Co., Waterloo, Iowa	Sept. 1, 1915	15%	15%	No	Factory	Not always
West Side Garage, Green Bay, Wis.	1914		None	No	Own	Sometimes

Salesmanship

MANY of the best minds in the country are gathered this week in Detroit to attend the first World's Salesmanship Convention. Motor World has two editorial representatives "covering" this convention for Motor World readers. The complete story will appear next week.—Editor.

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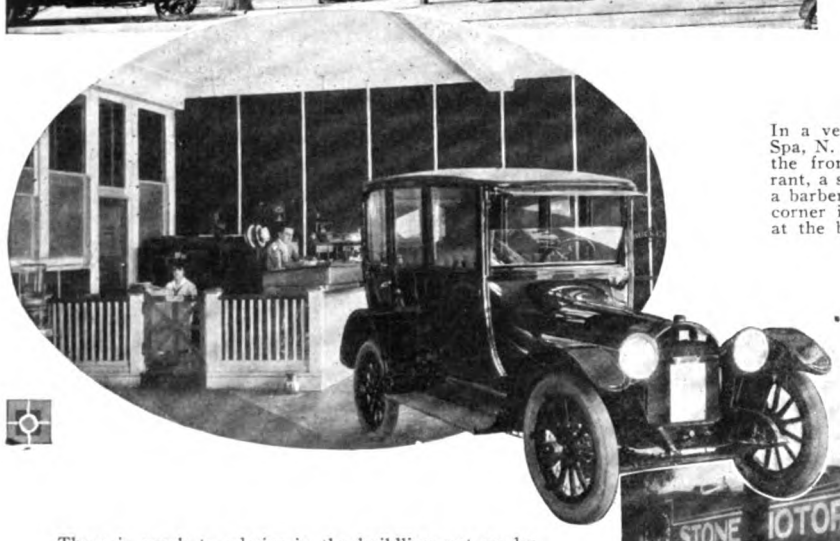
Here and There in the Garage And Dealer Field



A clever show window was designed by M. W. Morris, manager of the Broadway Tire Store, Tacoma, Wash., formerly the Hercules Tire Sales Agency, which distributes Hercules and Michelin tires. A car one-third life size was constructed of cardboard and installed in a window trimmed with lattice work and pillars of crepe paper. Evergreen boughs and holly gave a wintry air. The window is 4 x 8

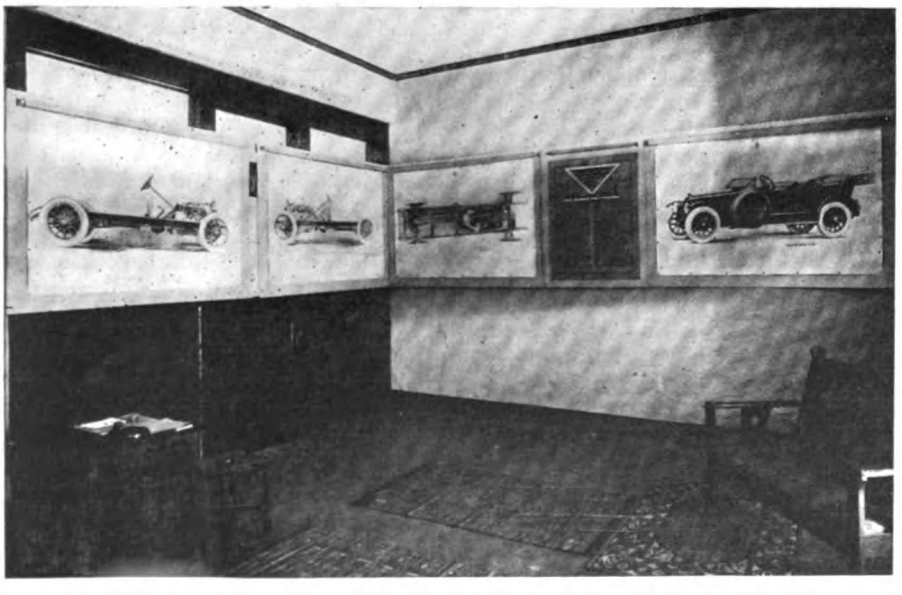


In a very attractive garage building at Ballston Spa, N. Y., the most valuable part of the ground—the frontage—is occupied by stores. A restaurant, a shoe shining parlor, an accessory store and a barber shop are on the street front, and the fine corner is occupied by an office. The space left, at the back, is just as good for garage purposes and costs less





There is much to admire in the buildling put up by the M. D. Stone Motor Co., Inc., Richmond, Va., which handles Buick and Mercer, and these interior and exterior views tell a good deal of the why. The exterior is plain. So is the interior; but that does not mean that it is unattractive. The salesroom has an office of the wide-open type; you can see at a glance who is in and who isn't. The building also contains a service station, stock and waiting rooms and wash rack, and measures 100 x 260



Wasting time by sitting around and waiting is no part of the plan of Wm. Steinhardt, of the Crockett Automobile Co., San Antonio, Tex., which distributes Hudson cars. Early in the season, when cars had not yet come in, a regular little art exhibit was arranged. A number of fine photographs of the new models were enlarged to a large size and arranged on the walls, art-gallery fashion. The interested prospects liked them and they kept things moving

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MOTOR WORLD
at the
National Tractor Demonstrations

WHAT do the National Tractor Demonstrations mean to the dealer, the garageman and the repair-shop operator?

Motor World will answer this question in a series of articles, the first of which will appear following the demonstration to be held in Dallas, Texas, July 17 to 21.

Pursuing its policy of keeping its dealer, garagemen, repairmen, supply men and jobber subscriber-readers fully abreast of the latest news of merchandising and maintenance, Motor World will send Stanley P. McMinn, representing the editorial department, to these demonstrations.

He will tell Motor World readers exactly what these demonstrations mean to them as an aid in merchandising tractors and as a help in solving maintenance and service problems. He will tell exactly how the demonstrations are run and will analyze the results obtained from a merchandising and maintenance point of view.

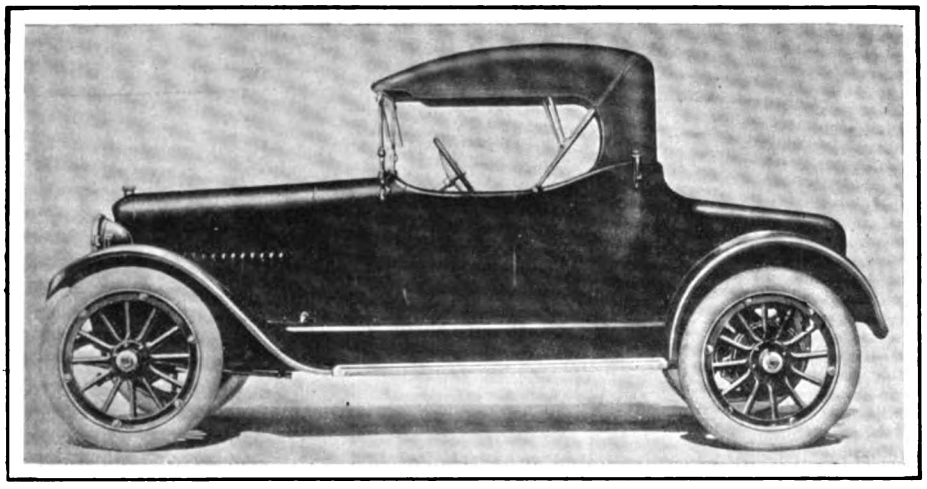
In addition, he will talk with tractor dealers, tractor distributers, tractor owners and tractor manufacturers and discuss their merchandising and service problems with them.

In short, he will turn the searchlight on every detail of the tractor business. He will boil down the experience of hundreds of men selling and using and caring for tractors and present the results in a series of articles which will be helpful and constructive to the men who are now, or may later become, interested in selling and maintaining power machinery for the farm.

Where Demonstrations Will Be Held

Dallas, Tex	July 17-21
Hutchinson, Kan	July 24-28
St. Louis, Mo	July 31-Aug. 4
Fremont, Neb	Aug. 7-11
Cedar Rapids, Iowa	Aug. 14-18
Bloomington, Ill	Aug. 21-26
Indianapolis, Ind	Aug. 28-Sept. 1
Madison, Wis	Sept. 4-8

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A smooth exterior always has been a distinguishing feature of the cars in the Paige-Detroit line. At the left is shown the 6-46 Meadowbrook roadster model. Neither this, nor the Fleetwood model 6-38, which is shown below, has been greatly changed. The Meadowbrook is $1,375 and the Fleetwood $1,090

Paige-Detroit Improved and Prices Raised

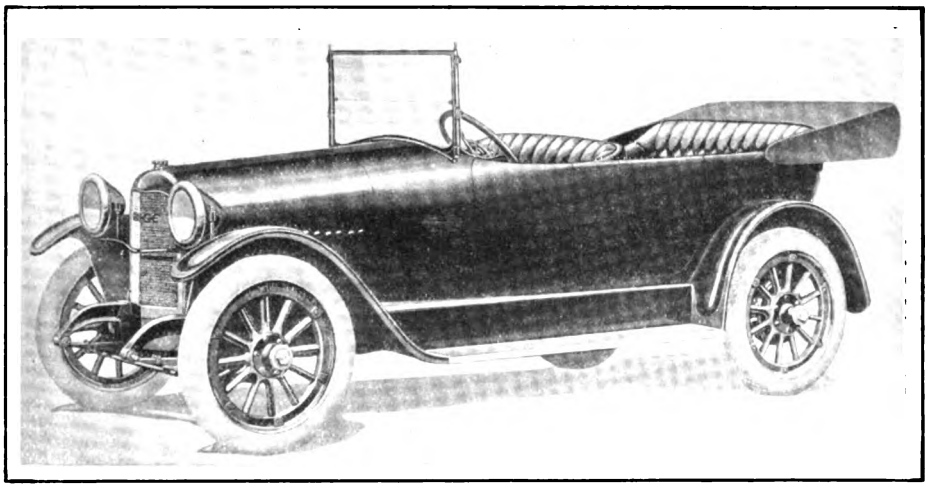
Few Mechanical Alterations

THE Paige-Detroit Motor Car Co., Detroit, is continuing, with refinements, a new series of its Fairfield model 6-46. In addition, the smaller six-cylinder car, styled 6-38, is continued without change.

A change has been made in the prices, the Fleatwood being now $1,090 for the five-passenger car and the roadster. This is the smaller model, known as the 6-38, which, when first announced, was $1,050. The Fairfield sells for $1,375 in seven-passenger and roadster bodies. This is also a slight increase, as the previous model sold for $1,295.

The changes in the 6-46 are principally a few body changes and one mechanical change. The body changes are a sloping windshield instead of the vertical type formerly employed; a new form of upholstering in which the leather is arranged in piping, giving a long tufted effect; better springs are also used in the upholstery, and these tend to make the car easier riding. Leather door flaps have been added, and in addition there have been some improvements in the equipment in the form of a Boyce Moto-meter, a straight or vertical tire carrier in place of the slanting one on the previous car, and a mahogany instrument board. A feature is made of the oversize tire equipment on this car and the color has been changed to Brewster green with ivory white wheels and black bonnet.

The only mechanical change is the addition of a Stewart single-cylinder tire pump, which is mounted on the gearbox and is driven from the reverse idler pinion. The pump gear is easily thrown into mesh by a lever projecting through the floor board.



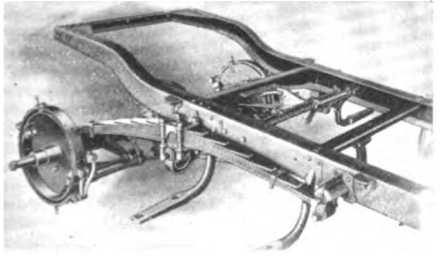
The Paige 6-46 chassis carries the Fairfield touring body and the Meadowbrook roadster. It is the larger of the two sixes and is mounted on a 124-in. wheelbase with a standard tread of 56 in. The motor is a block-cast 3½ x 5¼-in. unit power plant. The cylinder casting is of gray iron and the crankcase is aluminum. The lower half of the crankcase which incorporates the oil pan is pressed steel. The valves are on the right and are composite, having nickel steel heads welded to 0.20-0.30 carbon steel stems. The entire valve mechanism is inclosed by aluminum cover plates and the working parts are submerged in oil.

The crankshaft is an alloy steel drop-forging, heat-treated and ground. Every shaft is balanced individually for both running and static balance. The shaft diameter is 2¼ in. and three bearings are used. The camshaft is also a carbon steel drop-forging, having the cams integral, with the wearing surfaces hardened and ground. The crankshaft main bearings have the following dimensions: Front, 2 3/16 in. diameter, 3 5/32 in. length; center, 2 7/32 in. by 2½ in.; rear, 2¼ in. by 3 9/32 in. The camshaft bearings measure: Front, 2 17/64 in. diameter by 1 11/16 in. length; center, 2¼ in. by 1⅛ in., and rear, 2 7/32 in. by 1¾ in.

Drop-forged, heat-treated, I-beam 0.35 carbon steel connecting-rods are used. The wristpin bearing has a diameter of

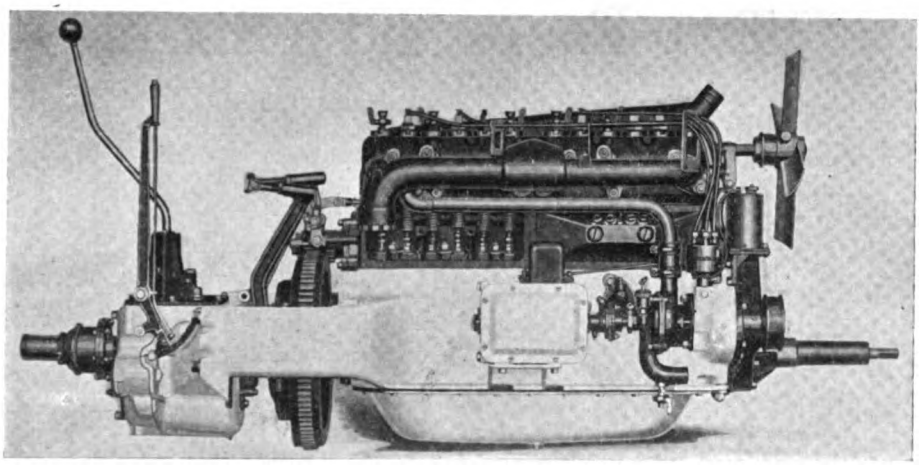
TWO PAIGE MODELS

Price—	6-46	6-38
Touring	$1,375	$1,090
Roadster	1,375	1,090
Color	Dark blue—straw wheels	
Number of cylinders	6	6
Shape	L-head	
How cast	Block	
Bore	3½	3⅛
Stroke	5¼	5
S. A. E. horsepower	29.4	23.44
Magneto	Remy	
Carburetter	Rayfield	
Starting, lighting	Gray & Davis	
Clutch	Disk	
Tires	35-4½	32-4
Wheelbase	124	117
Type rear axle	Three-quarter floating	

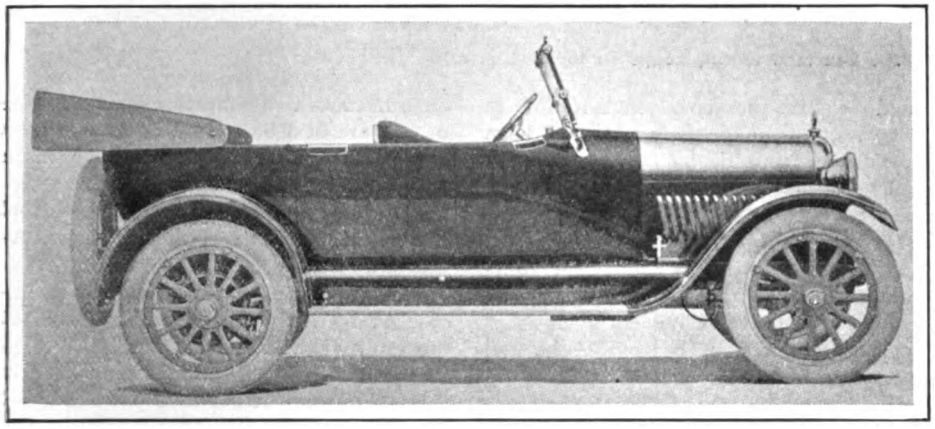


In the 6-46 models the rear cantilever springs are mounted over the axle

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The 6-46 motor is substantially the same as in previous models and is characterized by logical and accessible positioning of the various accessories. Note the aeroplane type of fan. The 6-46 touring model shown below now has a sloping windshield and the upholstery is arranged in piping; a Boyce Moto-Meter has been added, and also a new tire carrier



1 3/32 in. and a length of 1½ in. and the lower connecting-rod bearing has a 2-in. diameter and a 2 3/16 in. length. These rods, together with the pistons and the entire reciprocating assembly are balanced in sets.

In carrying out the valve design particular attention has been paid to securing good volumetric efficiency at high speed. The diameter of the valve-head is 1 11/16 in. and the opening of the port in the clear is 1 17/32 in. The valve-lift is 5/16 in. The design of the valve is conventional, with 45 deg. seat, and the stem diameter is ⅜ in. The valve timing is also conventional, having the inlet opening at 10 deg. after top dead center with inlet closing at 28 deg. after bottom dead center. The exhaust valve opens 40 deg. before bottom center and closes 2½ deg. after top center.

Lubrication is by a combined pressure and splash system. Oil is carried in the lower half of the crankcase, which has a capacity of 8 qt. A plunger pump operated from the camshaft forces the oil directly to each of the main bearings, and to the helical timing gears. Oil is forced through these leads in much greater quantity than is consumed by the main bearings, and the resulting overflow is allowed to pass into a series of splash troughs which are arranged one below each crank throw.

Cooling is by centrifugal pump, which forces water to a zig-zag cellular radiator having a capacity of 7½ gal. Cooling is assisted by a ball bearing four-bladed aeroplane-type fan, which is hung from a casting directly on the front of the motor.

The gasoline feed system is by gravity. The tank is located beneath the cowl and has a capacity of 14.7 gal. The carbureter is a Rayfield, supplied with both hot waterjacket and hot-air intake pipe.

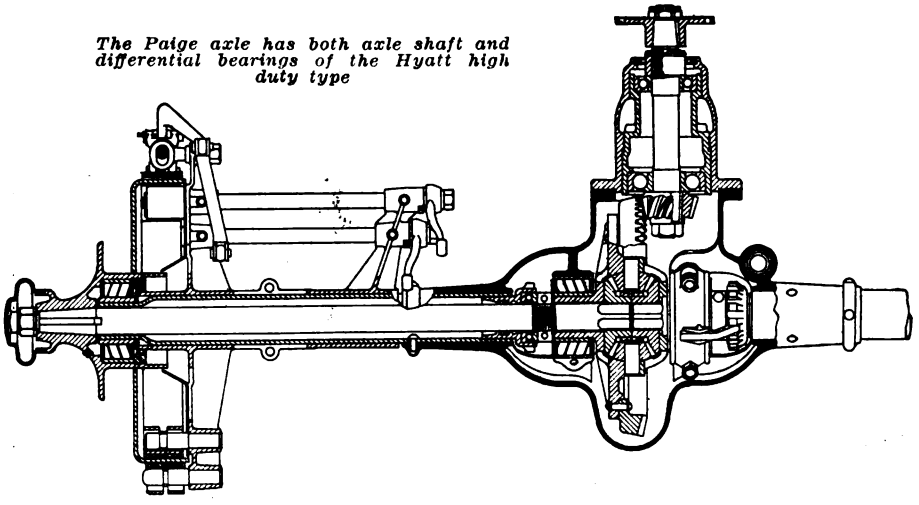
Electrically the car is Gray & Davis as far as starting and lighting is concerned, while ignition is furnished by a Remy high-tension distributor and Willard six-volt storage battery. The starting and lighting system is a two-unit design with a series motor, meshing with the flywheel ring gear by means of a Bendix drive and a shunt generator on the right side of the engine, driven directly off the water pump shaft through a flexible coupling. The automatic cutout, which is a magnetic design, is mounted directly on the top of the generator.

Power is transmitted through a multiple disk clutch fitted with cork inserts. The entire clutch is inclosed within the flywheel and runs in oil. The drive is carried back through a three-speed gear box, mounted in an aluminum case which is a unit with the crankcase. The gears in the gear box are of chrome nickel steel, hardened and ground. The shafts are carried on both annular and Hyatt roller bearings. The main shaft is mounted on two annular ball bearings, while the countershaft is carried on two Hyatt high-duty roller bearings. Lubrication for the gear box is taken care of by transmission oil and the capacity of the gear box is 2 qt.

From the gear box the drive is taken through a Spicer universal joint to the axle. This is a floating type, having both the axle shafts and differential on Hyatt high-duty roller bearings. The torque on this model is taken through a torque arm. The rear axle is geared 4.357 to 1, having a 14-tooth pinion and a 61-tooth ring gear. This gives a reduction on low speed of 14.157 to 1, on second of 7.189 to 1, and reverse 18.876 to 1. Two sets of brakes are used, working

(*Continued on page* 42)

The Paige axle has both axle shaft and differential bearings of the Hyatt high duty type

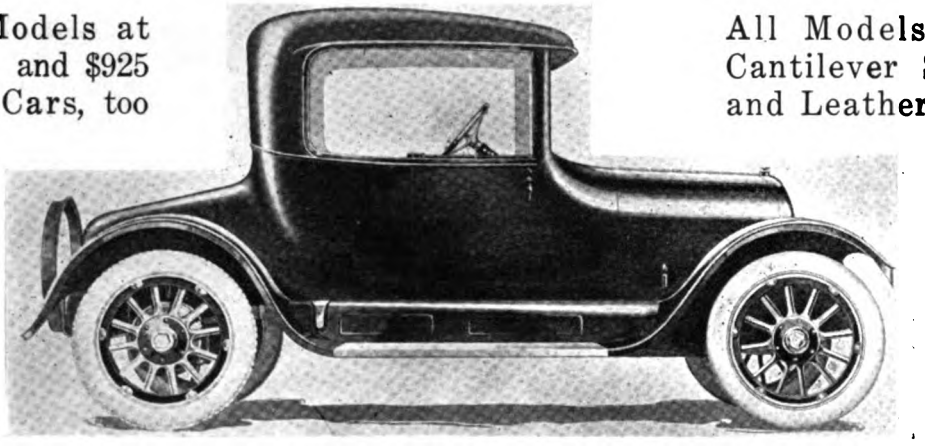


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Two Fours and a Six in Overland Line

Touring Models at $635, $795, and $925 ——Closed Cars, too

All Models Have Cantilever Springs and Leather Joints



The Overland touring coupe on the 85-4 chassis

THE Willys-Overland Co., Toledo, is now marketing a low-price four-cylinder car styled 75-B at $620 as a roadster and $635 as a touring model, and the series 85 four at $795 and a six at $925. The latter series is the latest development and will not be started regularly through production until toward the end of July.

Model 85 takes the place of the previous model 83, and although similar in many respects incorporates several refinements. One of the features is in the increased use of pressed steel to take the place of heavier castings. An example is in the axle housing. Another important alteration is in the spring suspension, which is now cantilever. The gasoline tank has been moved to the rear and a new form of rigid tire support has been added. On the six-cylinder car spiral bevel gears are used for the axle, and on the four-cylinder model the axle gears have straight teeth. The use of a leather universal joint is another innovation.

Probably the biggest feature of the model 85 is the particular attention which has been paid to riding comfort. In relation to price, both cars are quite long, the wheelbase of the four being 112 in. and of the six 116 in. Both have large, comfortable bodies, with ample seating room for five persons. In addition to these improvements the seats have been built lower and deeper, with a slight backward tilt, and the seat cushions are built on deep coil springs.

In the four-cylinder car the power plant is the development of the four-cylinder motor which has now been used on over 300,000 Overland cars. It is of block design, with a bore of 3¼ in. and a stroke of 4½ in. The cylinders are gray iron castings and the pistons are also of cast iron. The piston length is 4 in. and the number of rings are two on this model. Connecting-rods are 8½ in. and are of drop-forged I-beam section. The crankshaft is carried on five main bearings and has a diameter of 1½ in. The motor is thermo-syphon cooled, and one of the features is the large water-jacket space.

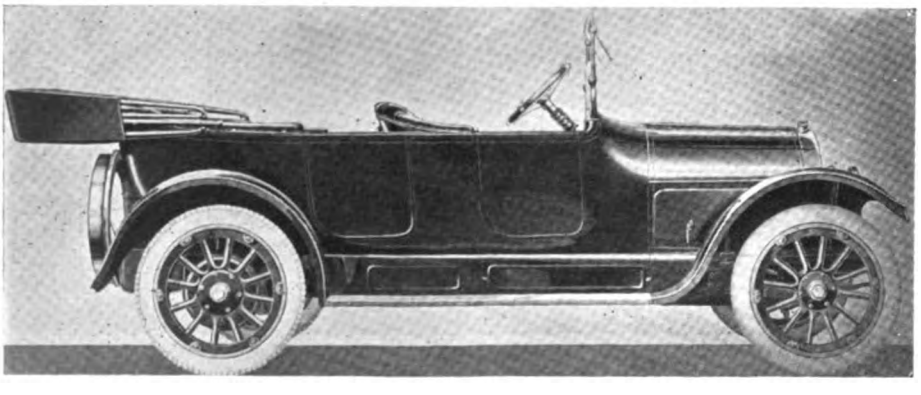
Overlands at a Glance

Price	75-B	85-4	85-6
Touring	$635	$795	$925
Roadster	620	....	....
Coupe	...	1,045	1,175
Sedan	...	1,195	1,325
Color, Brewster Green Ivory striped.			
Number of cylinders..	4	4	6
Shape, L head.			
How cast, Block.			
Bore	3⅜	4⅛	3¼
Stroke	5	4½	3½
S. A. E. horsepower..	18.23	27.23	25.35
Ignition, battery.			
Starting, Lighting, Auto-Lite.			
Clutch, cone.			
Wheelbase	104	112	116
Tires	31 x 4	32 x 4	32 x 4
Type rear axle, floating.			

The capacity of the radiator is increased by fitting an auxiliary tank at the top and the radiating surface is also augmented by corrugations in the thin vertical tubes. A shell of pressed steel acts as a protective housing and this is made of a single piece of steel having no joints. The shell is supported in swivel seats.

Splash-feed lubrication is used. The splash is operated on the constant level system, in which the oil is continuously drained. A small gear oil pump in the crankcase end provides a steady flow of lubricant and also sends the oil through a revolving sight feed. The oil passes through the sight feed and returns to a lead which runs the length of the crankcase, supplying each of the troughs with a quantity of lubricant and keeping them constantly full. The overflow from the trough escapes back to the well in the crankcase, after which it is strained before again being circulated. There is also a float gage on the crankcase which indicates the amount of oil in the reservoir, and the breather tube is widened at the top to act as a filler.

Other than in the power plant the six-cylinder car is exactly the same as the four, except that the longer motor necessitates a longer hood and consequently a slightly longer wheelbase, the exact difference being 4 in. All this difference in length is made up at the front end of the car, necessitating a longer frame on the six than on the four. The six-cylinder motor is also a block design and is characterized by an extremely clean exterior. It has a bore of 3¼ in. and a stroke of 3½ in. It develops from 35 to 40 hp., according to the manufacturer's figures. The cylinder heads are remov-



Overland 85-4 touring model which lists at $795

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able and are cast in one piece. Throughout, the motor is of conventional L-head design, with both the intake and exhaust manifold on the right, together with all the auxiliary apparatus, such as the water pump, ignition distributor, generator, starting motor, etc. The only parts mounted on the left side are the carbureter, oil filler and oil level gage.

A departure for the Overland company is in the abandonment of magneto ignition and the use of a battery distributor system in its place. The ignition current comes from the storage battery. A feature of the ignition system is the switch, which incorporates a thermostatic throw-off arrangement, by means of which is is impossible to drain the battery through neglect to open the switch. The current passing through the switch causes the temperature to rise in the thermostat, allowing it to bend and close an electric circuit, permitting the current to flow through a coil somewhat like a buzzer. This buzzer arrangement hammers the switch button until it is opened, thus breaking the ignition circuit.

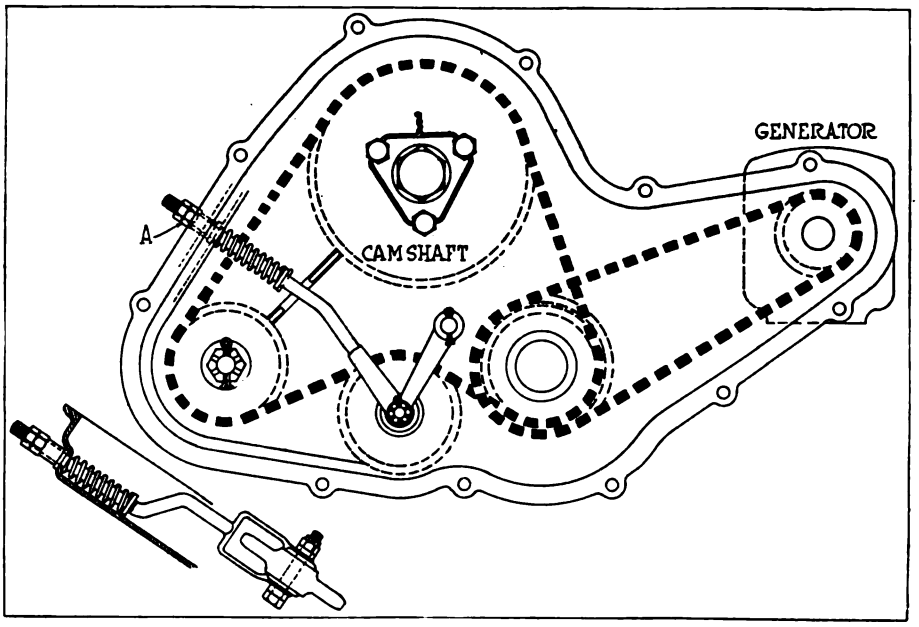
The clutch is a spring insert leather face cone with three tension springs. There is only one universal, since the gear box is mounted in a unit with the axle. This gear box provides three forward speeds and is made up of double heat-treated stub tooth nickel steel gears. The gear box shafts are carried on both roller and annular ball bearings. The axle is floating. There are four differential gears and the shafts are removable. The differential is carried on adjustable taper roller bearings and the wheels are on annular ball bearings.

Service brakes are contracting type, 13⅜ x 2¼ in., and emergency are expanding, 13 x 2¼ in. Both sets operate on the rear wheel drums and are lined with asbestos fabric on woven brass wire core. The springs are semi-elliptic front, 36 x 1¾ in., and cantilever rear, 48 x 2¼ in. The wheels are artillery type of twelve spokes, and the tires 32 x 4 in., fitted with straight side tires, non-skid in the rear. On the touring sedan, mounted on the 85 chassis, the tires are 33 x 4½ in. Demountable rims are used throughout.

In the body work the up-to-date conception of streamline design has been carried out through the entire line. The touring body is built with one-piece cowl and high-backed seats. The doors are hinged in front and are U-shaped, fitted with disappearing hinges and provided with large pockets. The tool compartment is located under the front seat. The fenders are heavy, shaped steel, crowned. The finish is Brewster green with ivory striping. The fittings are nickel and polished aluminum, and the fenders and other trimmings are black enamel.

The price of $925 for the six-cylinder and $795 for the four-cylinder touring car includes full equipment, with Auto-Lite two-unit, six-volt electric lighting and starting system; dimmers and ammeter. There is also a speedometer and an oil pressure gage, with complete tool equipment and an extra demountable rim. The top is one-man mohair and the curtains are fastened from inside. The windshield is built in and incorporates both the rain-vision and ventilating features. On this same chassis there is a touring sedan at $1,195 in four-cylinder, and $1,325 as a six, and a touring coupe at $1,045 and $1,175.

The model 75-B is a new series which has taken the place of the previous small four-cylinder car. It is characterized particularly by a larger motor, which is claimed to develop 31½ hp. at 1950 r.p.m., and to have a speed range of from 2½ to 53 m.p.h. on high. Another feature is that it is equipped with 4-in. tires. It has cantilever suspension, two-unit six-volt lighting and starting and complete equipment. The body is new and is fitted with a one-pieced cowl which slopes back in a graceful curve.

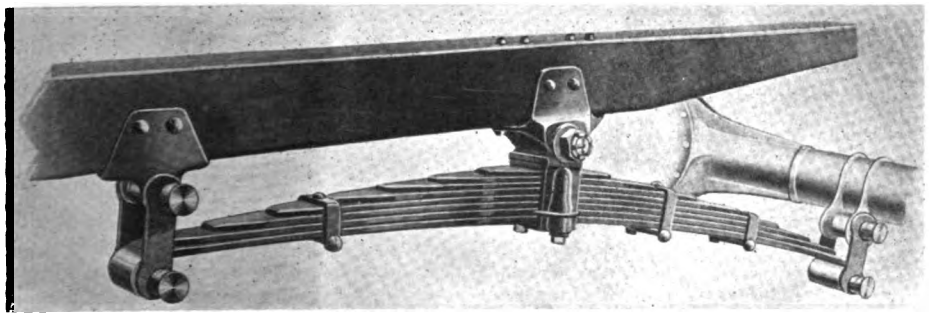


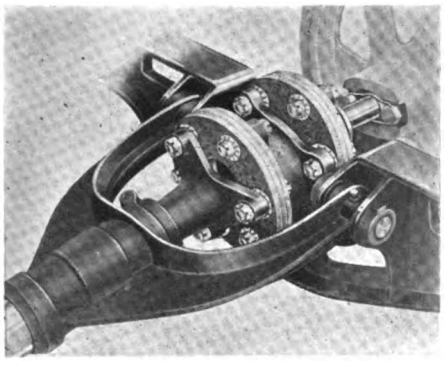
The silent chain drive for camshaft and generator is provided with an easily adjustable take-up which can be adjusted from outside at A

All four-cylinders are cast in a block, having a bore of 3⅜ in. and a stroke of 5 in. The only auxiliary drive is that of the ignition distributor, which is now used in place of a magneto and which is mounted on the right side of the engine, back of the timing gear case. The valve mechanism drive is by silent chain and this drive also takes care of the distributor. The intake manifold is cored in the cylinder casting.

Lubrication is by constant level splash, the oil being circulated by a small pump which constantly maintains a supply of lubricant in the troughs beneath each connecting-rod.

The clutch is the Overland type similar





This is the type of rear cantilever spring used on the Overland model 75 chassis; it is shackeled beneath the axle. Right, the new leather universal joint

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to that described for the model 85. It has the three engaging springs with the auxiliary springs beneath the surface of the leather cone facing. The gearset is on the axle and is similar in design to that of the larger model with three speeds and with nickel steel gears carried on shafts that are mounted on roller and annular ball bearings. The axle is floating and the differential is made up of four bevel gears. The axle shafts are removable and the bearing equipment is annular ball.

Two sets of brakes are used, the service being contracting, 12⅜ x 1¾ in., and the emergency 12 x 1¾ in. The springs are semi-elliptic, 36 x 1¾ in., with cantilever rear, 42 x 2 in. The tires are 31 x 4 in., mounted on artillery type twelve-spoke wheels with demountable rims. The bodies are streamline, provided with Fabrikoid upholstery, front-hinged U-doors, large pockets in doors, and with tool compartment beneath the rear seat; heavy sheet steel crown fenders are fitted, and the finish is black with nickel and polished aluminum trimmings. The equpment includes Auto-Lite starting and lighting, ammeter, one-man mohair top, inside fastening curtains, electric horn, combination taillight and license bracket, hinged robe rail, foot rest, tire carrier and extra demountable rim.

Far-Side Stop for Fifth Avenue Buses

NEW YORK, July 10—Far-side stops will be hereafter made by the Fifth Avenue buses instead of the near side, as has been done for the past 15 months. According to the company, the near-side stop, which worked well with trolley cars, was a pitfall for the unwary so far as the buses are concerned. Many serious accidents were narrowly averted, it was said, as, seeing a bus drawn up beside the curb on the near side, pedestrians hastened to cross the street, believing all traffic in that direction had been held up.

Keeps All the Cars in the Shop Before Him All the Time

SYRACUSE, N. Y., July 10—Following out the modern idea of garage efficiency, Charles G. Hanna, Chalmers distributer, has just put into effect a new daily work sheet. Hanna has gotten up the accompanying form, which he has tacked up before him every day in his office. On the form are placed pins representing each car in whatever department it may be when business opens in the morning. All his used cars are accounted for on the sheet.

Thus, if he has a Ford in the paint department, he sticks a pin in that space. The foreman of each department is instructed to visit the office at least once every day and account for the cars in his department. If that Ford has been painted, the foreman comes in and has the pin placed in the ready column, where it stays until sold. As soon as it is sold the salesman places the pin in his column.

Hanna can tell at a glance where every car is in his garage. He says it works like a game with his employees and has created a lot of good competition. Every day or two foremen will come to him and register a kick that a pin is charged against them when the car should be in some other department.

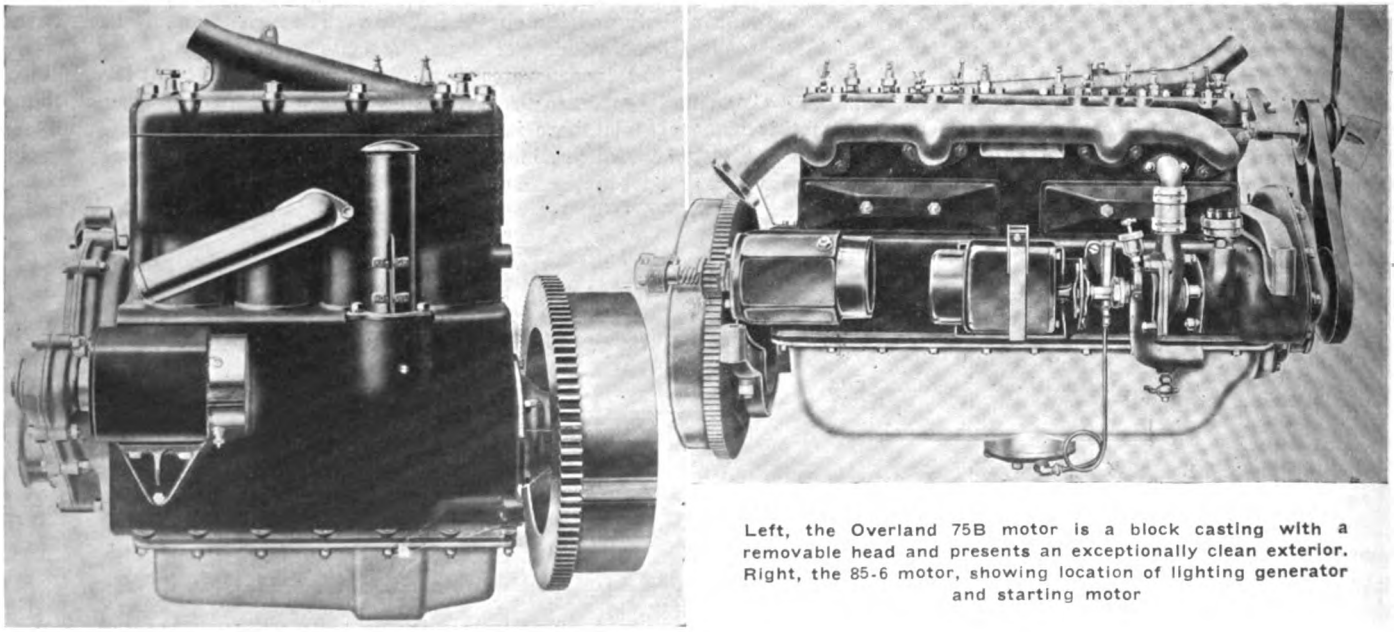
For instance, if a car has been put into the paint shop without being quite finished, the paint man will kick that he is charged with the car and the car will be sent back to the repair department. Hanna credits the various departments with the speed with which they are able to move the pins out of their column.

If a pin remains in one column several days, Hanna knows something is the matter and immediately calls the foreman to account for the delay.

Hanna has a big repair business in this city and the new system has solved his personal troubles in keeping track of cars sent to his shop.

Car	Former Owner	Shop	Paint	Dirty	Ready	CARS SOLD			
						J. H.	P. W.	I. S.	A. L.
Ford	T. Sterns		*						
Overland					*				
Haynes	B. Wells						*		
Chalmers	S. House				*				
Chalmers	T. Otto				*				
Chalmers	W. Brown			*					
Chalmers	H. Murphy	*							
Chalmers	J. Cobb	*							
Studebaker	F. Jones				*				
Grant	A. Pratt				*				

The stars on this chart represent pins. Each pin represents a car, and as a car moves from one department to another the pin is moved. Hanna makes out a new sheet every day and requires up-to-the-minute information at all times from his organization



Left, the Overland 75B motor is a block casting with a removable head and presents an exceptionally clean exterior. Right, the 85-6 motor, showing location of lighting generator and starting motor

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Daniels Has Dressed Up

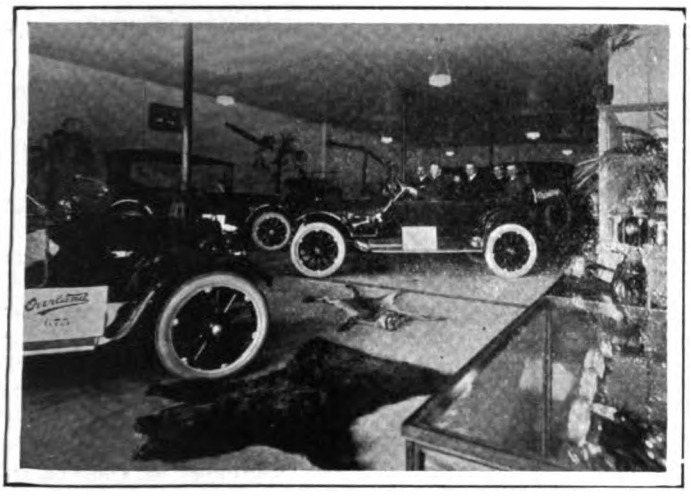
He's in Manistee, Mich.

TO open his new place of business to the public, William Daniels, of the National Garage & Sales Co., Manistee, Mich., held a show and reception, which is shown in one of the views on this page. At this time the visitors were shown the cars, the building, the service facilities and the members of the organization. The final night of the show the visitors danced in the salesroom between the cars.

Between 2500 and 3000 visitors were in during the week and many sales have since resulted. Daniels states that his business has practically been built upon Motor World suggestions, and he calls attention to his accessory store at one side of the salesroom. He has a good display window in front.



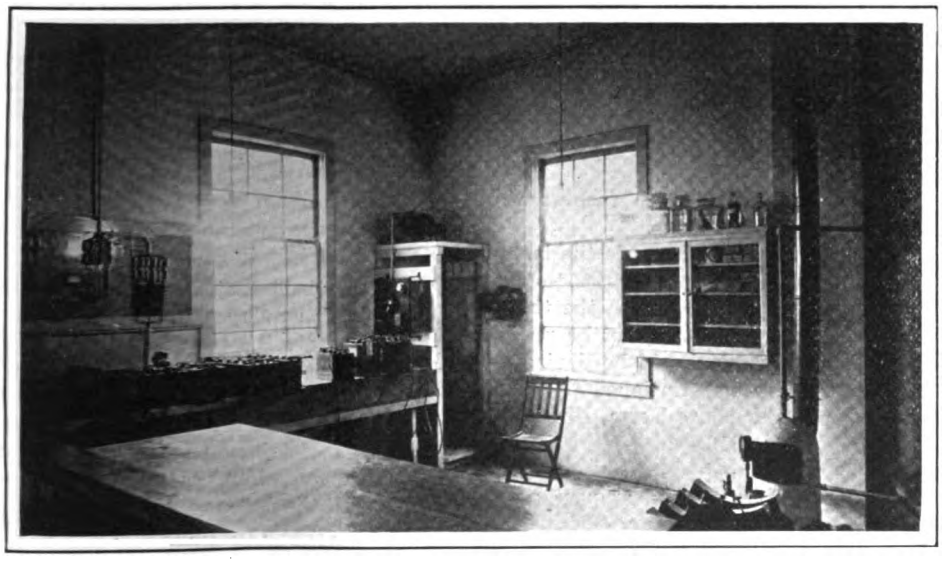
Front of building of the National Garage & Sales Co.



The opening show



The accessory department



Battery and vulcanizing room

The building is 115 x 60, and another building, used for storage only, is 100 x 60. In Motor World's Garage and Equipment number, April 26, was shown the rest room. There is also a men's rest room; hot and cold running water is provided. There is a turntable, automatic warning signals and other modern appliances.

Manistee has a population of 13,000 and is in a county of 27,000. It is one of the principal cities of northern Michigan. Daniels handles the Buick, Chevrolet, Overland and White.

Ohioans Can Tour Canada Free

COLUMBUS, OHIO, July 10—The Ohio Automobile Trade Association, after working more than a year, has secured reciprocity with the Province of Ontario, Canada, in the interchange of licenses. Hereafter Ohio licenses will be recognized in Ontario for a period of 21 days. Minister of Public Works MacDiarmid of Ontario has sent word that all formalities have been complied with and hereafter American tourists will not have to pay the $25 necessary to traverse Ontario.

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ANGLES OF THE LAW



By Geo. F. Kaiser

CONTRACTS MUST IMPOSE EQUAL CONDITIONS

ANOTHER interesting case dealing with an agency contract has been decided, this time in the District Court of Appeals, First District California.

The suit was started to recover $1,000, which had been deposited by a dealer under a car agency contract.

It appeared that the dealer had entered into the contract with the company and that the contract provided that he should purchase fifty motor cars between the date of the agreement, Feb. 20, 1914, and Jan. 1, 1915, at San Francisco, list prices, and a percentage or discount of $40 on each car so sold was to be allowed to him on the list price.

The company reserved the right to change the list prices of the cars at any time by giving at least 2 weeks' notice of the proposed change. The dealer agreed to open an establishment for the sale of the cars at Fresno, keep a demonstrator for exhibition purposes, and resell the cars to such customers as he could procure under the conditions named in the contract.

In case of cancellation of the contract before its expiration, or in the event that its terms should not be fully complied with by the dealer, the deposit was to be retained by the company. The company also reserved the right to cancel the contract upon 15 days' notice and upon returning the deposit.

The court held that the contract was not void either because it reserved the right to the company to cancel upon 15 days' notice, or because it reserved to the company the right to change the price at which the machines were to be sold, subject to the variations in the market, it appearing that the agent's commission was not to be changed.

It was held that in order for the company to retain a deposit of this kind as liquidated damages for a breach of the contract, it must show that it would be impractical or extremely difficult to fix the actual damages.—Thomas vs. Nathan, 157 Pacific, 823 (California).

MUST PAY DEFICIENCY

A person giving a chattel mortgage must pay any deficiency if the sale of the mortgaged chattels do not bring enough to pay the mortgage debt, according to a recent New York decision.

Suit was started to foreclose a chattel mortgage which had been given to secure the payment of seven promissory notes, four of which were unpaid.

The court held that as the mortgagor had given notes for the entire original debt and the chattel mortgage was given over as security for the payment of the notes, the mortgagor would have to make good any amount which remained unpaid after the mortgaged chattels were sold, even though the mortgage did not specifically provide that this should be the case.—Cottone vs. Spivach, 159 N. Y. S. 241 (New York).

CANNOT RECOVER ON DEFECTIVE PATENTED ARTICLE

WHERE patented motor car wheels are expressly warranted for 1 year, the purchaser is not precluded by waiver or otherwise from availing himself of that defense when he is sued for the purchase price.

Two patented wheels were sold under a verbal agreement. The sale was confirmed by a subsequent letter, in which it was stated that the wheels were sold subject to a trial for 30 days immediately following delivery, and they were also guaranteed for 1 year without restriction.

After the wheels were used a few days one had to be removed because of defects and was returned for repairs. During the next 6 months other repairs were made from time to time. The 30-day trial period was later extended to 90 days, and before the end of that time the purchaser offered to return the wheels.

The seller then sued to recover the agreed price of the wheels.

The court held that because the buyer had given repeated opportunities to furnish a wheel to conform with the terms of the contract, he should not be prejudiced and judgment should be denied to the seller.—Sipe vs. National Co., Supreme Court, Appellate Term, First Department, June, 1916.

CANNOT RETURN CAR AFTER ONE MONTH'S USE

WHEN a person buying a motor car makes no tender or offer to return it for more than a month after learning that it is not in running order as warranted, other than to express a willingness to return it, he cannot recover the amount he has paid on the theory that the contract has been rescinded.

Suit was brought against a man who had purchased an automobile on some promissory notes which he had given as part of the purchase price of the car. The buyer set up that he was entitled to damages for breach of warranty.

It appeared that although it had been represented that the car was all right; that it was in perfect running order; that it had been thoroughly overhauled; that there were no defects in it, and that there was nothing wrong with it, that it actually was out of repair; was not in perfect running order and had not been thoroughly overhauled at the time of the sale.

The buyer claimed that he had rescinded the contract and was entitled to get back the money he had paid for the car.

The court held that as all the buyer had done was to write a letter stating he would not accept the car, which was then at a garage, he could not claim that he had rescinded the contract and get back the purchase money, as in order to do that he should have notified the other party within a reasonable time and should have returned or have offered to return the automobile in substantially as good a condition as it was when transferred to him.—Skillings vs. Collins, 112 N. E. 938.

OIL IN SEWER; EMPLOYEE KILLED; DEALER PAYS

A peculiar case, in which an oil company, a garageman and an employee of the latter were concerned, has just been decided in the Supreme Judicial Court of Massachusetts.

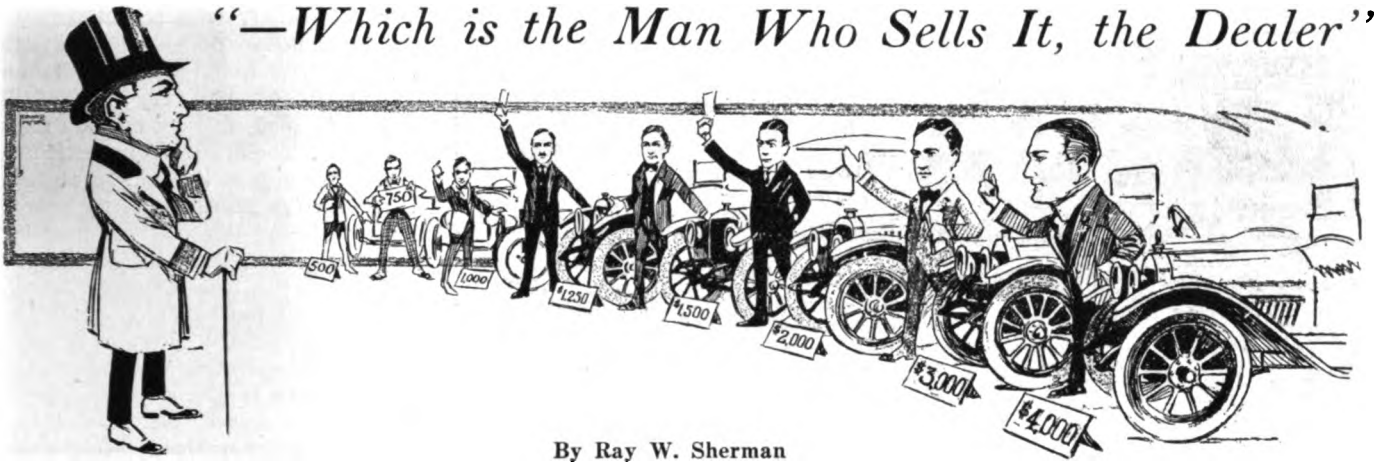
Suit was started by the workman's administrator against the oil company and judgment against it was recovered.

The court held that negligence of the oil company's employee in allowing gasoline to flow into the cellar of the garage while attempting to fill a gasoline tank, and thereafter sweeping it into a pit in the cellar, might be a concurrent approximate cause of injury to an employee of the garageman when water was allowed to mix with the escaped gasoline.

The fact that the garageman's negligence in letting water into the escaped gasoline brought about the injury did not lessen the responsibility of the oil company, according to the decision, and it therefore had to stand liable for the damages caused by the death of the employee brought about by an explosion.—Leahy vs. Oil Co., 112 N. E. (Massachusetts).

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"—Which is the Man Who Sells It, the Dealer"



By Ray W. Sherman

"REILLY, I'm all mixed up!"

An old-time friend of C. J. Reilly, the Sennett dealer in Callawassa, plopped himself into a chair in the dealer's office with an air of all-worn-out-ness.

"What now?" smiled Reilly, turning around in his chair to face the bewildered.

"Reilly," continued the old-time friend, "I've been trying to buy a car. I actually made up my mind to buy and set out to make the purchase, but I've been told so much by so many different salesmen that I'm darned if I know anything about any of them. I thought I knew it all when I started."

"And the more you hear the less you know."

The More the Less

"That's about the situation," continued the Old Friend. "Naturally, I want to make the best possible purchase. I want to get the most I can for my money. That's why I started this looking around. I thought that if I looked around a little I could eliminate all but a few cars and then eliminate all but one, but there are about a dozen that seem to be all right and there isn't much difference in price. I've studied and worried and thought, and I don't seem to be anywhere near a solution of my problem."

"What do you want me to do; sell you a Sennett?" asked Reilly.

"Darned if I know, Reilly. I hadn't intended paying quite as much as that, but what I did want you to tell me was your opinion as to which of a dozen or so cars is the best."

The Never-Answered Question

Reilly leaned back and smiled. "That old question, that never yet solved problem," laughed the dealer. "If I could answer your question with one word and that word the name of a car, I could make a lot of money——"

"But you can't!"

"I can't. You hit it right; I can't. It can't be answered that way. I've been asked that question many times and have always had to answer the same way I answer you: 'There ain't no such animal.' There is no supremely one best car, when it is considered from the standpoint of the buyer. There are so many factors to be taken into consideration that no one car is universally the best. There are certain towns where some one car may be best, but there is no car that is the best in every town."

"Why not?" demanded the Old Friend.

All Are Good

"So far as cars are concerned every car that amounts to anything is a good buy," asserted the dealer. "There is no one that is rightly termed the best. There are different constructions and different prices, but when you consider what you get for your money there is little difference in the dollar-for-dollar value. You don't get stung in any of them. If you pay more you get more; if you pay less you get less.

"Of course, there are 'lemons.' There are cars that are made by unsafe manufacturers and there is not over-value in the cars themselves. This manufacturer element enters as much into a car as anything else, so if you are tempted to buy a car that looks to be exceedingly cheap, look twice at the company behind it.

"And then comes the one, big, dominant factor in car value——"

"Which is——"

The Dealer Makes the Car

"Which is the man who sells it, the dealer. You should not overlook the dealer when you buy your car. You may find a good car, a good price and a good manufacturer, but if the dealer is no good the car is quite likely to be the same, because it is the groom that makes the horse.

"When you get right down to cases, what do you buy? You certainly are not buying steel and leather and rubber. If you were you could go down to a raw goods store and get that stuff. And you're not buying a car because you want a car. If you were you could have one made of papier mache and set it up in your front parlor. The thing you really are buying and the thing you really want is car service, car satisfaction.

"You Don't Want a Car"

"You don't want a car; you want to ride. You don't want a high-speed motor; you want to travel rapidly. The car and its motor help give you what you want and that's why you buy the car, and because you must buy the car to get what you want too many people place too much stress on the mechanics of a car and its first price. And in many, many cases they regret it later.

"Now, what gives you car satisfaction? You must first have a pretty good car at a reasonable price, or else you are likely to believe all through your ownership that you were stung when you bought. In addition to the good car at a good price you must deal with a good dealer in order to get car service and satisfaction. If you get a good car but buy it from a dealer who is not equipped and is not responsible, you can't get car satisfaction. If you can't get car satisfaction, you didn't get your money's worth, no matter how little you paid for your car. A car that won't run when you want it to run isn't worth a nickel from a car satisfaction standpoint.

"Better a Rotten Car——"

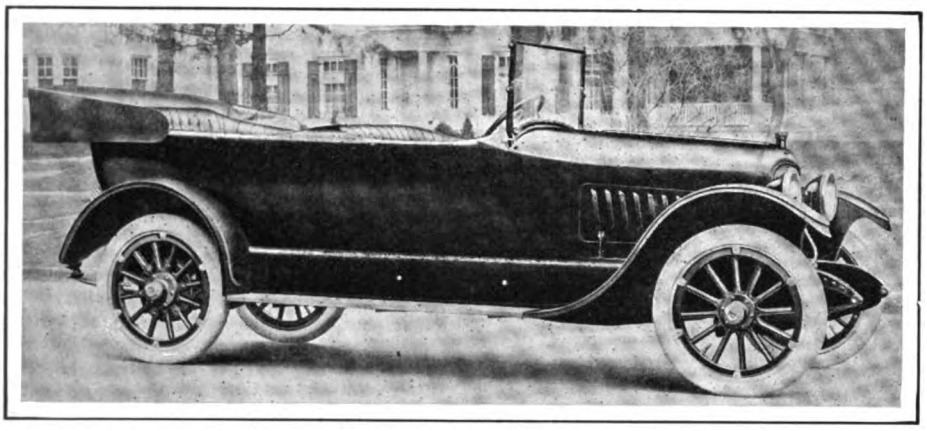
"Personally, I would rather buy a rotten car from a good dealer than a good car from a rotten dealer. The measure of car satisfaction would be greater in proportion.

"And that's why there is no best car built. Pay $4,000 and you generally get $4,000 worth of car. Pay $500 and you generally get $500 worth of car. But buy a car from a good dealer at several hundred dollars more than you would pay to a poor dealer and you get a lot more for your money.

"There is no best car, because a car of itself is nothing. You must not lose sight of the fact that you want car satisfaction, not a car."

"How much is a Sennett?" asked the Old Friend.

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The new Ross eight has ultra modern lines blended in a manner to give a rakish appearance without sacrificing good looks

Double Cowl Body on Ross Eight

But No Change in Price, which Remains $1350—Chassis is Unaltered

THE Ross eight-cylinder car for 1917 appears in a new dress that is in accord with latest body fashions in every particular. The vehicle is practically the same mechanically as it was when first brought out by the Ross Automobile Co. over a year ago, but there have been some important revisions of its lines. The price remains unchanged at $1,350.

The modern double-cowl effect has been worked out at the back of the front seat, and the hood slopes into the cowl without a break, the radiator shell also sloping to the hood in very pleasing manner. Doors are wide and fit snugly and there is enough rake to the steering column to assist in giving a racy appearance so often sought by designers.

Stripped of its new body, the new chassis presents a most substantial appearance, with a tapered frame of deep section, sturdy drive members and long and wide springs. In unit with the motor are the clutch and gearset, and the driveshaft is inclosed within a torsion tube. The specifications include a multiple-disk clutch, floating rear axle, semi-elliptic springs all around, rear gasoline tank with Stewart vacuum feed, Zenith carbureter, Ward-Leonard two-unit starting and lighting system, and 34 x 4 tires.

No alteration has been made in the standard Herschell-Spillman motor. The cylinder dimensions give a displacement of 331.8 cu. in., but the motor is capable of delivering upwards of 75 hp. on the block. Valves are made reasonably accessible by the disposition of the parts that of necessity have to be in the V between the cylinder blocks, the carbureter being so mounted that it is little in the way, and the exhaust manifolds being well above the valve compartments. Although the ignition distributor is mounted vertically at the extreme rear of the cylinders, it is really not in the V, and so the carbureter is practically the only obstruction.

Ross Eight Specifications

Price—Touring	$1,350
Color	Blue
Make of motor	Herschell-Spillman
Number of cylinders	Eight
Shape	L-head
How cast	Blocks of four
Bore	3¼
Stroke	5
S. A. E. Horsepower	33.84
Carbureter	Zenith
Starting-lighting	Ward-Leonard
Clutch	Borg & Beck dry plate
Gearset	Grant Lees, 3-speed
Wheelbase	130-in.
Front tires	34 x 4
Rear tires	34 x 4 non-skid
Make of axles	American
Type rear axle	Floating
Equipment:	One-man top, motor-driven horn, demountable rims, Stewart speedometer, ammeter, usual equipment of tools, tire repair kit, jack.

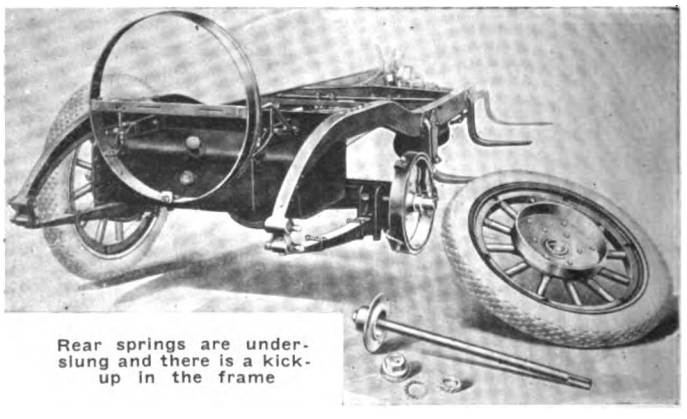
Conventional practice holds throughout the internal construction of the motor, there being a sturdy crankshaft, directly above which is mounted the single camshaft that actuates both sets of valves through rockers that are hinged to the top of the crankcase. At the front there is a cross shaft that is connected to the crankshaft by a worm gear, and on its right end this shaft drives the double water pump, while the left end connects to the generator armature. This cross shaft drive is inclosed by the plate that houses the spiral gears driving the camshaft and the fan shaft above this latter. Thus a very compact front end is obtained with not even an exposed fan drive. The drive of the vertical ignition distributor is through bevel connection with the camshaft at its rear end.

On the right side of the engine is the starting motor, this connecting automatically with the flywheel teeth by means of the Bendix drive unit. As the flywheel is inclosed, there is practically no exposed operating mechanism.

Lubrication is given special attention. There is no splash, distribution to the various bearing surfaces being entirely by pressure maintained by a regulating valve between a minimum of 10 lb. per square inch and a maximum of 40 lb. per square inch. The gear pump is located in the crankcase well on the bottom of a vertical shaft which takes its drive through spiral gear connection with the camshaft. Oil is delivered through a longitudinal tunnel running the length of the crankcase, and from this by individual branches to the three main bearings of the crankshaft and the three camshaft bearings. The crank webs are drilled and the oil is thus led by centrifugal force to the lower rod bearings, from which it is piped through steel tubes to the wristpin bearings, these tubes attached to the rods. An overflow valve allows the excess over the requirements of these bearing surfaces to be delivered to the front gears, keeping the gear assembly submerged well above the cross shaft.

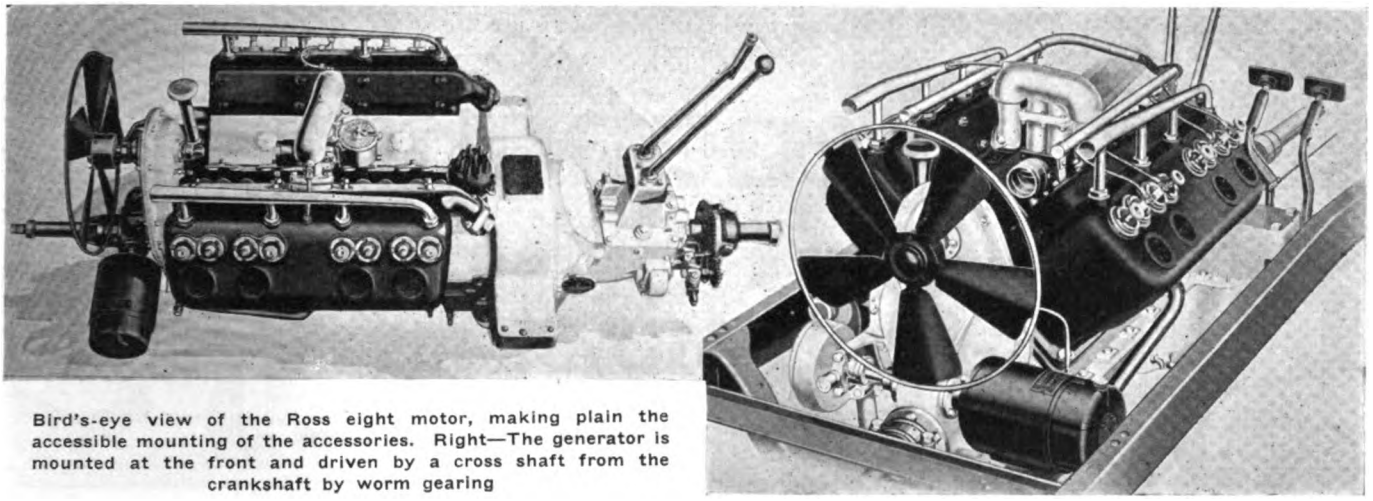
In connection with the clutch mechanism, the pedal is adjustable for position, due to the use of a flange drilled with several holes and attaching to a flange on the pedal in a number of different positions wherever any set of holes in the two flanges will register.

A Grant-Lees gearset is also incorporated with the engine, this being a very compact unit, affording the usual three speeds and reverse. The gears and shafts in this unit are constructed of chrome-nickel steel, and the gears have wide faces with stubby teeth for strength. Just back of the gearcase is the speedometer drive gearing, and then a uni-



Rear springs are underslung and there is a kick-up in the frame

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Bird's-eye view of the Ross eight motor, making plain the accessible mounting of the accessories. Right—The generator is mounted at the front and driven by a cross shaft from the crankshaft by worm gearing

versal joint, after which the propeller shaft enters a torsion tube that is in unit with the rear axle. The front end of the tube is supported in and slides in an arm that hinges to the bottom of the gearbox.

Both axles are made by the American Gear Co. and follow standard lines. The rear unit has a pressed-steel housing that is webbed outside at top and bottom as a strengthening factor, and the springs are underslung from it. The gear ratio is slightly lower than 4 to 1.

In the rear suspension three-quarter elliptic springs have a length of 57 in., and, due to the generous bend down of the rear of the frame, are normally nearly flat, even though they do pass below the axle. This allows them to work efficiently to dampen road shocks and to promote easy riding.

Hung from the rear cross member of the frame is a large gasoline tank, so positioned that it is practically balanced on its mounting, preventing any bending strains being set up. A large size vacuum feed tank is mounted on the front of the dash to bring the fuel forward from the reservoir. On the right side of the frame and just to the rear of the motor, the U. S. L. storage battery is carried. This is concealed by the running board apron, and is conveniently reached through a door in the latter.

Kansas Feels Prosperity Wave

KANSAS CITY, July 8—Branch houses, agencies and dealers of Kansas City and the territory report large gains for June and for the first six months of 1916, the advances ranging from 25 to 50 per cent and even larger. The heavy rains and floods for most of June prevented work in the country, so that the advantage was largely obtained from city business.

The Bond Motor Co., handling Oldsmobile and Saxon, report a gain every month this year. On July 1, five Saxons were received, and five customers were waiting for them.

H. H. Pierce, assistant manager of the Greenlease Motor Car Co., Cadillac dealer, had 50 per cent increase in June, the gain being mostly in the city.

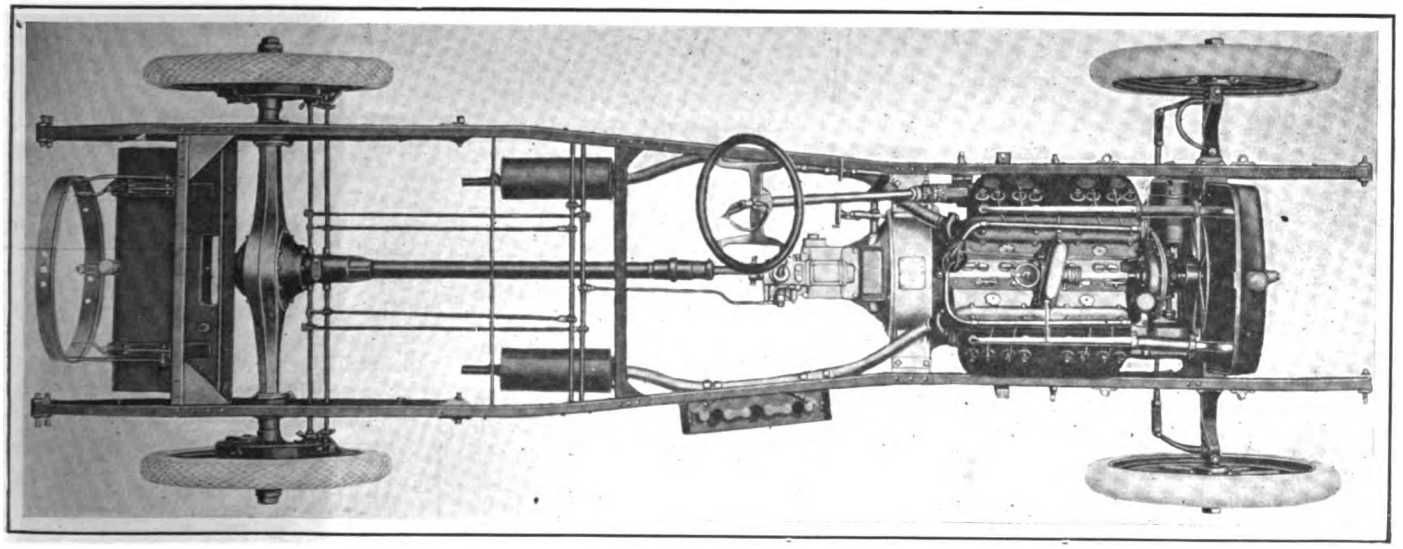
The Acton-Parke Auto Co. has had an increase every month in Maxwell sales, June being its largest month. The company was on June 30 sixteen cars short of 100 for the month; the organization got busy and at 11.30 that evening the sixteenth car for the day, the 100th for the month, was driven out of the door.

The weather was like summer the last week of June; conditions for wheat harvesting are excellent, with good prospects in both corn and wheat, and in a few weeks the trade with the country will begin to flow.

The Ford Motor Co. has had a 75 per cent increase in business, including June of this year, though the output was somewhat less in June than in May. June, however, showed a 70 per cent increase over the same month last year.

A Correction

In the Motor World Guide for June 28 the Kisselkar Hundred Point six was listed as a four instead of a six, and was credited with a Remy starter, whereas this unit is made by the Kissel company. The starter on the 6-42 is also made by the company and not by Westinghouse. Remy lighting equipment, however, is used on the former model and Westinghouse on the latter.



The chassis presents a substantial appearance, with a tapered frame of deep section, sturdy drive members and long and wide springs

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Accounting and Business Systems



ACCOUNTING BORROWED CAPITAL

Editor Motor World:

We have installed your system of accounts and have for the past month used it. However, there are a few points we do not fully understand, and one is: We have been in business for about 3 years and have been using another system. When we began our business we borrowed a sum of money to equip ourselves with the necessary stock, etc.

Now, in this system, if we debit ourselves with, say, $10,000 notes payable it will show that our business has—that is, our cash—increased that amount, and we know it has not; at the same time, where will it go? And do you list all the liabilities in the income and expense records; that is, all the old bills payable—the ones that were on hand when we opened up these books?

The system is complete in every way for the first month's business, but I have some little difficulty in working out the different items that have been carried over from the old system of books.

If you will please inform me at once on these points I will appreciate it very much. I am in a great hurry to close the month's business.—Independent Auto Co., Topeka, Kan.

Answer—We believe your only trouble is in properly compiling your assets and liabilities at the time you opened the new Motor World system. We assume when you originally commenced business you borrowed $10,000 and used this money to buy stock, supplies, etc. If the notes are still unpaid you would have a liability of the amount of your notes outstanding. To offset this amount you would have assets of supplies, machinery, etc., of perhaps a greater amount. The difference would be your profit for the period of operation of your business.

We suggest that you refer to Table No. 2, page 30, of the System booklet; then make a schedule of your assets and liabilities as of June 1, if this is the date you started our system. None of the above will appear on Forms 1 or 2; it will simply mean the status of your business on June 1. This will be shown on Table No. 2 above referred to, under the heading "What We Started With."

If you wish, these assets and liabilities could be carried on the back of your book or on a separate account outside of the system. Then at the end of each month Forms No. 1 and No. 2 would change, your assets and liabilities showing what you had left at the end of the month's operations. The $10,000 and what you had prior to opening the system go into the monthly tables (No. 2), and not on Form 1 or 2.

DIVIDING ACCOUNTS

QUESTION—Please send me, subject to examination and return, a set of Motor World business accounting books.

We use a set of books, but it is a little limited as to what you can tell at the end of a period.

Inclosed you will find a sample of a day's business.

We use only credit and debit slips, not numbered, for all cash taken in or paid out, or charges for anything.

Now, on the Motor World System cannot all charges be totaled under customers' accounts, all accounts paid be totaled and all cash taken in be totaled in their respective departments?

As I understand it, in the Motor World System you require an entry for every sale, charge or amount paid out.—D. W. Roderick, Wells Garage, Wells, Minn.

ANSWER—We believe the Motor World System will operate with a little more satisfaction as to ultimate details than you secure from what you are now using.

We suggest that you study the system booklet very carefully before going ahead, because if you do not there will be quite a few things come up that you will have to ask about. In any event, we want you to ask every question that comes to your mind, because we have assumed the job of making these systems operate with satisfaction and to do this must give this service.

All charges to customers can be totaled at any time; so can all cash taken in and all cash sales, although you can readily see that since the money for cash sales and the money from charge sales all goes in the cash received column, you would have to separate the items when you total at night and divide the two. This you can readily do, however, because your cash sales will be accompanied by slips or report orders.

Unless these items are small and occur with great frequency, especially at the beginning, you ought to make a separate entry for each sale or charge, but if you are selling gasoline five times an hour and have that many sales slips, you can enter a handful of them in a bunch, although it is better not to let too many of them pile up until you become familiar with the operation of the system.

KEEPING STOCK CARDS

QUESTION—Please give us an idea as to how to keep an inventory card index on accessories? It is a h—l of a job to put down each thing as it comes in and as it is sold, but I do not see any other way. Thanks very much.—H. Tovey, Fayetteville, Ark.

ANSWER—As goods are purchased and received, the price should be noted on the goods themselves, or on their containers; that is, the cost price. Then, as each sale is made, and we are presuming that you use some form of sale ticket, the cost price is placed on the same ticket that shows the sale price. A code of some kind is used, in order not to let the customer know the cost of the goods; the bookkeeper at the end of each day computes the value of the goods sold on that day and makes his entries accordingly.

In order to find the number of the various parts sold, we suggest that you use a large sheet of ruled paper, heading the various columns with the names of those parts or accessories that are sold most frequently, then run through the sale tickets of that day, placing in each column the various parts and accessories as shown by the headings.

It is true that this is a lot of work, but the value of the information that you get should be worth the time and trouble you spend in arriving at the same. We are forwarding you a 6 x 4 inventory card. We also have these 3 x 5.

Time Payments
Page 6

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THERE is a man in a certain city who is trying hard to walk with rectitude up the pathway of business integrity. So far as any one knows he never has made a wrong move since he has been in that town, and still the man does not stand on a par with the other men of that city.

Why?

Simple answer: Years ago this man lived in a city several hundred miles from where he now lives. He was young in those days and wanted to make a short-cut to fame and fortune. He made several short-cuts, and one of them was so short that it cut the whiskers off the law and the young man made a short-cut out of town.

From that day the man realized the folly of trying to build a future life or a future business on poor or dishonest work. He set out to live and work right, but that slip he made follows him around all the time like the dog in the picture on page 5 this week. The man once owned and befriended the dog and now the dog won't leave.

IT has been said that the "evil that men do lives after them; the good is oft interred with their bones." And it is true. One bad act, move or word is remembered above many good ones. Why? One reason is that the bad deeds are the unusual. If you saw Old Bill Stover asleep with a jag on every day in the shade beside Hennessey's saloon you wouldn't comment on it, but if you saw Old Bill Stover going down Main Street all dolled up like a judge the news would spread like wild-fire. And that occasion would hang to Old Bill just the same as one slumber in the shade with a jag on would stick to you. The dog of reputation would follow you both around.

REPUTATION is like a range of mountains. It consists of everything you have done and those things which are unusual are the mountain peaks which stand out above all the others. The peaks may be good or bad, but they are the unusual, the extreme instances. The dealer who almost wrecked his business to make good on a "lemon" car filled his reputation with peaks of good; the dealer who slipped a few things over on his customers filled his reputation with peaks of bad. He adopted a number of little curs of mangey aspect that will follow him for years no matter how hard he tries to beat them off with future good service.

This cleaning off a reputation by reform is the only possible method, but it is VERY HARD. It is better by far to keep the slate clean.

That One Poor Job

THERE is, for instance, a capable young man who did very good work in a certain business, but he had failings, among which was a tendency to be bull-headed. Despite his good work he lost several positions and finally had to start over again in a different business where he wasn't known. He has long since changed his tactics and could do good work in his original profession if that it were not that this cur of previous bull-headedness keeps following him around and won't be shaken off. Some day the young man may be able to get rid of the dog but it will take time and lots of hard work.

There are hundreds of dealers, garagemen, repairmen, supplymen, salesmen, chauffeurs, mechanics, stenographers, street car conductors, bankers, white wings, congressmen and everything else who are followed by a little dog of misstep. At some time or other—may be several times—they have done something not at all to their credit, and that one thing is remembered by all those with whom they have dealings.

MAYBE the superintendent of the service station let a job go out in poor condition. Maybe the car owner had a lot of trouble over the deal. And maybe that car owner isn't telling everybody about the sort of treatment he received.

Perhaps a clerk in the store or a salesman offended a customer, or a prospective customer. That customer pans the store every chance he gets. He works a world of harm.

And supposing that a stenographer came to work some morning and made a serious error. Is it remembered or isn't it? The boss may say he has forgotten it—but has he?

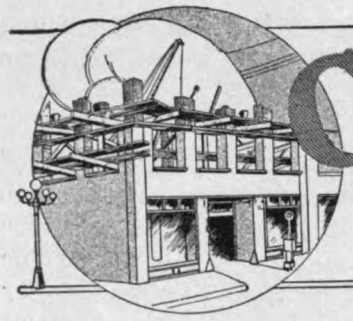
ATTENTION to these little details is essential to a really successful business. A business may slam through rough-shod and get away with it for years, but the business that endures and grows and thrives is right from top to bottom. It sends out no bad jobs, it makes few slips, it makes discourtesy a crime. The customer is always right.

So many hard-headed business men, who are able and know it, pooh-pooh at these details of business. They call them "rot" or "bunk." They consider them effeminate or trifling. They do not realize that the 100-per-cent business structure has all the big stones of its wall mortared in with little grains of sand and the mortar pointed.

Because this business man IS a business man he wouldn't buy a 90-per-cent house. Why, then, should he run a 90-per-cent business?

He wouldn't invite a mangey cur to follow him around town because it would detract from his respectability. Why then should he create curs of misstep, of "poor job," of discourteous sales work, of unethical business? For this latter imaginary animal will dog his footstep through eternity.

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Scientific Construction

GARAGES REPAIRSHOPS SHOWROOMS

CONVERTING THREE-STORY BUILDING INTO GARAGE

Editor Motor World:

We have three-story building to convert into a garage 67 x 150 ft., with an alley entrance to rear. The door is in the middle. The front is divided into four doors. We expect to excavate enough in the rear for furnace and coal. We want two showrooms in front with entrance to garage between them. Ramp to go upstairs to second and third floors. How would you arrange this building principally for public garage.—Acme Garage & Auto Co., Baltimore, Md.

The plan is shown in Fig. 1. The entrance to the ramp was put at the rear so that the full frontage might be used for showroom. However, if it is desirable to have the ramp entrance at the front the change is a simple matter, as it merely means narrowing the two showrooms enough to allow the entrance to be put in, and then the second and third floor plan are turned around, the front going at the back and the back at the front.

DOUBLING GARAGE SPACE

Editor Motor World:

We occupy corner lot, present building is 50 x 80, and are building an addition 50 x 80, fronting on main street. We intend to use old building for storage, with new building for shop, office, showroom and stockroom. We handle the Studebaker and Paige cars and intend to have complete line of accessories. Any suggestions will be welcome.—Floyd Cram, Cram Bros. Garage, Colfax, Wash.

Fig. 5 shows a plan which we believe you will find satisfactory. You have not stated where the entrance to the garage back of your showroom should be. Consequently we have had to assume that it is at the side, opening into the old garage building, as shown.

The showroom is large enough for four cars and the entrance is provided with double doors, so that the cars may be brought in from the street rather than from the rear of the building.

Private and general offices have been provided. The former may also be used as a room for closing prospects.

You mention that you will carry accessories, but do not state that you will have an accessory store. We have provided one, however, because it is just as important to have a store for the sale of accessories as for the sale of cars. Every other merchant in your town sells his goods by displaying them in a store. If he finds it good policy, you certainly should.

The accessory stockroom is placed directly back of the store and may also be used as a repair parts stockroom, as it is convenient to the shop, which is located in the old building.

It seems a pity not to use the corner location for your showroom and accessory store, as it is much more advisable than an inside one. Your street frontage must be considered as valuable advertis-

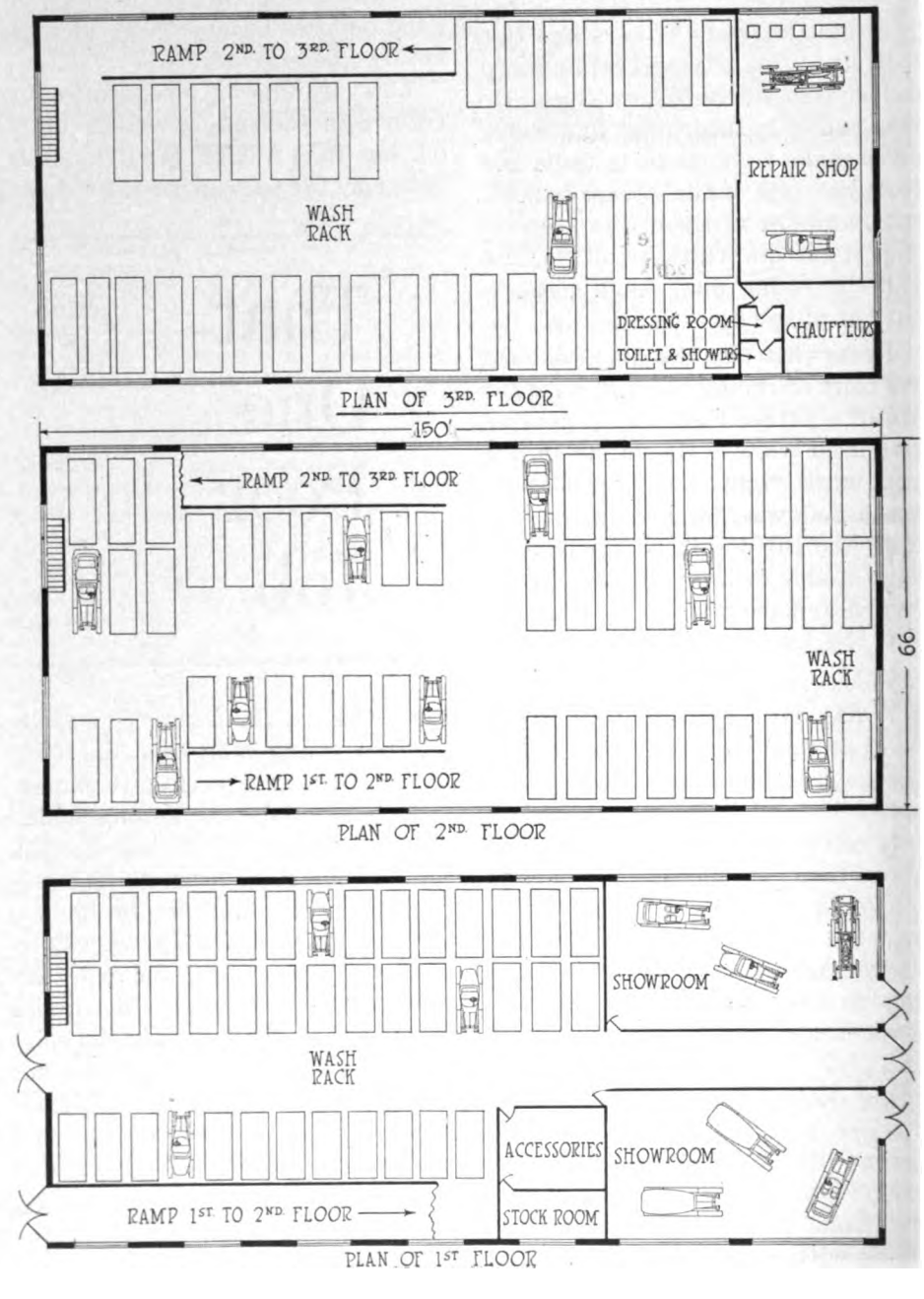
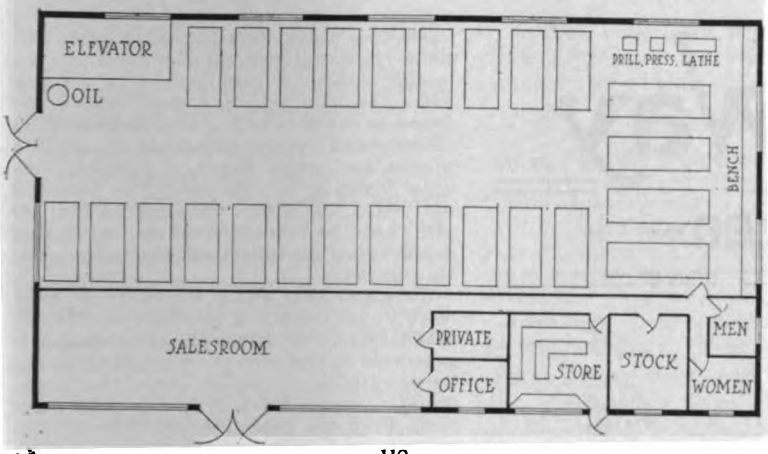


Fig. 1—Three-story building with two showrooms and a shop

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ing space and you should use as much of it as possible.

Fig. 2—Peculiar layout of building with large frontage

Therefore, the fact that you are making no use whatever of the frontage on the side street for the

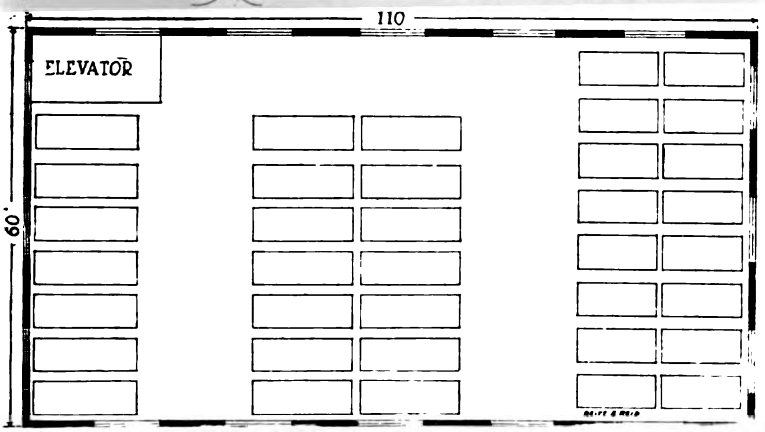


Fig. 3 — Crosswise arrangement of cars for basement

display of your wares is a waste. Unless the cost is prohibitive, we should strongly advise the use of the corner building for showroom and accessory store, as shown

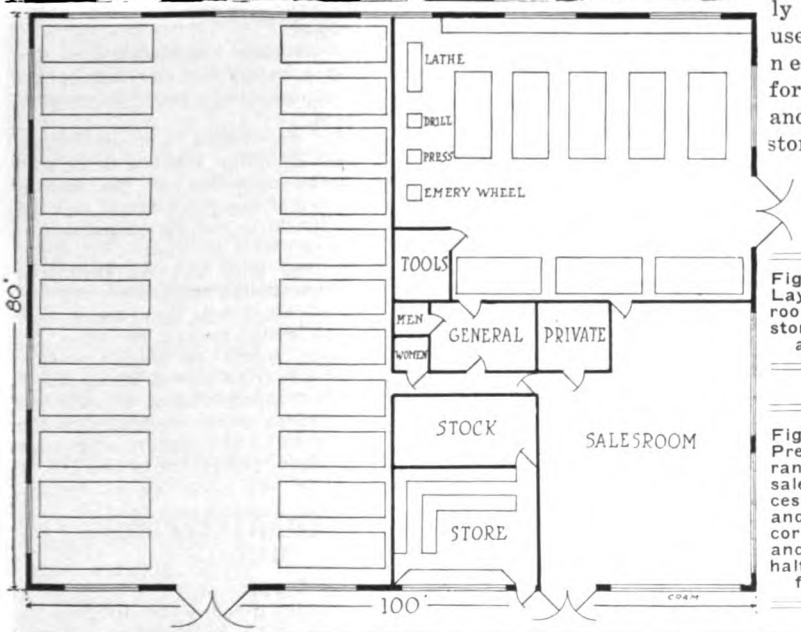


Fig. 4—Right—Layout of salesroom, accessory store and shop at the rear

Fig. 5 — Left — Preferable arrangement with salesroom, accessory store and shop in the corner building, and the other half exclusively for storage

in Fig. 2. The repairshop is also placed in this part of the building and the new addition is used entirely for the storage of cars. This is a much more attractive layout.

A separate stockroom is shown in this plan for carrying tools and repair parts.

NARROW SHOWROOM ON LARGE FRONTAGE

Editor Motor World:

Will you kindly give us plans for a modern garage building with arrangements for utilizing space to best advantage, the size of the building to be 60 x 110 ft., facing 110 ft. on one of the principal streets of the city? This frontage will be of plate glass the entire length. We could then arrange for entrance to garage from the other street, which runs through to an alley; that is, the front will face 110 ft. on the main street and one end on a cross-street and one end on an alley.

It is intended to use 20 x 110 ft. for showroom, accessory department and office. There will be a basement to the building, with washrack and storage room for cars and supplies. The building is to be modern and convenient for tourists and to contain a repairshop with some modern machinery.—A Subscriber.

Your plot is so shallow (60 ft.) that we should advise you to select another

(*Continued on page 25*)



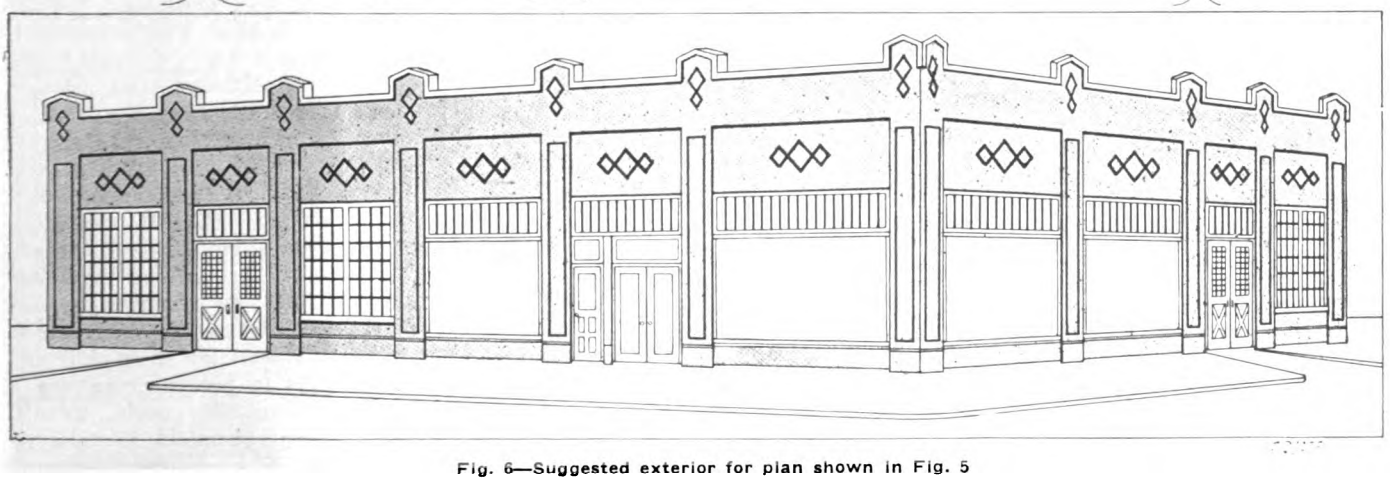


Fig. 6—Suggested exterior for plan shown in Fig. 5

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Do It This Way

···QUERIES ANSWERED···

CHAMOIS GASOLINE STRAINERS USUALLY SAFE

Editor Motor World:

What is your opinion in regard to the inclosed article taken from a Mobile, Ala., paper? I have been straining the gasoline I used through a chamois for several years, and would like to know if it really is dangerous. Perhaps others of your readers would like to read what you think about it, too.—Harry K. Onken, John Onken & Brothers, Chapin, Ill.

The following article, which was published in a recent issue of the Timken Magazine, was the subject of considerable comment among engineers of many of the largest automobile factories in this country. So widespread did the discussion become that the New York police department made tests to ascertain whether an explosion could be caused in the manner described. The tests proved conclusively that the article was correct. The article follows:

"Garagemen, Beware! Motorists, Attention—There is death in the chamois strainer. Whenever you filter gasoline through chamois you are playing hide and seek with one of the deadliest combinations known to man—electricity and gasoline. . . .

"Do not put gasoline through chamois skin. But, if you will insist on taking chances, be sure that you have a 'ground' on it by seeing that the funnel touches the opening of the tank. Be doubly sure that you take this precaution."

The consensus of opinion seems to be that straining gasoline through chamois under ordinary circumstances will not cause a fire, and this is borne out by the fact that in the years you have been handling gasoline you have never had an accident. This question has been thoroughly investigated by the Nordyke & Marmon and Moline automobile companies. The Nordyke & Marmon Co. says:

Eminent authorities seem to agree that there is nothing whatever in the report that passing gasoline through a chamois generates an electrical charge.

In this connection the report from Arthur L. Foley, head professor of physics at Indiana University, is of interest. Professor Foley writes as follows in answer to the Nordyke & Marmon Co.'s inquiry:

No Current from Chamois

"Pouring gasoline through a funnel with chamois strainer does not of itself produce a charge, and it makes no difference whether the funnel is supported by a person or by the gas tank. The article is in error in saying that the funnel is grounded when in the tank and insulated when in the hand. If there is insulation in either case it is more likely when the funnel is in the tank, as the car stands on rubber while the man usually does not.

"As a matter of fact, there would be very rare cases indeed when both were not grounded for potentials sufficient to produce a spark. But on a day when the atmosphere is very dry, as it is usually on a cold, clear day, a man may become charged by scuffling about on a clean, dry floor, or his clothing may become electrified by friction, as noticed sometimes when combing the hair.

"Under such circumstances pouring gasoline through a funnel, whether or not there is any chamois in it, gives rise to induced charges that are quite too complicated to undertake to explain in a few words. Such charges might fire the gas. Indeed, the original friction charge might do so under certain circumstances."

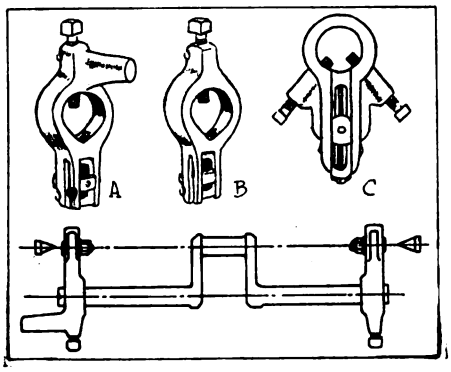


Fig. 1—Dogs for centering crankspring in lathe

In January the Moline Automobile Co., East Moline, Ill., manufacturer of the Moline Knight engines and automobiles, had two fires caused by the ignition of gasoline when being drawn from one of their filling stations. The Moline Automobile Co.'s supply tank is located at some distance from filling stations. The gasoline is pumped through a 1½-in. iron pipe by means of an electrically-operated pump controlled at each of the filling stations. The two fires both occurred at the service department's station and within about a week of each other. This filling station is at the end of a long pipe line which leads through a duct beside an asbestos-covered steam pipe. It had been noticed that the gasoline, especially that first to be drawn in the morning, was very warm and, therefore, gasified readily. In both of these fires it was noted that the gasoline ignited when the can had about 4 gal. of gasoline in it and before the control switch for pump was pulled.

Switch Spark Eliminated

As the control switch for the electric motor was situated near the drawing faucet, it was first assumed that possibly the explosion and fire occurred by the fumes catching from a spark due to bad switch connection. Therefore, immediate steps were taken to remove the gasoline pipe from the steam duct so that the gasoline would not be heated.

In about another week there was a similar fire although not so much damage, due to the presence of mind of the operator to shut off the gasoline. This time the explosion occurred after about 3½ gal. of gasoline was drawn. The man drawing the gasoline distinctly heard the snap and the explosion.

Investigation showed that the former theory of the fire was in error. It is believed that the fire was caused by static electricity jumping from the funnel of the can to the faucet. A 5-gal. can with a funnel but no chamois skin was used. The funnel rested in the neck of can and came in direct contact with the can. The can rested on a wooden box, which formed a complete electrical insulator for the can. The height of the funnel was about the same as the faucet. Thus by movement of the can the air gap between the funnel and the faucet could be changed.

We found that static electricity is generated by the flowing of gasoline into the can. When there was sufficient static electricity generated in the surface of the can, making its potential great enough above that of the faucet, it would break down the air gap and jump from the funnel to the faucet. This would set fire to the gasoline.

Experiments showed that a spark could be drawn from the can after it was partly filled with gasoline, providing it was left undisturbed on the wooden box. This spark could either be drawn by a wire direct connected to the piping system and therefore grounded, or even through a man's hand who was standing on the floor as he approached with his hand the surface of the can to about the distance of ¾ in. This spark is similar to one secured under certain atmospheric conditions by scuffling along a heavy carpet and touching some other person or conducting article.

Hang Can on Faucet

The reason for not having trouble at the other filling station is thought to be due to the fact that the cans are either hung on the faucet by the handle or rest on some metal-grounded support.

The Moline company has installed at this filling station a metal rest instead of the wooden box. This metal is perfectly grounded to all piping.

The Moline Automobile Co., therefore, wishes to warn all filling stations to be sure that the charge collecting on the can is properly disposed of and not allowed to build up. The can should be resting on some conducting metal properly grounded. If metal pipe is used, then pipe and can should be metallically connected in some way.

It is also to be noted that under this theory the can while resting on some insulating material might be filled and carried by someone wearing gloves, which would keep the can still insulated and would allow the can to discharge static electricity to car tank or other metal and possibly, when this spark is discharged, to set fire to the can of gasoline.

WELDING CHARACTERISTICS OF METAL

Editor Motor World:

Will you kindly discuss the differences in method of welding of the various common metals?—E. M. J., Pawtucket, R. I.

The characteristics of cast-iron, wrought-iron, steel, aluminum, copper, brass and bronze and fully discussed in "Welding," by Richard N. Hart. He says:

"Cast-iron welds readily. But a casting is very liable to crack either when heating or cooling. Careful preheating is necessary, and after the weld is made the piece should be covered with asbestos paper and slowly allowed to cool out of reach of drafts. The melt bar is high-silicon cast-iron, low in sulphur and phosphorus. It is necessary to use a flux or scaling powder made of salt, borax, or similar chemical, to take up the iron oxid formed in the flame and

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allow the metal to run freely. Cast-iron runs freely at the weld, and for that reason vertical welding is difficult and underneath welding impossible.

"Wrought-iron does not melt to a fluid, but becomes pasty, and the metal at the weld may have to be assisted by the melt bar. If the wrought-iron is not low in silicon it becomes cast-iron when it cools, and even pure iron which has been melted loses its structure. This can be regained to some extent by hammering as it cools.

"Steel, as its carbon content increases, becomes increasingly hard to weld, losing its essential properties because its carbon has changed form. High carbon steel welds can only be restored to their original properties by after-treatment annealing. There are many tricks in the welding and heat-treatment of special steels, and the welding of steel to iron, steel to copper, and welding tool steel, which need not be taken up here.

"Aluminum is sensitive to oxygen to a fault, and so it is a good thing to have a slight excess of acetylene in the flame. The work to be welded is preheated, after the fracture or edges to be welded are made clean and raw. The metal does not run readily, but becomes soft and may be joined by the puddling action of an iron stirring rod. The great heat conductivity of this metal, its tendency to oxidize quickly, and its low melting point, make it a difficult metal to weld. Nevertheless, it is welded successfully by good operators. The difference in toughness and ductility between cast and rolled aluminum is very great; some of this toughness can be restored by hammering the weld when hot. But the operator must bear in mind that this metal when reasonable pure is hot-short between 600 deg. and 655 deg. C., and may crumble or fracture under the hammer within this range.

"Brass is welded with a slightly larger flame than for iron, and the cone of the flame is kept away from the work. Borax is used as a flux to prevent the metal from burning after it melts. Like wrought-iron, rolled brass becomes cast metal when welded and is not so tough. Bronze calls for similar treatment.

"Copper requires a large, low-temperature flame, and its toughness can be restored by hammering after it is welded."

DOGS FOR CRANKPIN TURNING

Editor Motor World:

Will you kindly tell us how we may turn the crankpin bearings in a lathe? What sort of a fixture is the best to use? —Reader.

Fig. 1 shows a combination lathe dog for this purpose. The model shown at C is for heavy work, such as crankshafts, and is adjustable from 2 to 8 in. It is provided with a screw feed center and gage. Models A and B are similar in principle but are for lighter service.

The work is clamped in two of the dogs and then the centers are adjusted until the crankpin is centered.

TOTAL REGISTRATION IS 2,423,788

Editor Motor World:

Can you advise us as to whether there are any published statistics showing the total registration of automobiles by States?—Hood Tire Co., Inc., Watertown, Mass.

Car and truck registrations as of Jan. 1, 1916, are:

New York...	212,844	Virginia	21,357
Illinois	182,290	N. Carolina..	21,160
Ohio	179,767	Kentucky ...	19,500
California ..	163,801	Maine	18,600
Pennsylvania	150,729	Rhode Island	16,362
Iowa	139,808	Montana ...	14,520
Michigan ...	114,845	S. Carolina..	14,500
Indiana	96,915	Alabama	13,798
Minnesota ..	91,829	W. Virginia.	13,256
Texas	90,000	Florida	13,123
Mass.	89,133	Mississippi .	11,500
Wisconsin ..	81,371	Vermont	11,499
Missouri ...	76,462	Louisiana ..	10,880
Kansas	74,956	N. Hamps're	10,819
New Jersey.	67,556	Dist. of Col..	10,200
Nebraska ...	59,140	Arkansas ...	8,021
Connecticut..	38,950	Utah	7,994
Washington.	36,905	Arizona	7,320
S. Dakota...	29,336	Idaho	7,093
Maryland ...	27,638	N. Mexico..	4,947
Tennessee ..	27,266	Delaware ...	4,924
Colorado	26,611	Wyoming ...	3,976
Oklahoma ..	25,615	Nevada	2,177
N. Dakota...	24,678		
Georgia	24,059	Total 2,423,788	
Oregon	23,758		

CARBURETER TESTING

In testing a carbureter to see whether the float valve leaks or not the method depends on whether it is used with pressure or gravity feed. If the latter, it is merely necessary to attach the carbureter to a pipe running to a small tank full of fuel a foot or so above it. This apparatus will not answer, however, when pressure feed is employed, because the valve might appear tight, yet when subjected to pressure would leak. Consequently it is necessary to apply pressure equal to that found in actual operation. The testing apparatus may consist of a small tank or can supplied with a filler opening, a pressure gage, and a hand air pump to bring the pressure up to that desired.

PAINT SPRAYER

An ordinary gas blow torch may be used as a paint sprayer, the paint taking the place of the gas and being drawn up through the gas tube as shown. It is particularly suitable for putting on the lead coat.—Autocar Sales and Service Co., Philadelphia.

Hot-Air Stove

An exhaust pipe stove for the carbureter may be made out of a piece of an old stove pipe by cutting out a disk and bending it into an oval-shaped cone which is strapped onto the exhaust pipe. The small end is drawn out on the horn of the anvil so that the flexible pipe may be attached.—George W. Lownsley, Palmyra, Mo.

SCIENTIFIC CONSTRUCTION

(*Continued from page* 23)

location, unless this one may be obtained at a comparatively low price or is desirable for some other reason which we cannot appreciate from this distance. A smaller frontage and a greater depth would do you just about as well, and, other things being equal, should cost less. However, if this lot is worth no more than one of similar area with smaller frontage and greater depth, then is it probably a good buy.

Fig. 1 shows the first-floor layout. A 20-ft. strip along the front of the building is used for showroom, accessory store, stockroom, offices, etc., and the remainder of the area is for garage and repairshop. The garage is only 40 ft. wide, which is narrow except for the very smallest cars, yet it is impossible to make it any wider without encroaching too greatly upon the strip across the front of the building.

One basement plan is shown in Fig. 2. It accommodates thirty-seven cars and has the elevator in the far corner from the side street. Fig. 3, on the other hand, will house from forty-one to forty-four cars; in this plan the elevator must be put on the front side, which probably would be an advantage anyhow, as it is preferable to have the entrance from the main street. If the elevator were placed in this position each one of the rooms in the strip would be made a little narrower. A foot or so may be taken off of the showroom, the offices, the accessory store, the stockroom, etc.

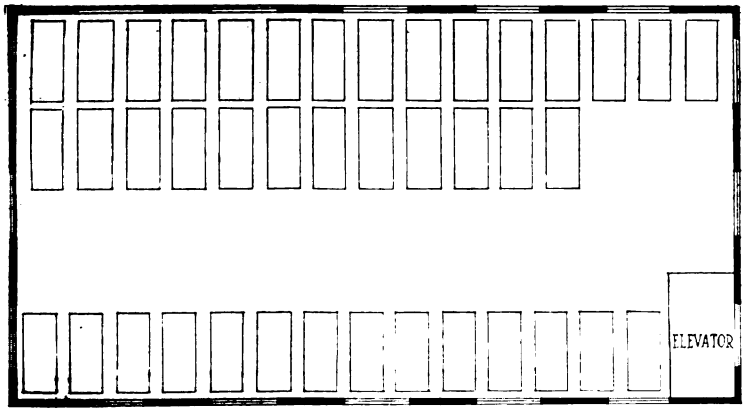


Fig. 2—More cars can be stored with this layout than in the plan shown in Fig. 3, page 23

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 750) WINDSHIELD REPAIR

Upper halves of windshields do not always stay put, especially when worn; there is a tendency for the upper section to fall over. In the construction shown the position of this part is determined by a pair of disks at each end. These are held in contact by stiff coil springs, and additional friction is obtained by having a series of raised points on one disk and cupped ones registering with these on the other. Sometimes the springs may be adjusted; but if not, or if this is not sufficient, a leather washer placed as shown will do the trick.—S. P. M.

(No. 751) EMERGENCY INSULATION

Tire tape is not the only means of temporarily repairing wires with broken-down insulation. It is surely the most convenient; but if none is at hand, cord may be tightly bound around the defective section as shown, or even strips of paper may be used. In the latter case there is danger of current leakage until the mucilage dries; for this reason, and because of its insulating properties, tire cement is preferable.—H. F. B.

(No. 752) RAIN-VISION WINDSHIELD

Rain-vision windshields are common on closed cars but unusual on open ones. It is a simple matter, however, to add this feature. The upper section of a windshield is mounted on the front of the top, two specially made brackets being used to hold it in place. It catches the rain and the regular windshield protects the driver from the wind.—W. B. Snyder.

(No. 753) TAP WRENCH

The tapping of small holes is facilitated by the use of a tap wrench, which consists of a hexagonal nut mounted on a short rod and having square holes in each of the faces. Each of these holes is made to fit a different sized tap, there being six holes.

(No. 754) EMERGENCY VALVE REMOVER

Myriads of valve removers have been designed, some simple and some complicated, but the simplest of all is merely an S wrench. The jaws at one end form the yoke which slips around the end of the valve stem. The wrench is supported by a stout wire which is attached to any convenient point on the cylinder.

(No. 755) NUT AND BOLT HOLDER

Considerable time may be saved when nuts and bolts of a given size and from a certain part of the car may be kept together. This is readily done by construction of the holder shown. In the center are several stiff pieces of wire, over each one of which washers and nuts of any particular size may be dropped. Thus all the nuts and washers holding the two halves of the crankcase, for example, would be carried on one of these wires. Bolts are dropped into the slots around the sides of the holder. The four slots are all different in width, so that bolts of various sizes may be accommodated. This is better than a series of compartments in a box, because the different nuts are always in sight.

(No. 756) ADJUSTABLE LIGHT

Instead of having the drop light attached to a flexible cord, it will often be found of greater advantage to use the universal bracket shown. Particularly will this be true when it is necessary to illuminate parts that cannot easily be reached by the former. The universal bracket may be made out of bar stock or pipe, and consists of an upright standard from which projects a long arm which has a joint which allows it to be moved in any direction. At the end of this arm there is a similar short one attached by a similar joint.

(No. 757) STUD REMOVER

Studs, especially those difficult to move, may be taken out with the aid of a split nut and a C clamp. The nut is screwed over the stud, and then the clamp is screwed down on it until the nut grips the stud firmly.

(No. 758) SIMPLE MOTOR STAND

A substantial motor stand that is easily adjustable can be made of 2 x 4s, as shown. The base should be made of a single heavy block of wood, if possible, in order to give the necessary rigidity. The adjustable feature is the bar which spans the two side members. This can be forged of ½-in. round iron and will be plenty strong enough for almost any size motor.—Overland Garage, Harrisburg, Pa.

(No. 759) WRENCH HANDLES

Wrench handles in odd sizes and shapes are often required in order to do the work in minimum time. Sometimes a very short handle is necessary to clear a closely projecting part, sometimes a long one for a nut which must be attacked from a distance because of cramped quarters; then there are various types with curved handles to meet the peculiarities of design of certain cars. Sometimes a wrench with thin jaws is required, and again, one with thick jaws. All these types may be combined in one by having several jaws and handles, the two being threaded into each other.

(No. 760) ELEVATOR GATE

A satisfactory elevator gate can be made of two planks about ¾ in. thick and of the proper length. These are bolted to shorter lengths at each end by means of a single bolt through the center as shown. A counterweight is then attached, with the rope running through a pulley hung to the ceiling, and an additional rope provided for raising the gate. The gate folds into small space when raised.—Crispen Motor Car Co., Harrisburg, Pa.

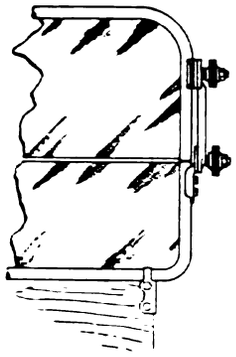
You Have a Good Idea

WHY not tell us about it so that we can print it on this page where it will do 20,000 *other garagemen and repairmen some good?*

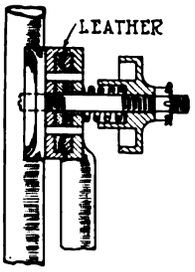
WE are anxious to have you send in your good ideas. The Motor World Roadmen are now on the road—one in Boston and one in Detroit—collecting the best ideas for this page. These ideas will appear very soon.

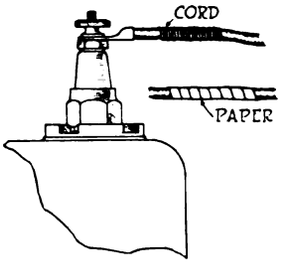
IN the meantime why not do your share. A postcard will do and you need not mind about the drawing—just a rough pencil sketch.—Editor.

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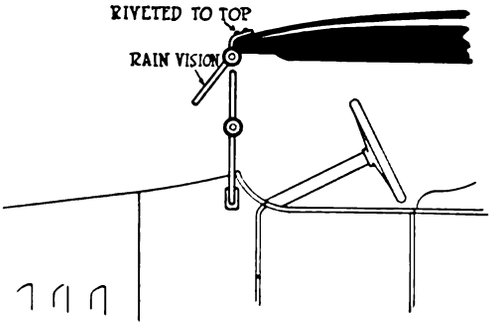


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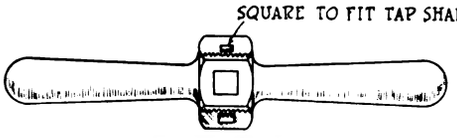




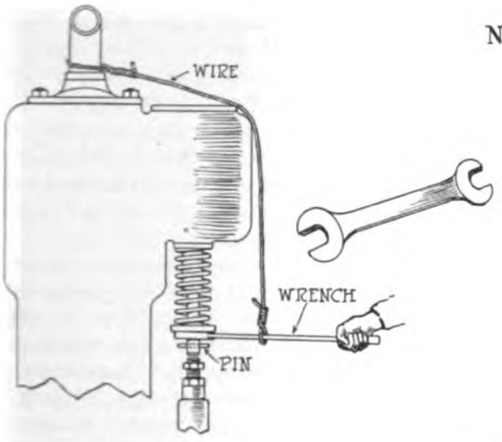
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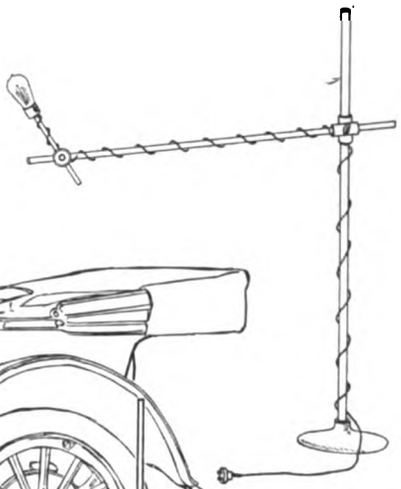
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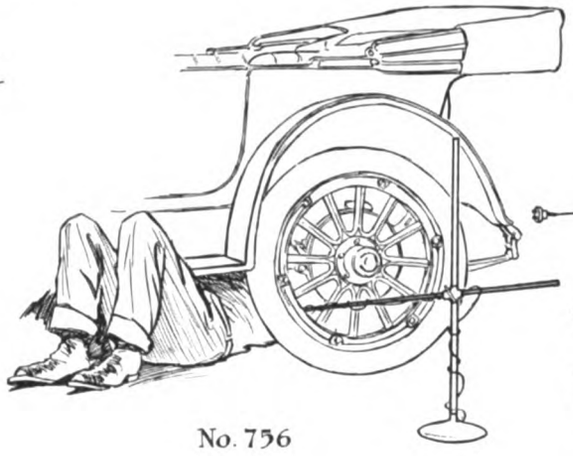


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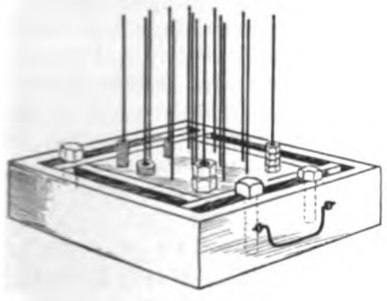


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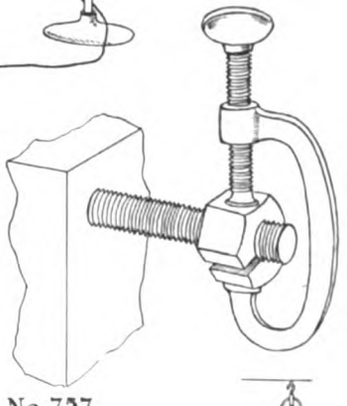




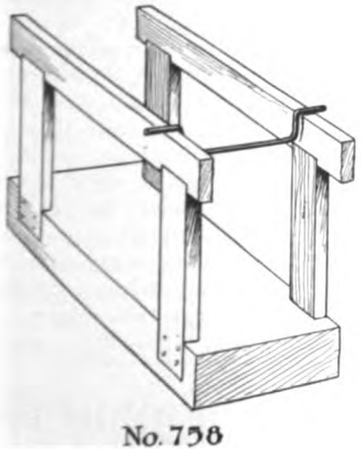
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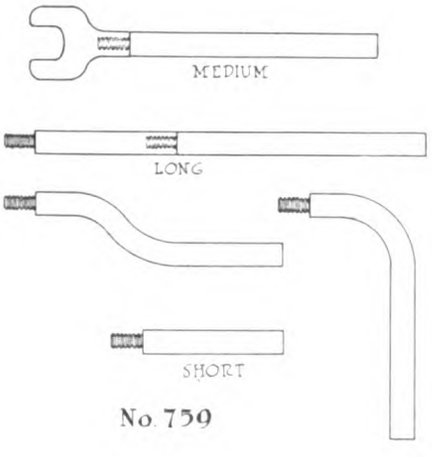
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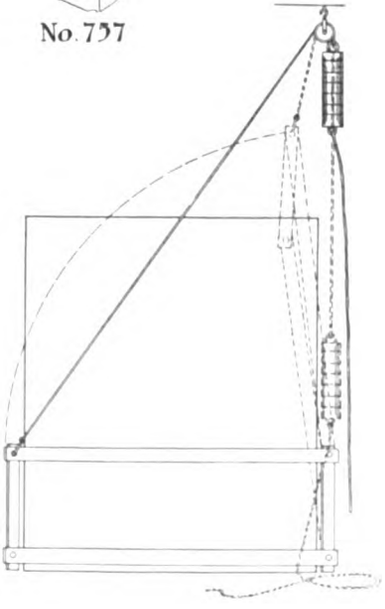
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Accessories & Supplies



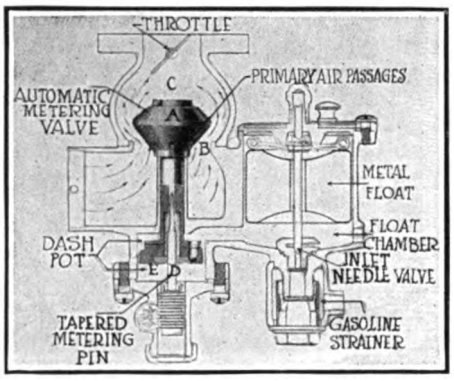
STEWART CARBURETER FOR FORDS

Detroit Lubricator Co., Detroit. PRICE, $15.

This instrument works on the same metering-pin principle as the other Stewart instruments, but is designed for the needs of the Ford engine. Besides the carbureter itself, a manifold, hot-air connections, dash adjustment and all fittings are included in the outfit as retailed at $15.

The principle of the Stewart carbureter may best be understood from the sectional view. The metering valve A rests upon the seat B when the engine is not running, but as the engine begins to rotate, the suction raises the valve from the seat, drawing in air around it from the air intakes. This suction also draws gasoline up within the valve stem, this mixing with the incoming air in the chamber C. The Stewart has but one adjustment, that being for the amount of gasoline. The air is a fixed amount, it being simply necessary to regulate the amount of gasoline admitted. This is controlled by the tapered metering pin D, and the adjustment is made when the engine is running at idling speed. When the right proportion has been determined at slow speed, it is evident that as the speed of the engine increases the metering valve A raises higher from its seat and away from the metering pin D. This allows a greater supply of both gasoline and air to be admitted in the right proportions as predetermined when designing the instrument.

In the Ford type of Stewart carbureter the float bowl is furnished in either one or two positions. Some Fords are specially equipped with a high-tension magneto, in which case it will be necessary to have the bowl at right angles to the air port or between the carbureter body and the hood base of the car. Where there is no high-tension magneto installation the float bowl is placed at 180 deg. to the air port, or forward of the carbureter body.



Stewart carbureter

MECHANICAL STARTER FOR FORDS

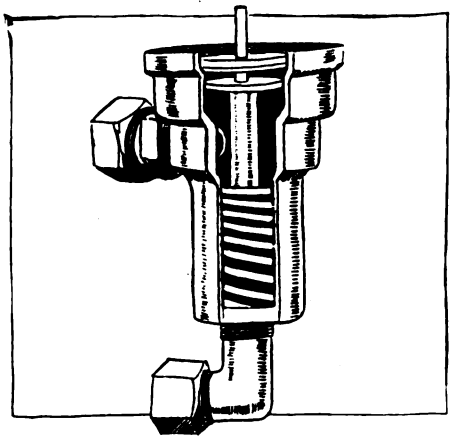
The Peoria Specialty Co., Peoria, Ill.

A chain and drum starter for Fords. The device is operated by a pedal placed just at the left of the low and high gear pedal on the footboard. The device is attached to the crankshaft in front of the radiator.

DUPLEX AIR VALVE

Duplex Vitalizer Corp., Elmira, N. Y. PRICE, $5.

A plug, screwed into the intake manifold, to supply additional air. The casting houses the valve opening into the manifold, the valve being operated by a piston working in a cylinder, which is also connected to the manifold. At low speeds the valve is held closed by vacuum, but at higher speeds the reduced vacuum allows the valve to open under the action of a spring and admit additional air.



Duplex air valve

BLAKE INSULATED STAPLES

Blake Signal & Mfg. Co., 251 Causeway Street, Boston. PRICES: For twisted pair and single wire, in hard wood, use No. 1; for general use, No. 3; lots of 1000 to 4000, $1.45 per 1000. Single packages of 100, 15 cents per 100, plus 3 cents postage. For twisted wire and extra heavy pairs, use No. 5 for hard wood and No. 6 for general use; in lots of 1000-4000, $1.60 per 1000. Single packages of 100 staples, 17 cents per 100; postage per package, 3 cents additional.

These staples are designed for use on all low voltage circuits. They consist of a standard square shouldered staple, having good driving qualities, bearing a fiber insulation. This insulation is folded to give two layers of insulation under the head of the staple and a large bearing area on the wire.

EFFECTO AUTO FINISHES

Pratt & Lambert, Inc., New York, N. Y., Buffalo, and Chicago. Effecto enamel: Red, quarts, $1.60; pints, 85 cents; half-pints, 45 cents. Blue, gray, dull gray, green, yellow, quarts, $1.35; pints, 70 cents; half-pints, 40 cents. Black, quarts, $1.10; pints, 60 cents; half-pints, 30 cents. Top and seat dressing, quarts, $1.25; pints, 65 cents, half-pints, 35 cents. Varnish, quarts, $1.40; pints, 75 cents; half-pints, 40 cents.

This is an enamel designed especially for bodies. Only one coat is required and the composition is such that it will dry evenly and smoothly, according to the maker, no matter how carelessly it is applied. It dries quickly, so that dust does not have much chance to settle. It is said to be durable, will not crack, chip off nor become dull to weather or through repeated washing. Effecto Auto Finishing Varnish is for restoring the original luster of the car and is of use when the original finish is shabby but not badly chipped or marred. Effecto Auto Top and Seat Dressing is designed to restore mohair and leather automobile tops, seats, side curtains, leather work, etc. It is a rich black and dries in about an hour. There is no danger that clothes will stick to the seats, because it does not soften or become sticky, according to the manufacturer.

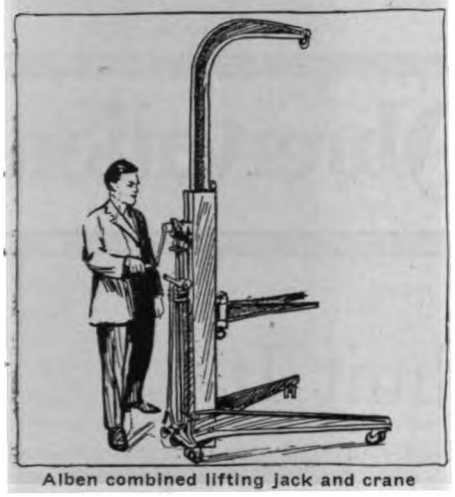
BLAKE TUBE FLUX

Blake Signal & Mfg. Co., 251 Causeway Street, Boston. PRICES: Single tube, 20 cents; if by mail, postage 5 cents. DEALERS: Ten tubes, 20 per cent; 25 tubes, 20-10 per cent; 50 tubes, 20-10-10 per cent; 100 tubes, 20-10-10-10 per cent.

This is a soldering flux contained in a metal holder, and is not a substitute for solder. The spout in the tube is aluminum and allows the paste to be applied directly to the joint at the same time as the heat without soldering up the vent. This container allows the flux to be applied exactly where it is needed.

Time Payments
Page 6

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Alben combined lifting jack and crane

ALBEN JACK AND CRANE

Alben Co., Milwaukee. PRICE, $85.

A portable crane with a bifurcated base and ball-bearing castor wheels. The boom or arm to which the chain is attached moves upward bodily, the upright part sliding in a hollow column and being actuated by a hand-crank, through gearing. The gearing gives two speeds, one for heavy loads and the other for light loads and quick lowering. Another feature is a jack arrangement, consisting of a pair of arms hinged to the sliding upright, so that they can be inserted under the load and the load raised by turning the crank. The arms can be swung to any angle and can be moved back out of the way when not needed. Minimum boom height, 6 ft. 4 in.; maximum, 9 ft. 3 in.; length of jack arms, 26 in.; weight of complete machine, 300 lb.

ICY-HOT MOTOR RESTAURANT

Icy-Hot Bottle Co., Cincinnati.

A motor restaurant at a more reasonable price than the wicker baskets used by many owners. The new models, made for parties of four or six, have cases of basswood, a material that shows very little tendency to warp. The box is 12 in. high, 15½ in. wide and 9½ in. deep. The color of the case is black, with a finish like patent leather, and impervious to water. The lining is in Bakst style.

It contains plates, knives, forks, napkins, cups, spoons and jelly jar and a large lunch box. The lower half has three divisions, two for vacuum bottles or jars and the other for fruit, crackers, cake, etc. There is a division above for an Icy-Hot jar or bottle, so that three vacuum containers can be carried.

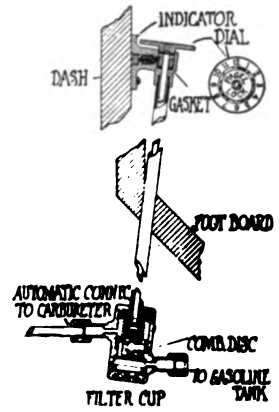
APCO VALVE PACKING

Auto Parts Co., Providence, R. I. PRICE, 50 cents. Felt washers, 12 cents per dozen.

This is a simple device for Fords, designed to prevent leakage through worn valve stem guides. It consists of a thick felt washer which goes around the stem and is pressed closely to the guide by a fitting which is attached to the top of the valve spring. New felt washers should be put in every time the valves are ground.



Icy-Hot motor restaurant

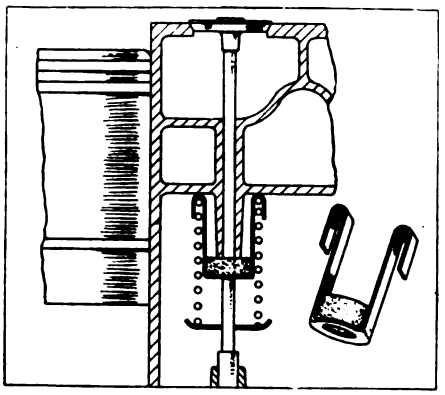


Combination gasoline lock

COMBINATION GASOLINE LOCK

Turner Brass Works, Sycamore, Ill.

The device is operated from the dash or cowl board and consists of three disks revolving in a chamber and engage with each other in the same manner as the disks of a combination lock. Each disk is pierced by a hole. When the lock is open the holes of all three disks are in alignment and the gasoline flows through unobstructed. The disks are controlled by the numbered dials, but a single turn on the dial throws these holes in the disk out of alignment and positively locks the flow of gasoline. A great variety of numbers may be used, making combinations of either two or three figures, and the owner can set his lock to any desired combination in case of discharging a chauffeur. The combination lock may be opened in the dark by feeling the notches. Inside the device is a strainer and filter cup which prevents dirt from clogging the needle valve seat. The cup also serves in removing water from the gasoline and the impure grease may be periodically removed by unscrewing the cap at the bottom. The price is $3.50 for cars with cowl boards and $3 for straight dashboard equipment.



Apco valve guide packing for Fords

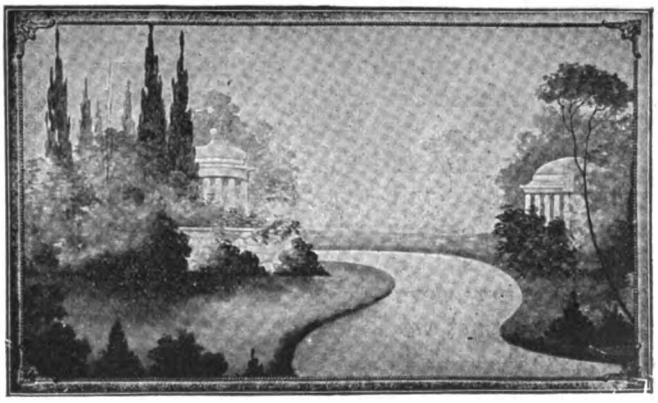
ROUND-RUF GARAGES

Butler Mfg. Co., Kansas City, Mo. PRICE, $71 and up.

Sides and top are one piece in this sheet-metal garage, which is constructed of U-shaped pieces of sheet metal. The peculiar shape avoids waste space and gives maximum room at minimum construction cost. The length of the garage is variable, so that a larger car may be accommodated at any time by adding additional sections.

PAINTINGS FOR DISPLAY

Scenic paintings which may be used in arranging show window displays are made by Burt L. Daily, Dayton, Ohio. A large stock varying in both subjects and sizes are carried on hand, so that any order may be filled immediately. Work is also done on order. Scenic effects are sold by the square foot, the price varying from 15 to 20 cents, according to the size. Paintings under 15 sq. ft. are sold for $2 and up.



Scenic painting which may be used in car and accessory window displays

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Editorial Observation



—And Now They Admit It

"MUCH ado about nothing" is the best way to characterize the attack of editorialitis which has caused a certain hardware trade paper to waste a half dozen pages of its space in an attack upon the National Association of Automobile Accessory Jobbers.

This paper devoted two pages to its verbal effusions a couple of weeks ago in trying to make out that motor car accessories are hardware and that therefore all hardware jobbers are accessory jobbers. When MOTOR WORLD replied to this statement which was filled with insinuations of varied nature, the hardware paper devoted four pages, last week, to saying the same thing it said before in two pages and which can be said in a few words, to wit:

"Motor car accessories are hardware. Therefore, the accessory jobbers ought to recognize ALL the hardware jobbers as accessory jobbers. Because not ALL are recognized the hardware paper is peeved, and in an effort to make itself solid with its readers it launches its attack."

But when it continues the attack and attempts to answer MOTOR WORLD it has, unknowingly perhaps, admitted the falsehood of its position, for instead of facts to back up its contentions it has filled its four pages with alleged comedy which seems well classified as what Chanceller James R. Day has termed the "frothings of an unsound mind." Having nothing to say, the hardware paper says nothing—and wastes four pages in saying it.

Vituperation, ridicule, satire—the ultimate resort of a defeated debator—avail nothing. Any one can call names but verdicts are won by facts, and the facts are, as MOTOR WORLD previously stated, that *when a hardware jobber conducts a legitimate wholesale business in motor car accessories he becomes an accessory jobber as well. If he doesn't, he ISN'T an accessory jobber—and that's the whole answer.*

From the start MOTOR WORLD has maintained that the fuss was trivial and the hardware paper's contention almost silly. The hardware paper in its four pages of vituperation and slap-stick burlesque has helped us prove it.

Paper Promises

FORTUNATELY—for himself—it appears that the embryo motor car dealer, the garageman, perhaps, who has never handled cars but who would like to, is becoming more cautious in his dealings with companies which promise great things on paper and then are unable, or unwilling, to live up to those promises.

Occasionally complaints are received that such and such a company has accepted deposits and promised to deliver cars and has failed to do so. But the reports are becoming scarcer though only within the past week still another has come in.

The case is a typical one. The garageman was urged to contract for several cars and required to pay a deposit on them. The cars looked good on paper, the price was right and if the cars had ever been produced there would have been no difficulty in selling them.

But the cars never put in an appearance. The company has not even a factory. It intended to put up a factory and build these cars with the deposits received from dealers and garagemen. Its intentions may have been good, probably at one time were good. But by the time the company was ready to put up its beautiful factory and turn out its beautiful cars, all the money so obligingly supplied by dealers and garagemen had been exhausted in administration expenses, in salaries to the officers, in commissions to those who took orders from the dealers.

And what redress has the garageman? He may sue for his deposit but even if he wins the suit what chance has he to collect for the paper company has no assets?

The moral, of course, is plain. Deal only with factories which already are successful, or with men who are known by their reputation to be honest and to have the capital to make their dreams come true. Beware of stock-jobbing schemes which have a high-sounding ring and promise immense profits. Better invest your money in first class mortgages and be certain of a small profit.

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GARAGE AND SUPPLY HOUSE STATION CO-OPERATION

Editor Motor World:

The Jacksonville Garage and Accessory Dealers' organization "has grown this day" to broader and more intelligent business understanding. A deeper sympathy with fellow man and fellow competitor has been greatly emphasized since the organization came into practical existence, and much good has been accomplished.

The garages and repairshops have standardized on uniform prices for car storage and mechanical labor, and are working in harmony with the tire, accessory and filling station dealers. While there is no combination of fixed prices, all agree that a legitimate and just profit is necessary for the permanence and prosperity of their business success and a proficient protection to the automobile public.

Maintaining Tire Prices

Tire dealers, as a rule, are maintaining strictly published list prices, with an exception to the wholesale trade and to companies operating five or more motor-propelled vehicles, when a certain per cent off list is allowed.

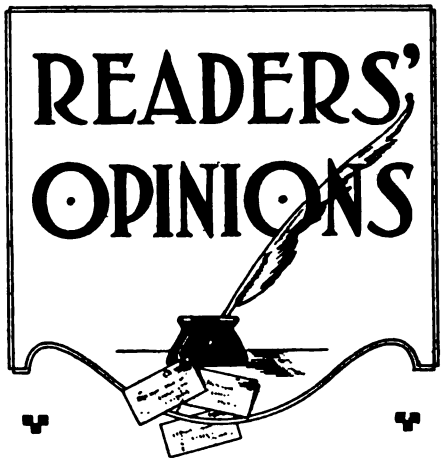
Gasoline, for which there is such a great demand, is being sold by the dealers at a margin of 2 cents per gallon above the wholesale tank wagon market prices. Lubricating oil for automobile lubrication is supplied by the dealer at a price of 50 cents to 60 cents per gallon. The majority of public garages, accessory houses and filling stations are handling standardized brands, realizing that it is easier to sell advertised products of proven quality than non-advertised goods, appreciating also the fact that publicity and good advertising reduce selling cost to the lowest known minimum and increase the volume of sales.

No Cut-Throat Competition

The pioneer garage and supply house men can very well remember—and the time has not been long—when there seemed to be little prosperity for those engaged in this line of trade. Business was, in a way, all shot to pieces. Men engaged in the merchandising of automobile accessories, oils, gasoline, etc., groaned under the ordeal of cut-throat competition. In time some of the dealers began to realize that no real advancement could be achieved until abandonment of competitive tactics and genuine co-operation was promoted, which resulted in one of the best good fellowship organizations in the Southern States.

Co-operation, mutual interest and business understanding is their great slogan. —R. B. Dodson.

Jacksonville, Fla., July 6.



"Evidence of Progress"

Editor Motor World:

I have read with a great deal of interest your splendid editorial in the June 28 issue entitled "Evidence of Progress."

First of all, I wish to compliment you on the excellence of the article as an argument and an answer to the short-sighted, unfair and narrow-minded tirade indulged in by the editor of The Hardware Age. You have answered him in a most convincing manner.

I also wish to congratulate you on this additional evidence of the sincere interest taken by your publication in the improvement and upbuilding of the automobile accessory industry.

Motor World deserves the enthusiastic support of every jobber and every dealer in this great industry.—The H. F. Brownell Co.; H. F. Brownell, President.

More Evidence

Editor Motor World:

We have read with a great deal of interest your fine editorial in answer to the unjust howl set up by a crowd of soreheads.

We are referring to your editorial "Evidence of Progress."

We have talked to several other jobbers of automobile supplies, and they have all commented on your excellent answer to the lot of slush printed in the Hardware Age.—Carolinas Auto Supply House; Joseph G. Fitzsimons, President.

Ford Holds Sales Convention

DETROIT, July 8—The annual sales conference of the Ford Motor Co. has been in progress here this week, managers and assistant managers of the twenty-eight branches of the company in the United States and of the fifty-one sales and service branches throughout the country being in attendance. These men are responsible to a large extent for the marketing of half a million Ford cars for the present fiscal year which ends July 31, and on them will depend a great deal of the success of the contemplated marketing of 1,000,000 Fords for the next fiscal year. Somewhat over 500,000 cars will have been built when the present year ends, probbably being in the neighborhood of 560,000.

Such sessions as are being held are a semi-annual occurrence at the Ford factory, and at them are discussed the various problems that have come up in the various territories, means of more intensive selling, etc. Although no information with regard to the price nor in respect to the actual changes that will be made in the Ford car has been given out, it is very likely that the branch men have been told just what to expect in the way of price and what changes have been decided upon.

New Overland Coast Branches

TOLEDO, July 10—In line with its sales-expansion policy, the Willys-Overland Co. has taken steps to facilitate distribution by the opening of new branches at Denver, Jacksonville and Omaha, in addition to increasing its facilities at Columbus, Ohio; Springfield, Mass., and in its home city of Toledo. Buildings have been acquired in the first three named cities, and remodeling and other expansion is being carried on in the latter three. At Toledo the Atwood Automobile Co., which was the dealer, has been purchased outright, to be hereafter conducted as a factory branch, and A. A. Atwood and C. T. Atwood, who conducted the local agency, have been taken into the Overland organization, the management of the Toledo branch being now under G. C. Morgan.

C. T. Dunkle has been put in charge of the Columbus branch, following the acquisition of the business of O. G. Roberts, former Overland distributer here, the conversion of this location into a service plant, acquisition of another site for salesroom, and the leasing of the plant formerly occupied by the Columbus Buggy Co. as a storage space. Calvin Eib will be in charge of the Denver branch, and J. R. Jamison is to operate the Omaha branch, having been the dealer there prior to the factory representation. G. H. Johnson, from the Toledo offices, goes to Jacksonville to manage that branch. M. T. White, former Stevens-Duryea official, takes charge of the newly erected branch at Springfield.

Fifth Avenue Bus Adopts Knight

NEW YORK, July 10—The Fifth Avenue Coach Co. will use the Moline-Knight engine in its new equipment exclusively. The company has been experimenting with various types of Knight motors, running over a period of years. All the new equipment will be Moline-Knight motored, and the company's plans are so laid out that production of this equipment was started this month. It now has a few of these machines running.

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The RETAIL NEWS

EAST

The Metz Co., Boston, has moved its Boston branch to Cambridge.

The Imperial Auto Supply Co., Springfield, Mass., has just been opened by the big company that has branches at New York, Chicago, Minneapolis.

The Longley Motor Sales Co., Providence, R. I., has moved into its new home on Broad Street.

The Paige Motor Car Co., Boston, has appointed Walter B. Hennigan sales manager. He was formerly with the Winton there.

The Athol Centre Garage, Athol, Mass., is building an addition that will care for twenty more cars.

Frank Beals, Wilton, N. H., has opened a public garage.

E. H. Hunter, Rochester, N. H., has moved his garage business to a more central location.

The Cadillac Automobile Corp., 144 North Broad Street, Philadelphia, has leased the first floor of the Metropolitan Building, Broad and Wallace Streets, which has been fitted up as one of the largest central service stations in the State. The floor space is 30,000 sq. ft.

Gomery & Schwartz, Philadelphia Hudson distributers, have taken title to the building formerly occupied by them at Broad and Cherry Streets and will erect a modern building on the site.

The Economy Motor Truck Co., having offices at 202 Franklin Street and service station and showrooms at 59 North Moore Street, New York, has renewed its contract with the H. J. Koehler S. G. Co., Newark, N. J., for the New York and vicinity agency for Koehler trucks. Victor Neustadtl is president, H. V. Neustadtl is vice-president, and H. Wolff is secretary and sales manager. Wolff was associated with Republic Motor Truck sales prior to his present interests.

MIDDLE WEST

The Mills Auto Sales Co., Lansing, Mich., has opened a new garage, salesroom and service station in the building formerly occupied by the J. A. Carr & Sons Taxicab Co. at 414-416 North Washington Avenue.

Pope Brothers & Dixon, Jackson, Mich., whose salesroom and headquarters will be at the Orpheum Garage, 120 West Pearl Street, have secured the agency for the Marion-Handley car.

H. F. Dibbert, Coldwater, Mich., with headquarters at the Southern Michigan Garage, has taken the agency for the Auto Kamp Trailer for Coldwater and Branch County.

C. A. Triphagen, Lansing, Mich., has been appointed local Chalmers distributer.

The Service Garage, Alma, Mich., will open its doors to the public this week in the building formerly occupied by the Ford Garage on West Superior Street.

F. E. Hines, White Cloud, Mich., has opened a garage in the Rosenberg Building, where he will carry a complete line of Ford repair parts.

J. E. McCleary, Fowlerville, Mich., plans to open a garage in the Martin store building on the west side of Main street.

Claude Huff, Niles, Mich., has purchased the garage business of James Hatch and took possession July 1.

Roecker Brothers, Saginaw, Mich., proprietors of the C. L. Roeser Co., farm implement and supply dealers, have taken the distributing agency of the Dixie Flyer for Saginaw, Bay, Midland, Tuscola, Genesee, Shiawassee and Gratiot counties.

A. E. Morrison, San Francisco, former Pacific Coast representative of the Nordyke & Marmon Co. and more recently a district sales representative of the Maxwell Motor Co., has been appointed manager of the distributing branch of the Hupp Motor Car Co. at San Francisco.

Henry Darts' Sons Co., Rock Island, Ill., has broken ground for a new garage on First Avenue between Eighteenth and Nineteenth Streets. The structure will be one story, brick. A line of supplies will be carried.

E. M. Carrier and **A. C. Hershey**, Freeport, Ill., have purchased the Farmers Garage at 46 South Galena Avenue. In addition to carrying on a general repair business they will carry a complete line of accessories.

Riley & Lawrence, Climax, Mich., have opened a new garage, where Ford accessories will be carried.

The Buick Sales Co., Pontiac, Mich., has moved from 105 South Saginaw Street to 14 East Pike Street.

The Collier Auto Co., Rockford, Ill., has opened a sales agency in the Cook Building, corner of South Church and Chestnut Streets. The Studebaker car will be distributed over Winnebago and adjacent counties. A line of supplies and accessories will be carried.

The E. B. Collins Supply House, Danville, Ill., has opened at 214-216 West Main Street. This firm handles supplies and accessories exclusively, doing a retail and wholesale business.

The Corn Belt Auto Co., Bloomington, Ill., has been organized by F. A. Sweeting and A. G. Alverson and has opened a sales agency and supply station at 201 East Front Street. The firm will handle the Marmon and Scripps-Booth.

The Defiance Tire Co. has located three agencies in Columbus, Ohio. Fred A. Walz & Co., 325 South High Street; the Spain-Wilson Co., 1408 North High Street, and the Linden Garage & Machine Co., Linden Heights, are the agencies.

John A. Pfister has opened a tire store and repairshop at 131 East Gay Street, Columbus, Ohio.

J. G. Borland has been made manager of the Savage Tire Corp. of Ohio, located at 139 East Gay Street, State agent for Savage tires.

The Vim Motor Truck Sales Co., organized several weeks ago in Columbus, Ohio, has taken over the Vim agency and will continue in the same location with its service station, 105 South Front Street. Charles A. Smith is president and J. W. Baker treasurer and manager.

The I. J. Cooper Rubber Co. has moved its salesrooms to 142 East Gay Street. W. W. Johnston is manager of the company.

S. W. Schott & Co., central Ohio distributer for the Empire, has sold out the agency to the Campbell-Gilchrist Sales Co., located at 170 North Fourth Street. Schott retires to take the active management of a garage in Westerville, Ohio.

The Ohio-Saxon Motor Car Co., central Ohio distributer for the Saxon, has taken over the building at 239 North High Street, formerly occupied by the Green-Joyce Co. The concern moved in the new location July 1. M. L. Yuster is president.

The Wilke & Seiler Garage Co., Forestville, Wis., announces that Bert Seiler has disposed of his half interest to Henry Knopp, Kodan, Wis., and the firm will be known as the Wilke & Knopp Garage Co.

The Suburban Garage Co., 26 State Street, Wauwatosa, Wis., has completed plans for adding a full second story to its present garage, 55 x 130 ft., and a two-story shop addition, 20 x 40 ft., at the rear. An electric freight elevator will be installed. A. D. Warren is president and P. G. Warren is secretary and treasurer of the company.

Walter Miles, Melrose, Wis., has moved to Blair, Wis., and is opening a garage and repairshop.

Bartie Dagenhardt, Cuba City, Wis., has opened a garage and service station for Jeffery cars in the building formerly occupied by Loeffelholz Bros. on South Main Street. The repair department will be in charge of Hansen & Hansen, Dagenhardt devoting his attention to the selling end.

A. L. Steffen and **A. J. Lutz**, Sheboygan, Wis., have opened a supply and accessory store in the York Building, 720 New York Avenue.

The Dietz Sales Co., Oshkosh, Wis., has been organized by Edward R. Smith to distribute the Dietz automatic auxiliary carbureter in the State of Wisconsin. Offices have been opened in the Globe Printing Co. Building and agencies are being established throughout the territory.

Boehme & Bruggemann, Alma, Wis., who recently established a garage and repairshop, announce the dissolution of the firm, Bruggemann disposing of his half interest to Ferdinand Wilk, Alma. The business will henceforth be styled Boehme & Wilk. Bruggemann has returned to Minneapolis.

R. P. Colwell, Symco, Wis., has taken occupancy of his new garage and repairshop, erected at a cost of $4,500.

The Auto Service & Supply Co., Milwaukee, specializing in Vesta batteries, has moved to new and larger quarters at 207 Fourth Street. Carl Aken has taken a financial interest and is vice-president and secretary of the concern.

The Marion Sales Co., Milwaukee, representing the Marion car in Wisconsin, has granted the Stutz Motor Car Co. of Milwaukee the right to retail Marion cars in the City of Milwaukee and environs.

C. C. Bradt, Wausau, Wis., has established a manufacturers' agency which will deal in motor car accessories and supplies. Among the products Bradt will represent are Havoline oils, Spruce oil polish and acetylene lighting systems.

James Merrick, Menominee, Mich., has purchased the Motor & Electric Co., State Street and Stephenson Avenue, Menominee, and will continue the business as an exclusive repairshop for electric and gasoline cars and service station for Maxwell and Studebaker cars, Bosch magnetos and Willard batteries. Merrick was associated with the Menominee Motor Truck Co. for several years.

R. G. Everist, Alma, Wis., agent for the Reo, is building a garage and service station at Waumandee, near Alma.

James Ovans, Prentice, Wis., operating a garage and service station, has taken the district agency for the Chevrolet cars in Price County, Wis.

George W. Boller, Milwaukee, has opened his new garage at Brady Street and Warren Avenue, styled the Lakeside Garage. It is a fireproof structure with 10,000 sq. ft. of floor space.

Jamieson Bros. Co., Poynette, Wis., is building a large garage and service station on the site of the Norton machine shop. The workshop will be in charge of Palmer & Beacham, Poynette.

Chester Bradford and **John Nelson**, Racine, Wis., have opened a garage, specializing in repair and commercial machine shop work, at Burlington, Wis., in the former Wagner machine shop on Pine Street. The firm name is Nelson and Bradford.

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John Steckart, Sr., DePere, Wis., is building a garage and repairshop on James Street, to be 40 x 60 ft.

The Knickerbocker Garage, Hartford, Wis., has taken occupancy of its new building, a three-story structure, of which two floors are used for garage purposes.

SOUTHWEST

Henry C. Potter has assumed the management of the Automobile Tire Co., 2032 Commerce Street, Dallas.

R. L. Cameron, veteran automobile dealer of Texas, has formed a connection with the H. A. Lozier Co., which gives him north and northwest Texas sales rights for the Lozier cars. A shipment of these cars is now en route to Dallas.

C. L. Zutavern of Dallas and others interested have leased the entire building at 1915-17 Commerce Street and will open a factory branch of the Oakland Motor Car Co. The new firm will handle the Texas end of this company's distribution. It will not affect the local agent, R. L. Cameron.

Peter Thomason, Phoenix, Ariz., has taken over the service and repair department of the Byrns-Ray Cadillac Co.

Payne & Saufley, Phoenix, Ariz., accessory and tire dealers, have opened a branch in Globe, Ariz.

The Pioneer Motor Co., El Paso, Tex., now has the Moon agency.

The Blount Garage, Richmond, Mo., has been purchased by F. M. Gorham, who has renamed it Gorham's Garage.

The South Thornton Street Garage, Richmond, Mo., has been sold by Roy Shelley to Charles Peterson and Edgar Kincaid. It is reported that Shelley will open a garage in Rockingham, Mo.

Hite's Garage, Eldon, Mo., which has been used as an overall factory for the past two months, has been reopened.

Ernest Otto and Fred Baille, Fredonia, Kan., have bought the interest of L. J. Pritchard in the garage located in the Commercial Club Building.

S. C. Smith, district sales manager of the Mutual Motors Co., Jackson, Mich., is now in Kansas City to establish a Mutual branch.

The Acton-Parke Auto Co. announced on July 1 the establishment of a direct factory branch of the Maxwell with this company in Kansas City, with C. B. McLaughlin as manager. While this arrangement has existed for several months, the particular occasion of the announcement now was the opening of the service station at 3344 Main Street, the station being moved to the new quarters from 404 East Eighteenth Street. The Acton-Parke Co. has enlarged its quarters at 1708 Grand Avenue. The company is arranging a Maxwell Day for July 15, with a parade, and a picnic at Fairmount Park, which has been turned over to the Maxwell for the day. The event will be for dealers and owners of Maxwells of the Kansas City district.

H. H. MacDonald, district sales manager of Kansas and Missouri for the Denby truck, is now opening the territory, making Kansas City his headquarters. He has appointed F. P. Kimber representative for Kansas City. Kimber has returned from a visit to the factory and on July 1 opened temporary headquarters at 1621 Grand Avenue. He may build.

E. S. Hutchin, for 10 years in the used-car trade in Kansas City, is selling out his stock; he will go East soon and plans to return this fall to open a store Oct. 1 to handle Fords exclusively.

The 20th Century Mfg. & Sales Co., St. Louis, was incorporated with a capital stock of $3,000 with the following directors: Ed. M. Lynch, Humphrey A. Buck, Bernard P. Pogy, to deal in automobile supplies.

Guy Murray, Fairport, Mo., is building a garage which he will operate.

The William Berg Motor Co., Omaha, was damaged by fire June 24.

The Newell Motor Car Co., St. Louis, was incorporated with a capital stock of $100,000 with the following directors: James E. Newell, Leslie E. Newell, M. Frank, E. I. Dunbar, E. B. Foots, for the purpose of dealing in motor vehicles.

The Commercial Auto Body Co., St. Louis, was incorporated with a capital stock of $50,000 with following directors: Hugh F. Carlwright, M. E. Carlwright and X. P. Wilfrey, to deal in cars and supplies.

O. B. Parks, Mount View, Mo., has opened a garage and repairshop.

Brooks & Jackson and F. E. Shackelford, Pratt, Kan., have opened a garage.

John A. Carlson, McPherson, Kan., will erect a new garage building next door to his present site.

The Eller Bros., Gaylord, Kan., proprietors of the New Garage, have added a repairshop.

A. Bradbridge, Hutchinson, Kan., is razing his brick building, first used as a livery barn and then for garage purposes, and will erect another garage building.

Teator & Delap, Blairstown, Mo., have opened the New Garage in a new building.

Jarvis & McHarg, Columbia, Mo., have opened a repairshop, painting and trimming shop.

Walter & Jones, Kingman, Kan., have leased the part of the building occupied by the Greenleaf & Hanlon Motor Co. The Greenleaf & Hanlon company is seeking new quarters.

N. E. Hobson & Son, Kingman, Kan., are erecting a garage building at Sherman and Cedar Streets and will open a garage.

George Furlong, Agra, Kan., has moved his garage to the building north of the Agra Hotel.

Swinson & Shafer, Pratt, Kan., have moved into their new garage at the corner of Main and First Streets.

Grieb & Sappington, Carthage, Mo., will soon move to a new building being erected at Fourth Street and Garison Avenue.

The Supreme Motor Co., St. Louis, was incorporated with a capital stock of $10,000 with the following directors: Edgar L. Turney, Don A. Livingston and James P. Conner. It will do a garage and car dealer business.

F. K. Baity, Kirksville, Mo., has opened a garage and repairshop.

Charles Klopfestein and **J. P. Withrow**, Cherryvale, Kan., will open a garage in the Porter Building.

Emery Day, Raymond, Kan., is building a new garage.

Geo. B. Rockwell, Guynon, Okla., recently bought the Prairie Tire & Rubber Co.

B. C. Lindsey, Gallatin, Mo., has bought an interest in a garage and agency in Winchester, Kan., where he recently moved.

C. H. Briggs, Kanorado, Kan., has built a new garage.

J. E. Hilton, Springfield, Mo., will have charge of the Chevrolet agency in the new garage being built at 414-416 St. Louis Street.

Bennett & Wray, Larned, Kan., proprietors of the Old Trail Garage, have moved their business to the new Fritsell Building.

Sam Carpenter and **James Francisco**, Osmego, Kan., will open a new garage in the Grant barn.

The Briscoe Motor Sales Co., St. Louis, was incorporated with a capital stock of $5,000 with the following directors: W. C. Shields, Hy C. Deabold and Frank Bishop, to buy and sell motor vehicles.

J. H. Gear, Sr. Centerville, Kan., has taken over the Overland agency.

Miron Bunday, Bruce, S. D., will build a garage, 75 x 100 ft.

George Francis, White, S. D., has taken the Oldsmobile agency.

J. Julian, Bowman, N. D., has taken the Crow agency.

B. Erbe, Aberdeen, S. D., is erecting a $5,000 garage.

E. Hurst, Ray, N. D., is erecting a $5,000 garage.

The Reeves & Smith Garage, Steele, N. D., burned.

C. Borgerding, Belgrade, Minn., will erect a garage.

E. S. Leach and **E. W. Root**, Dexter, Minn., have bought the D. H. Spreckles garage.

Iverson & Harrison, Jeffers, Minn., have opened a garage.

Fred Darling, Minneapolis, has taken the Ross agency. He is president of the Jackson Motor Co., 1528 Hennepin Avenue.

The R. & L. Motor Car Sales Co., 1207 Harmon Place, Minneapolis, has added the Dixie Flyer to the Owen and Rauch & Lang line.

The Barclay Auto Co., Hennepin Avenue and Harmon Place, Minneapolis, has added the Roamer car to the Scripps-Booth and Kissel lines.

The Foshier Motor Co., handling the Dort, Enger and Pathfindes, is established in its new quarters at 2211-2213 Farnam Street, occupying the main floor and basement of the building, which is 50 x 120 ft., with a fully equipped repairshop in connection. Joseph Gerspacher, for 5 years assistant manager for the Studebaker Corp. here, is vice-president and sales manager.

MOUNTAIN

The Wm. Thorney Auto Co., Denver, Apperson distributer for Colorado and Wyoming, has moved from 1443 Cleveland Place to 1333 Broadway and has just placed on display the first shipment of touring and roadster models of the new Apperson Roadaplane.

Harold Brinker, Cheyenne, Wyo., Cadillac dealer, has taken the agency for the Abbott-Detroit.

The Seventeenth Avenue Garage, Denver, 523 East Seventeenth Avenue, has been sold by Fred W. Cann to Hadsall & Jackson.

The Herring Garage Co., Denver, has bought the Hayutin Garage, a used car and garage concern at 1908-1914 Broadway.

The Mid-West Auto Sales Co., Denver, 1512 Broadway, King distributer for Colorado and Wyoming, has secured the distributing agency for the same territory for the Patterson, and also for the Wichita trucks and tractors.

PACIFIC COAST

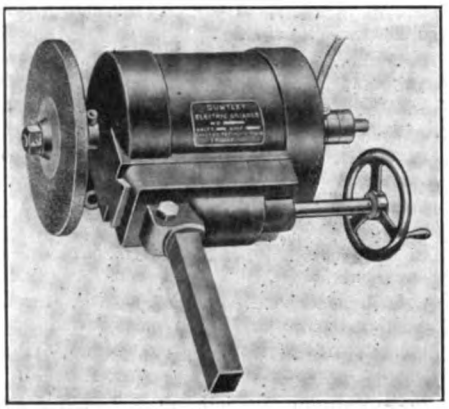
Edwin Brown, proprietor of the Hollywood Mission Garage, Hollywood, Cal., has just completed a large addition to his place, 1728 Highland Avenue, and has added extensive equipment to his machine shop.

The Angelus Garage, 110 East Third Street, Los Angeles, has been remodeled. J. H. MacClure, proprietor, has put in a concrete floor and added to the floor space to meet the demands of a growing business.

The Fifth Street Garage, Los Angeles, has opened a second annex. The Fifth Street Garage is located at 221 East Fifth Street. Annex No. 1 is on Winston Street and the second annex is located on Maple Avenue.

E. J. Woodward, Los Angeles, has taken over the Woodward Garage, Pico and Alverado Streets, and completed a large addition. This addition includes storage space and an addition to the machine shop and machine equipment. This garage was formerly owned jointly by G. J. and E. J. Woodward, the former having sold his interests to his brother.

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Chicago Pneumatic Tool Co.'s Duntley grinder for tool post work

Electric Grinder and Drill Double Purpose Tools

Grinder May Be Used for Surfacing Lathe Work or for Tool Grinding—Drill Is Portable but Is Quickly Mounted in Press

A problem that many a repairman encounters is that of doing profitably jobs that require special tools, but which do not come along with sufficient frequency to warrant the expense of the special appliances. A long step toward the solution of the difficulty is to make use of special tools and to keep them busy at regular work when they are not required for the semi-occasional jobs.

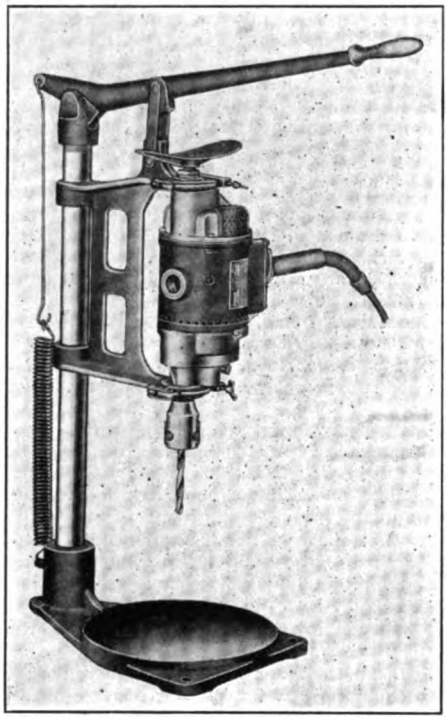
Such use can be made of the Duntley electrical drilling equipment manufactured by the Chicago Pneumatic Tool Co., Fisher building, Chicago, and 50 Church street, New York. The apparatus consists of two parts, the electric drill, which is of the portable type and can be used anywhere it can be reached by a flexible cable tapping an electric light socket, and a drill stand, into which the portable is fitted and in which it is used exactly as an ordinary type of drill-press is used.

Press for Portable Drill

The portable drill, housing the electric motor, gearing and drill chuck, can be used in any position for drilling on a motor or chassis without the necessity of removing the part to be drilled and taking it to the machine.

The drill stand has a frame, sliding on a vertical column, with two jaws between which the portable drill is held by clamping straps and screws. Vertical traverse is obtained by means of a lever, and the weight of the drill and frame is counterbalanced by a long coiled spring. The frame is kept accurately in line when sliding on the column by a feather and keyway. When the drill is required for portable service it can be removed from the stand in a few seconds and almost as quickly replaced. A breast-plate is fitted for portable work.

Drills are made in five sizes, the drilling capacities in metal being 3/16, ¼, 5/16, ⅜ and ½ inch; the weights are 5, 6, 10, 17 and 22 pounds, respectively. All sizes are made in the universal type—that is, they will run on either alternating or direct current—and for two voltages, 120 and 240. The two larger sizes, ⅜- and ½-inch, are also made in two other types, one for direct current only, 120, 240 and 600 volts, and the other for alternating current only, 120 and 240 volts. The manufacturers state that most of the garages and private owners using these tools have the universal type in the larger sizes, this being well adapted to all-round work.



The drill as it is mounted in the stand for ordinary drill press work

The drilling stands are made in five sizes to correspond with the drills and are all practically alike, though the two larger have T-slots in the base so that work can be bolted down. The weights of stands for the two larger sized drills are 44 and 46½ pounds.

Grinding is a method of removing surplus metal that can be used advantageously in a great many cases, provided the requisite apparatus is available. Grinding produces the best possible surface on turned work, but a special grinding machine is nothing short of an expensive luxury when there are only semi-occasional grinding jobs to be done.

Grinder for Many Jobs

The Duntley electric tool post grinder belongs to the large family of lathe attachments and may be classed with the drill as a double-purpose tool because with the lathe it forms a practical surface grinder while it can be used in a separate mounting for ordinary small tool grinding, leaving the lathe free for ordinary work.

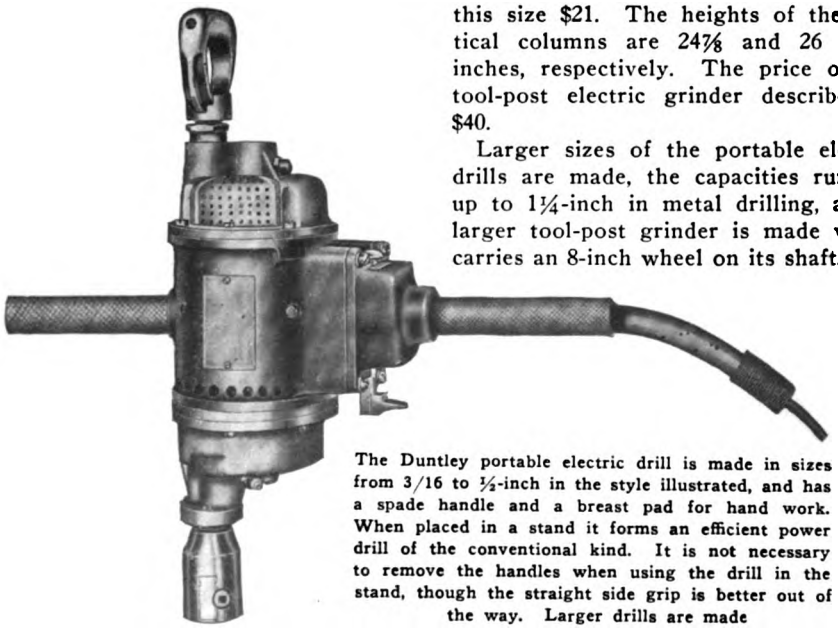
One of the time-saving uses of a portable grinder is to substitute it for a file. There are many jobs where a file is difficult to use but where the grinder can be made to work quickly and efficiently.

The tool-post grinder carries a 5-inch wheel and has a longitudinal slide operated by a small hand wheel. A square shank is provided for clamping the attachment in the tool-post. The motor is wound for direct current, 110 and 220 volts.

The current consumption of the ⅜-inch portable drill is about 300 watts, on the average, and of the ½-inch drill 350 watts. The tool-post grinder will average about 300 watts.

The price of the ⅜-inch drill is $55; the stand for this drill costs $20. The ½-inch drill costs $68 and the stand for this size $21. The heights of the vertical columns are 24⅞ and 26 13/16 inches, respectively. The price of the tool-post electric grinder described is $40.

Larger sizes of the portable electric drills are made, the capacities running up to 1¼-inch in metal drilling, and a larger tool-post grinder is made which carries an 8-inch wheel on its shaft.



The Duntley portable electric drill is made in sizes from 3/16 to ½-inch in the style illustrated, and has a spade handle and a breast pad for hand work. When placed in a stand it forms an efficient power drill of the conventional kind. It is not necessary to remove the handles when using the drill in the stand, though the straight side grip is better out of the way. Larger drills are made

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Five Suggestions for Fire Extinguisher Windows



THESE are the five prize-winning windows in a window dressing contest promoted by the Pyrene Mfg. Co., New York. They emphasize the point that a fire extinguisher is a necessity on a motor car and about a garage and also make plain that dealers who sell Pyrenes can also sell them to house owners for use about the home. None of these windows is difficult to arrange; each brings home its point which is to increase sales. All of the advertising literature is supplied by the Pyrene company.

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123 Tractors in Action at Dallas

That Number Already Registered—Dealers and Garagemen Flock to Demonstration—The Rules.

DALLAS, July 8—That the interest in the first National Tractor Show, to be held at Dallas, July 17 to 21, inclusive, is even greater than the committee in charge of arrangements had expected, is indicated by the hundreds of queries that are received daily and by reservations that are being made at local hotels.

Indications are, and plans to that end are being made, that 200,000 people will witness the tractor demonstrations. These demonstrations will be given daily each afternoon, on the 1000-acre Caruth farm, 5 miles north of Dallas. The farm is an ideal one. Noted for its black soil and smoothness, tractor dealers who have viewed the grounds declare it to be an ideal location. Tractor men and representatives from the motor car industry from all parts of the world will be here for the event.

The demonstration grounds are accessible by two railroads, an interurban and jitney buses.

Already there have been 123 tractors registered for the demonstration and before the week end it is expected numerous others will be registered. Entries already made are:

Avery Tractor Co., Peoria, 12 tractors; Texas Harvester Co., Dallas; 10 tractors; J. I. Case T. M. Co., Racine, 10 tractors; Emerson Brantingham Plow Co., Rockford, 10 tractors; Advance Rumely Thresher Co., La Porte, 9 tractors; Twin City Tractor Co., Minneapolis, 8 tractors; Sattley Bull Tractor Co., Dallas, 6 tractors; Rock Island Plow Co., Rock Island, 4 tractors; B. F. Avery & Sons, Louisville, 4 tractors; Moline Plow Co., Moline, 4 tractors; Ford Tractor Sales Co., Dallas, 4 tractors; C. O. D. Tractor Co., Minneapolis, 4 tractors; Denning Tractor Co., Cedar Rapids, 4 tractors; Joliet Oil Tractor Co., Joliet, 3 tractors; Peoria Tractor Co., Peoria, 3 tractors; Waterloo Gas Engine Co., Waterloo, Iowa, 3 tractors; Parrett Tractor Co., Chicago, Ill., 3 tractors; Electric Wheel Co., Quincy, Ill., 3 tractors; Interstate Engine & Tractor Co., Waterloo, Iowa, 3 tractors; Waite Tractor Sales Co., Chicago, 3 tractors; Simplex Tractor Co., Minneapolis, 3 tractors; McIntyre Mfg. Co., Columbus, Ohio, 3 tractors; Allis Chalmers Co., Milwaukee, 2 tractors; Standard Detroit Tractor Co., Detroit, 2 tractors.

Automobile men throughout the State have shown much interest in this demonstration, as it is pointed out that automobile dealers are the proper men to handle such propositions. Rules for the demonstration have been adopted. They are very stringent. Stands have been erected on the demonstration grounds. The fields are to be surveyed this week and most of the machinery will be placed in the mammoth sheds which are being erected. Thousands of dollars are being spent in the preparations for the demonstrations and it is confidently expected to be one of the biggest tractor demonstrations of the year. Farmers, dealers and business men from all parts of the South especially are expected. In addition, factory representatives and newspaper men from various sections of the United States will be here.

Demonstration Rules

THE following rules and regulations for the conduct of the eight national tractor demonstrations have been officially adopted and promulgated. They are designed to be fair to all participating and to prevent any possible attempt by any demonstrator to take an unfair advantage of the rest:

1. Public demonstrations shall begin at 1 and end at 3 p. m. Private demonstrations may be held in the forenoon from 8 to 11.30 a. m.
2. No exhibitor will be allowed more than one tractor of each size on the field during the public demonstrations doing the same kind of work. He may have one or more machines performing different operations, namely: one plowing, one disking, one seeding, etc.
3. Size of land for each tractor exhibitor for plowing demonstrations will be determined by the average number of plow bottoms pulled, the width of plows and speed of machine as given in company's catalog. Each tractor exhibitor must plow out dead furrow to its left.
4. All exhibitors will be allotted land in the same field or adjoining fields during each day's demonstrations. Land for private demonstrations will be provided daily.
5. All plows on any given gang must be set at the same depth and kept there during the day's demonstration. This depth will be announced daily by general manager. (Plows found operating otherwise will be ordered from the field for the balance of the day's work.)
6. In all public demonstrations, the motor or tractor must not be run at more than 10 per cent above its catalog plowing speed. Tractors may be run on high gear with normal engine speed, when disking, harhowing, seeding, etc.
7. Positions on field first day will be arranged alphabetically. Each field will be divided into four divisions: A, B, C, and D. These positions will shift daily, making each exhibitor occupy a similar position in the field as does his competitor. Each exhibitor will be required to finish his land daily, in a workmanlike manner, and assist in plowing the end lands as directed by the general manager.
8. Each field plowed will be surveyed and staked ready for afternoon demonstrations. These fields will be tested for the drawbar pull of a 14-in. plow, plowing at the specified depth previous to the demonstration. All manufacturers will be furnished information relative to drawbar pull so they can better determine the number of plows to use on each gang.
9. Each tractor shall bear a placard, showing the brake horsepower of the engine, the revolutions per minute, the plowing speed in miles per hour and the kind of fuel used.
10. All tractors on the demonstration field belonging to one exhibitor must be kept on or along the land allotted him for that day's demonstration, until the hour designated by management for returning to headquarters.
11. No machine will be allowed to operate with special equipment other than that designed for practical use with same. No spectacular methods will be permitted on the part of salesmen, or others, to attract crowds. The demonstration must speak for itself.
12. Each tractor exhibitor will have the privilege of burning any kind of fuel he desires, but no one will be permitted to burn fuel of higher gravity test than that used by his competitor burning the same kind of fuel. All exhibitors will be required to obtain fuel from source designated by general manager.
13. Public demonstrations will start on Tuesday of each week and close on Fridays. Mondays will be known as opening day.
14. No time will be required of exhibitors to make movie pictures or group photographs for commercial purposes. Manufacturers can arrange to get photographs during demonstration if they desire. Any manufacturer or representatives of farm or trade papers will be allowed to have their official photographers on the grounds to get pictures for their own use.
15. Manufacturers will be privileged to make dynamometer tests of drawbar pull of their tractors during any day of demonstration, but these will not be official and cannot be published as authorized by the management of the demonstration (such tests will be purely educational). They may also make fuel consumption tests if they so desire. These tests must be made in the forenoons, or following public demonstrations afternoons.
16. Arrangements will be made for daily demonstrations showing use of tractor, harrowing, disking, seeding and other farm operations, demonstrating general utility of the tractor. The rules governing these demonstrations will be the same as those applied to plowing.
17. The interpretation and inforcing of these rules shall be left to the local manager of each demonstration and the general manager of demonstrations.
18. Each company exhibiting at these demonstrations shall appoint one manager, who will be expected to report to the general manager not later than 9 a. m. each day for instructions and information regarding the day's work. The manager of exhibits will be held accountable for the work of his company, and no instructions will be issued to anyone else, nor will requests, instructions or complaints be recognized from anyone but this exhibit manager. He shall wear a badge furnished him, specifying his being official exhibit manager.
19. Each exhibitor will be expected to keep plows, tractors, etc., around his tent arranged in first-class order, and the land allotted him for exhibiting purposes free from circulars, rubbish, etc., such as will be distributed around headquarters daily. They will also be expected to use care at all times in operating machinery with respect to its safety for all visitors. The management will appreciate co-operation of these exhibit managers in all matters.

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Service is Key to World's Prosperity

Betterment of Business Must Come Through Betterment of Salesmanship, says President Wilson, Opening Salesmanship Convention

DETROIT, MICH., July 10—*Special Telegram*—President Woodrow Wilson to-day gave his indorsement to "the betterment of business through the betterment of salesmanship." When he addressed the World's Salesmanship Congress in the Arcadia Auditorium he was enthusiastically received by the audience of 3000, to whom he drew close in his brief but explicit remarks.

He pointed out the future that lies in store for the United States and attributed success in selling relations and in business to a close understanding between the two parties to the transaction. His opinion of his audience and of American Business was indicated when he said:

"I have always believed, and I think you have always believed, that there is more business genius in the United States than anywhere else in the world."

Pointing out the element of adaptability that must prevail in the foreign phase of American selling, he said American industry and its sales organizations must become parted on the needs and tact of buyers and fit to that situation all of the much abused word "service." He said:

"There has been a great deal of talk, my citizens, about service. I wish the word had not been surrounded with so much sickly sentimentality, for it is a good, robust, red-blooded word and it is the key to everything that concerns the peace and prosperity of the world. You cannot force yourself upon anybody who is not obliged to take you.

"The only way in which you can be sure of being accepted is by being sure that you have got something to offer that is worth taking, and the only way you can be sure of that is by being sure that you wish to adapt it to the use and the service of the people to whom you are trying to sell."

The President also delivered a luncheon address and in the afternoon spoke to the nearly 3000 men at the Ford plant. Secretary of Commerce William C. Redfield told of the present prosperity of America and emphasized the need for the elimination of shameful waste in American industry.

Next Week

A complete report of the World's Salesmanship Congress.

The Program

DETROIT, July 10—The first national meeting of men whose vocation is selling began to-day in this city. It is styled the World's Salesmanship Congress and continues until Thursday. While the majority of those who will take part in the sessions are connected with American industries, several foreign representatives are scheduled to participate, giving the affair a world-wide aspect.

Most of those who are on the convention program are experienced in sales work and the discussions are not confined to any trade or group of trades. Sales executives and managers will give their experiences on many pertinent subjects.

The convention opened yesterday with addresses in two dozen churches on "The Ethics of Salesmanship." These talks not only served to spread the uplift idea of modern salesmanship among the people generally, but also made known to the city that the congress is being held.

This afternoon the formal opening was held in the Board of Commerce building and the regular work of the sessions begins to-day. The program follows:

MONDAY

Hugh Chalmers, president, Chalmers Motor Co.—Salesmanship.

Senator Lafe Young of Des Moines, Iowa—Your "Uncle Sam" Salesman.

Norval A. Hawkins, general sales manager, Ford Motor Co.—The "Man" in Salesmanship.

Arthur Brisbane, editor, New York Evening Journal—Salesmanship at Home.

Wm. C. Redfield (Secretary of Commerce)—Salesmanship Abroad.

Sir Thomas Lipton, London—Salesmanship vs. Sailsmanship.

Gordon Selfridge, London—Are Salesmen Born?

TUESDAY MORNING

General Session

Chairman—E. St. Elmo Lewis, Campbell-Ewald Co., Detroit.

Speakers—Seven 20-min. talks:

Frank Goewey Jones, author, Detroit—Integrity.

Edward Hines, president, Edward Hines Lumber Co., Chicago—Loyalty.

H. J. Heinz, president, H. J. Heinz Co., Pittsburgh—Perseverance.

Warren Hilton, president, The Society of Applied Psychology, San Francisco—Psychology.

W. W. Kincaid, president, The Spirella Co., Niagara Falls, N. Y.—The Salesman's Wife.

A. C. McMahon, salesman, National Cash Register, Chicago—Salesmanship Books and Courses.

Followed by discussion by—

B. P. Neff, secretary and sales manager, F. A. Patrick & Co., Duluth, Minn.

L. G. Muller, sales counsel, Chicago.

S. DeWitt Clough, president, Chicago Advertising Club.

W. C. Standish, district manager, U. S Tire Co., Detroit.

L. D. Robertson, Packard Motor Co., Detroit.

Chas. W. Hoyt, Hoyt Service, Inc., Garden City, L. I.

TUESDAY AFTERNOON

Sales Managers' Session

Chairman—Bartley J. Doyle, president, Keystone Publishing Co., Philadelphia.

Speakers:

R. H. Grant, sales manager, Domestic Engineering Co., Dayton, Ohio — Selling Schools for Manufacturers.

Walter Dill Scott, professor of Psychology, Northwestern University, Evanston, Ill.—Standardizing Selection of Salesmen.

Harry Tipper, president, New York Advertising Men's League—Driving vs. Leading.

F. C. Henderschoot, executive secretary, National Association of Corporation Schools, New York—Sales Schools.

John M. Bruce, sales counsel, New York—Hiring and Firing.

Brown Landone, Paris, France—Choosing Men.

George E. Watson, president, Southern Cypress Mfrs. Association, New Orleans—Price Maintenance.

Traveling Salesmen's Session

Chairman—Col. R. L. Dollings, president, R. L. Dollings Co., Hamilton, Ohio.

Speakers:

D. M. Roth, general director, Roth Memory Institute, Seattle, Wash.—Memory Value in Salesmanship.

Edwin A. Walton, advertising manager, Burroughs Adding Machine Co., Detroit, Mich.—The Correct Attitude Toward Advertising.

Lee Anderson, commercial manager, Hupp Motor Car Corp., Detroit—Co-operation.

F. H. Dodge, sales manager, Burroughs Adding Machine Co., Detroit—The Quota.

Blaine S. Smith, sales manager, Universal Portland Cement Co., Chicago—Contests.

A. A. Breed, president, Crane & Breed Mfg. Co., Cincinnati, Ohio—Standard Presentation.

Gage E. Tarbell, The Garden City Co., New York, 60 Wall Street—Beating One's Record.

Counter Sales-People's Session

Chairman—C. H. DeAcres, superintendent, Crowley Milner Co., Detroit.

Speakers:

J. C. Aspley, "Printer's Ink," Chicago, Ill.—Determining Basis of Pay.

J. D. Walker, Burroughs Adding Machine Co., Detroit—Making the Sale Produce a Profit.

James W. Fisk, sales instructor, Lord & Taylor, New York—Training Retail Sales People.

Lucinda W. Prince, president, School of Salesmanship, Boston, Mass.—Salesmanship in Public Schools.

R. H. Webber, president, The J. L. Hudson Co., Detroit—How to Determine a Salesman's Value.

Walt S. Goodwin, salesmanship teacher, Brooklyn, N. Y., 1920 Sixty-first Street—Using Diagrams to Teach Salesmanship.

Morris W. Ellis, Ellis Shoe Co., Nashville, Tenn.—Salesmanship from the Standpoint of the Employer.

WEDNESDAY MORNING

General Session

Chairman—Wm. H. Ingersoll (Robert H. Ingersoll & Brother, New York).

Speakers—Seven 20-min. talks:

V. L. Price, vice-president, National Candy Co., St. Louis, Mo.—Sales Bulletins.

Elizabeth Phillips Dowling, sales manager, Bureau of Credits, Detroit—Relation of Credits to Salesmanship.

C. Louis Allen, president, Pyrene Mfg. Co., New York—Bonus.

Anna Carroll, Philadelphia, Pa.—Woman and Salesmanship.

E. D. Gibbs, Robt. L. Stillson Co., New York, 209 West Thirty-eighth Street—Health.

Jas. W. Elliott, author, Rochester—Selling Self.

John G. Jones, general sales manager, Alexander Hamilton Institute, New York—Cost of Making a Salesman.

Followed by discussion by—

Louis A. Hebert, president, Melting Pot Association, Chicago.

T. C. Rice-Wray, manager, Pacific Mutual Life Insurance Co., Detroit.

C. E. Howe, sales instructor, Detroit.

Mrs. Silvano Alfredo Andrew, general manager, Fisher & Norris, Trenton, N. J.

E. F. Dahm, editor, "Better Business," University of Seattle, Wash.

Thomas A. Knapp, sales management instructor, New York.

WEDNESDAY AFTERNOON

Insurance Salesmen's Session

Chairman—Edward A. Woods, president, National Association of Life Underwriters—Is There Unnecessary Loss in Selection and Training of Life Insurance Salesmen?

Speakers:

Walter Beeckner, second vice-president, New York Life Insurance Co., 346 Broadway—How Can the Selection of Salesmen be Improved?

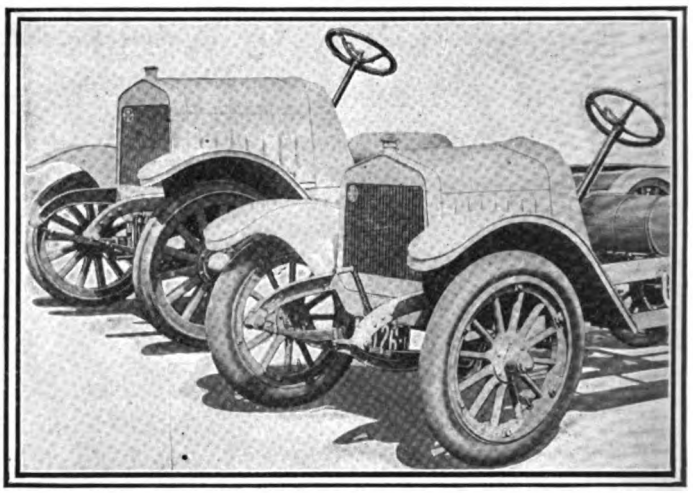
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Two Day-Elder Truck Models

One Pneumatic Tired, For Fast Delivery, the Other With Solid Tires

EMBODYING practically the same structural features in each, the Day-Elder Motors Co., Newark, N. J., is now producing two models of commercial chassis, rated at 1250 and 2000 lb. capacity, known respectively as the D-E Junior and Senior trucks. Both are conventional designs, with rather low, rakish lines, Hotchkiss drive through worm gears, and unit power plant assembly.



The two D-E truck models are quite similar in appearance and both are without governors

Specifications

Capacity, lbs.	1,250	2,000
Price	$875	$1,450
Wheelbase	108	128
Tires, front	33 x 4	34 x 3½
rear	33 x 4	34 x 4
Bore	3⅛	3½
Stroke	4½	5
N.A.C.C. hp.	15.64	19.61
Speed, r.p.m.	2,800	2,700
m.p.h.	42	35
Gear-ratio in high gear	6.5-1	7.8
Final drive	worm	worm

Both models are without governors, the smaller one being mounted on pneumatic tires and especially designed for fast delivery work, and the larger with solid tires. Both have small high-speed motors, which should show economy in ordinary work, and yet, being of the high-speed type, they are able to develop higher power than if they were governed. In each model the engine is incorporated with the clutch and gearbox and suspended on three points, final drive being by single shafts with two universals each.

On the Junior model the Le Roi motor is used and on the Senior a Continental. Both are block-cast, with valves to the right, and both have thermo-syphon cooling through square-tube vertical radiators in sheet-metal cases. Single high-tension ignition with hand spark advance is used on each model, both having Dixie magnetos. A Schebler carbureter is used on the Junior model and a Zenith on the Senior.

Clutches and gearsets on both models are the products of the Detroit Gear & Machine Co., and comprise dry-disk clutches and three-speed selective gearsets. The shafts and universals are of Hartford make, driving Sheldon worm-driven axles. Both torque and propulsion are taken by the springs.

Brakes are all on the rear wheels, consisting of side-by-side internal types, with rocking equalizers. Left steer and control levers are common to both models, Gemmer steering gears being used. Jones wheels are employed, the pneumatic-tired ones on the smaller model having demountable rims.

The Stewart vacuum system of gasoline feed is used, fed from a cylindrical tank beneath the seat on each model.

Prices as quoted in the specification table above apply to the stripped chassis only, including the driver's cab. Electric starting and lighting, including the lamps, will be installed for an additional charge of $85. Standard bodies are carried in stock and will be applied at extra cost, or the chassis will be sold without bodies.

New Federal Roads Bill Ready

WASHINGTON, July 10—The new good roads bill, under which federal aid in the building of roads is to be given the various States by the federal government in proportion to the area, population and rural delivery mileage of each State, is ready to be put into effect through the office of the Secretary of Agriculture. A total of $75,000,000, in addition to a total of $10,000,000 for the construction and upkeep of roads and trails within or partly within national forests, is provided for the carrying out of this act.

Champion Spark Plug Dealer Help Car

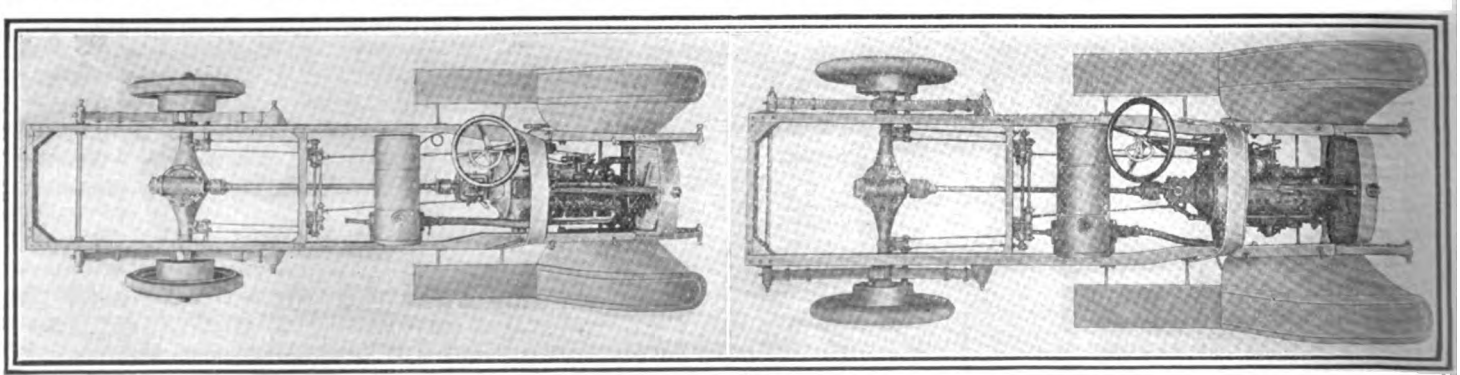
TOLEDO, July 10—Carrying its dealer help a little further, the Champion Spark Plug Co. has put on the road an Overland car which will carry from dealer to dealer the various paraphernalia necessary for the setting up of effective display windows. Already more than a score of towns and cities have been visited. George Nason is in charge of the outfit. The Champion company is planning a fleet of such cars.

Forbes Passes Great Divide

BOSTON, July 10—Walter J. Forbes, one of the pioneer accessory men in New England, died here last week following an illness of some weeks. He entered the motor accessory field 17 years ago and was very well known in the eastern field.

Reception for Jordan Officials

CLEVELAND, July 10.—Sixty of the leading manufacturers, business men and bankers of Cleveland, united in a formal welcome to the Jordan Motor Car Co. at a noon-day reception held in Cleveland last week.



Compact construction featured by worm drive characterizes both the Day-Elder truck chassis. Left, the 2000-lb. model; right, the 1250-lb. model

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Association News

Colorado Association Picnics

DENVER, July 10—The close of a highly prosperous half year in the motor car industry in the Rocky Mountain territory was celebrated by the Automobile Trades Association of Colorado with a picnic at Bergen Park, 30 miles from Denver, in the municipal mountain park system in the foothills.

The affair was attended by more than 500 persons, who made the trip in about 100 cars. They were the association members, their families and employees, and such special guests as newspaper and moving picture representatives, and transportation for everybody was provided by the trades body. The available cars supplied by the members were not sufficient to accommodate the entire crowd and so the association hired sixteen touring cars at an expense of $250.

The plans were started a month ahead and were handled by six committees, which were under the general direction of two chief chairmen, one from the main trades body and one from the affiliated Salesmen's Bureau. There were fifteen active committeemen in charge of the various features, and these met at weekly luncheons to work out the details. The duties of the committees were divided as follows:

(1) To arrange the general program for the day's events. (2) To provide transportation. (3) To have moving pictures made of the leading features. (4) To arrange for advertising and publicity. (5) To attend to the supplies for games and refreshments. (6) To secure the donation of prizes for the contests. (7) To handle the entries in the contests.

Lemonade and coffee for everybody were furnished by the association, the lemonade being bought from the treasury and the coffee being donated by a large wholesale house. The lemonade cost about $10. Instead of buying lemons the committee bought a highly condensed lemon syrup from a bottling concern, which required less room in the supply car and far less work to prepare. One member donated an oil tank for the lemonade and another donated a large boiler for the coffee.

The cost of sugar, indoor baseballs and bats for two simultaneous games, and other small items ran the total expense up to $300, which indicates a healthy condition of the association treasury.

There were a 100-yd. dash, a tug-of-war and other athletic events for the men, and a potato race for the women. The prizes averaged in value from $7 to $8 for first prize and from $2 to $3 for second. All the prizes were donated by the several accessory concerns among the membership.

The majority of the dealers closed their places of business for the day to give their employees a full holiday, and incidentally to show their appreciation of a heavy 6 months' business, which had shown increases ranging as high as 200 to 300 per cent in many cases over the corresponding period of last year.

This was the trades body's first picnic and the event proved such a thorough success that an annual affair of this kind has been decided upon.

MILWAUKEE REPAIRMEN CLOSE SATURDAY AFTERNOONS

MILWAUKEE, July 8—Following the announcement by Milwaukee motor car dealers and garagemen that they will be closed every Sunday, a number of repairmen specializing in radiator, lamp and similar work have agreed to close at noon on Saturdays. These houses have never been open on Sundays. The Saturday afternoon closing will be effective only during the summer months and up to Oct. 7. Among the larger firms which have subscribed to the agreement are the Auto Lamp & Radiator Co., Detroit Auto Radiator Co., E. K. W. Abraham and Longstaff & Meredith.

Two Member Classes for St. Louis

ST. LOUIS, July 8—At the meeting of the St. Louis Automobile Manufacturers and Dealers Association at the Washington Hotel, July 6, an amendment was considered to provide for two classes of members, dealers and manufacturers, who will pay $100 initiation fee, and accessory dealers, who will pay but $40. The idea is to admit more accessory dealers so that they can enter the annual show as participating exhibitors and thus share in the rebates.

Monroe County Organizes

MONROE, MICH., June 28—A number of garagemen and dealers met at the Park Hotel last night for the purpose of forming a local organization, and after discussing the needs of an organization the meeting was called to order by L. C. Steers, secretary of the Michigan Automobile Trade Association, which is the Michigan division of the National Automobile Trade Association. The Monroe County Automobile Trade Association was organized and affiliated under the Michigan Automobile Trade Association. The following officers were elected to fill the term for the balance of this year: President, N. B. Hubbell, Hubbell Auto Co.; vice-president, L. G. Miller, Sternberg & Miller; secretary, C. J. Clapp, Monroe Garage Co.; treasurer, Chas. McIntyre, McIntyre Bros. Garage. Directors: F. M. Hausmann, Monroe Overland Co.; W. F. Loucke, Carleton, Mich.; H. W. Kleckner, Union Garage.

It was unanimously decided to hold the charter open for 60 days so as to get every eligible garageman and dealer in Monroe County to join the association movement.

No Fall Show for St. Louis

ST. LOUIS, July 10—The Automobile Manufacturers and Dealers Association of St. Louis has decided that instead of the usual fall show it will hold a show in the spring, the date and place to be decided later. In the place of the fall show, usually held during the fall festivities, which include the historic Veiled Prophet parade, which brings thousands of visitors to the city, there will be an "open week." All members will be provided with show space on Locust Street and all quarters will be especially decorated and arrangements made to take visitors along this thoroughfare. The association at the last meeting also amended the by-laws to provide that two tickets be nominated for the annual election and so that all members of 6 months' standing be eligible to participate.

Centralia Dealers Organize

CENTRALIA, WASH., July 10—Six automobile firms of Centralia and Chehallis have organized the Lewis County Automobile Dealers' Association and elected the following officers: President, A. C. St. John; vice-president, S. E. Stone; secretary, A. S. Kresky.

Ohio Canvassing for Members

COLUMBUS, OHIO, July 10—Since the resignation of A. J. Peebles as secretary-treasurer of the Ohio Automobile Trade Association, F. T. Price, its president, has assumed the duties of secretary in addition to that of president. He has resigned his business connections and will devote his entire time to organization work. Headquarters for the association have been established in the Huntington National Bank Building.

One of the first activities of Price was to secure three field men to canvass the Buckeye State for new members. They are Harry C. Buhrman, G. C. McKelvey and F. B. Bues. After being on their territories a week, reports show that many new members are being received and that the membership will be rapidly built up.

The local organization at Springfield, known as the Springfield Automobile Trade Association, will affiliate with the State organization in a body.

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One of the new moves of the officials of the State organization is to secure members directly for the State association, instead of aiding in the organization of local units. This plan will be followed especially in the smaller cities and towns of the State. Where local organizations have been formed, however, they will be affiliated with the State association.

Denver Has Two New Bureaus

DENVER, July 10—Two new bureaus have been organized by the Automobile Trades Association of Colorado. One is for repairmen and the other for trimmers, painters, blacksmiths, tinners and carriage workers doing special work on motor cars. The bureaus are affiliated with the parent body, but have their own separate meetings to take up their own respective problems. The chairman of the first bureau is A. H. Gale, who runs a repairshop at 1361 Broadway, and the chairman of the other is C. Bergstrom, one of the proprietors of the Colfax Auto & Carriage Works, 510 West Colfax Avenue. Shop talks will be given by factory men here on business trips, and efforts will be made to establish the most practical and efficient methods of work and also to stop such evils as letting customers secure unreasonably low prices by playing contract bids against one another. As thorough standardizing of work and prices as possible will be sought in all the branches represented.

Westwood Heads Detroit

DETROIT, June 21—At a regular meeting of the Detroit Automobile Trade Association, which is the Detroit division of the Michigan Automobile Trade Association, held at the Wolverine Automobile Club, there was a much larger attendance than at any previous meeting for some time. There were several important matters to be discussed, as well as the election of a president and member of the board of directors. The board of directors were prevailed upon to accept the resignation of J. J. Towers as president, due to the fact that he could not spare the time to devote to the association work that was necessary. Towers, however, still remains a member of the board of directors and will continue to serve the association in this capacity.

W. G. Westwood of the Tire & Auto Service Co. was elected to the board of directors to fill the vacancy caused by the resignation of L. C. Steers, who found it necessary to resign, due to the fact of his secretaryship with the Michigan Automobile Trade Association occupying so much of his time and having to be out of the State so much on the advancement of the State work. At the board meeting which immediately followed, W. G. Westwood was also elected president of the Detroit Automobile Trade Association for the balance of the year.

There were two additional members appointed on the Gasoline Investigation Committee and the chairman of this committee promised rapid progress in their work from now on.

This association has what is termed an Alley-Rat Committee, that has been doing some splendid work, and when the question came up of increasing the number of members on this committee, it was unanimously adopted to make every member of the association a member of this committee and that each one should be on the lookout for infractions of the city ordinances and report it to the chairman.

RACING NEWS

De Palma Wins Minneapolis Race

MINNEAPOLIS, July 10—Ralph De Palma, driving a Mercedes, won the 150-mile race held at the Twin City Speedway July 4. The summary follows:

Driver and Car	Time Hr.Min.Sec.
De Palma—Mercedes	1:38:49.20
Aitken—Peugeot	1:40:14.5
Christiaens—Sunbeam	1:43:28.75
Milton—Deusenberg	1:44:11.95
O'Donnel—Haskins Special	1:47:37.95
Sorenson—Marse	1:56:14.45
Muller—Dans L'Argent	2:01:18.20

Haibe Wins Grand Rapids Race

GRAND RAPIDS, July 10—Haibe, in an Ogren, won the 100-mile race for a $1,000 prize, held at Comstock Park on July 4. Six cars started. The order of the finish follows:

Driver and Car	Time Hr.Min.Sec.
Haibe—Ogren	1:46:03.4
De Palma—Mercedes	1:47:59.0
Burt—Stutz	1:50:27.2
Andrus—Mercer	2:05:14.8
Mulford—Hudson	Flagged
Kline—Vernon	Flagged

Receiver for Twin City Speedway

ST. PAUL, July 10—Upon petition of the Standard Lithographing & Printing Co., Judge Hugo Hanft of the Ramsey County District Court named Philip Herzog receiver for the Twin City Speedway Co. Plans had already been made to put the company into bankruptcy and to have its assets sold to F. H. Wheeler, who resigned last fall as president.

Trade Active in St. Louis

ST. LOUIS, MO., July 3—Several of the accessory factories in this market are making improvements in their plants with a view to increasing the output.

The Commercial Auto Body Co. has acquired adjoining property and the building on the property will be converted into a lumber dry-kiln and a woodworking shop. Most of the bodies built are for Ford chassis.

The Piston Ring Sales Co. has leased the entire building at 3025-3027 Locust Street.

The K-P Piston Ring Co. will build at once an extensive addition to the present building at 3047-3051 Olive Street, which will double the present capacity of the plant.

The Moon Motor Car Co. shipped last week forty-one carloads of cars to the Van Wagener & Trimble Auto Sales Co. of Pittsburgh.

The local Chevrolet Motor Co. plant shipped 120 cars in a train of 16 cars to the Chevrolet Motor Co. of Fort Worth, Tex. The local plant is supplying the needs of the Fort Worth branch until the factory there is completed.

The Wagner Electric Co. has bought the factory end of the Carter Carburetor Co. of St. Louis. The Carter company will retain the marketing end of the business.

Dr. H. A. Uhlemeyer has been elected secretary and treasurer of the Moerschell Electric & Supply Co.

Separate Overland Used-Car Salesroom

KANSAS CITY, July 10—The Willys-Overland Co., because of the crowded condition of its present quarters, pending the opening of its new building, is maintaining a separate headquarters for used cars, in charge of N. L. White and N. B. Bensberger. A shop is maintained here also, where cars are put into condition and where cars sold and found at all unsatisfactory are given attention.

Massachusetts Registrations Jump

BOSTON, July 8—Massachusetts registrations for the first 6 months of 1916 show a great jump over the same period of 1914 and over the entire 12 months last year. Here are the comparative figures:

	Automobiles	Trucks
To July 1, 1915	83,868	9,900
Entire year 1915	102,633	14,733
To July 1, 1916	105,488	14,800
Gain over first six months 1915	21,620	4,900
Gain over entire year 1915	2,855	2,940

"EVIDENCE OF PROGRESS"

Editor Motor World:

As a member of the National Association of Automobile Accessory Jobbers, we are directly interested in the article published recently by the Hardware Age, and it was with very much interest that we have read your article in your June 28 issue, entitled "Evidence of Progress."

We feel that you have answered the first article in a very able manner and you have stated the situation very clearly.

We wish to take this opportunity as a member of the above association of expressing to you our individual appreciation of your efforts.—C. & E. Manufacturing Co., H. M. Cooper, Secretary and Treasurer.

Marshalltown, Iowa, July 6.

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Government to Collect Petroleum Statistics

Carter Bill, Favorably Reported, Will Allow Probe into Increasing Price of Gasoline

WASHINGTON, July 10 — Another step in the fight being waged to find out the reasons for the rapid rise in the price of gasoline was taken to-day, when the Committee on Mines of the House of Representatives reported favorably the Carter bill, providing for the collection of information upon which Congress may base legislation to meet the constant advance in the price of gasoline.

The bill, which was introduced some weeks ago by Representative Carter of Oklahoma, authorizes the Secretary of the Interior to collect and publish all possible statistics and data relating to the production and marketing of petroleum products. These statistics and data would embrace specifically the number of wells drilled, total amount of products and any other information of benefit and value to oil production, all of which would be for the general information and use of the public. The bill carries an appropriation of $20,000 to defray the expenses of the investigation during the present fiscal year.

Chairman Foster of the Mines Committee declared that an earnest effort would be made to secure the passage of the Carter bill before Congress adjourned.

It is expected the final report of the Federal Trade Commission on its investigation into the gasoline and oil situation in the United States probably will be completed within 2 weeks. Commissoner Harris predicted a reduction in the price of gasoline would follow the report.

Wilcox Features Sioux City Race Meet

SIOUX CITY, IOWA, July 8—Wilbur D'Alene in a Duesenberg to-day won the 10-mile race on the local speedway, making 79.6 m.p.h. His time was 7:32. Merz in a Peugeot was second and Lewis in a Crawford Special came in third. Wilcox in a Premier won the 20-mile race in 15:19, with D'Alene second and Lewis third. The scheduled 100-mile race was cut to 50 miles by agreement. The event was won by Wilcox, his time being 40:59, or 72.87 m.p.h. Lewis was second.

Tractors Help Car Sales

KANSAS CITY, July 8—"The great increase of interest in tractors among the farmers of Kansas will undoubtedly largely stimulate the sale of motor cars," says H. H. Pierce, assistant manager of the Greenlease Motor Car Co., agents for Cadillac. "Every farmer with 60 acres or more wants a tractor. And they are all going to have them. Anything that shortens the hours of farm labor will tend to increase the sale of pleasure cars to farms, both because of the additional time the farmer will have to enjoy the machine and because the time-saving of the tractor involves greater efficiency in farm operations, and therefore larger profits. The introduction of motor-driven machinery will, of course, have a direct influence also, familiarizing the farmers with the advantages of horseless vehicles and transportation. The prospects are wonderfully bright for the sale of automobiles to the farmers of the West."

Haynes Adds Another Building

KOKOMO, July 8—The Haynes Automobile Co. is starting the sixth factory addition built during the past year. It will be a two-story structure, to house the repair department, and will bring this year's increase in floor space to a total of 180,000 sq. ft. It will be ready for occupation Sept. 1.

SERVICE IS KEY TO NATION'S PROSPERITY

(*Continuel from page* 37)

Winslow Russell, agency manager, Phoenix Mutual Life, Hartford, Conn.—How Can Salesmen Be Better Trained?

General discussion of topic: Is It Desirable to Form an Organization of Life Insurance Executives?—By E. J. Clark, general agent, John Hancock Life Insurance Co., Baltimore; C. J. Edwards, manager, Equitable Life Insurance Co., Brooklyn; Geo. H. Gaston, third vice-president, New York Life, New York, and Mrs. F. E. Shaal, assistant manager, Equitable Life, New York.

Lumber Salesmen's Session

Chairman—R. H. Downman, New Orleans, president, National Lumber Manufacturers' Association.

Speakers:

W. E. Brownlee, president, Detroit Lumber Board of Trade—Welcome.

Charles S. Keith, president, Southern Pine Association, Kansas City—Stock List Offers vs. Real Salesmanship.

M. B. Nelson, sales manager, Long Bell Lumber Co., Kansas City—Direction of Salesmen.

R. B. Goodman, secretary and treasurer, Goodman Lumber Co., Goodman, Wis.—Influence of Salesmen on Product.

C. H. Worcester, director, National Lumber Manufacturers' Association—Knowledge of Product.

Frank Snell, general manager, Louisiana Red Cypress Co.—Salesmen's Hotels, Expenses and Wages.

Harry Kendall, sales manager, Kirby Lumber Co., Houston, Tex.—Sales Schools, Courses and Books.

Alex Hamilton, president, National Association Traveling Lumber, Sash and Door Salesmen—Ethics of Salesmanship.

Real Estate Salesmen's Session

Chairman—Walter C. Piper, president, Walter C. Piper Real Estate Co., Detroit.

Speakers:

Alexander Taylor, Cleveland, Ohio, past president, National Association of Real Estate Boards.

John L. Weaver, Washington, D. C., past president, Washington Realty Board.

Thomas Shallcross, Philadelphia, Pa., past president, National Association of Real Estate Boards.

Paul Steinbrecher, president of the Chicago Realty Board.

Henry Haas, Pittsburgh, Pa., president, Pittsburgh Realty Board; president, National Association of Realty Boards.

John H. Tigchon, Detroit, Mich., past president, Detroit Real Estate Board.

Lawrence McGuire, New York City, president of the Realty Board of New York City.

THURSDAY MORNING

Award of honors. Selection of next meeting place. Adoption of standards of practise.

THURSDAY AFTERNOON

Salesmanship Circus at Bois Blanc.

Saxon Dealers Average 23½ Miles Per Gallon

Nation-Wide Contest Won by Frye Motor Co., St. Louis, with Average of 34 2/5 m.p.g.

DETROIT, July 10—Results of the Saxon Motor Car Co.'s 300-mile non-stop run, conducted in all parts of the country by the Saxon dealers on July 1, have indicated that the Frye Motor Car Co., St. Louis, attained the greatest mileage per gallon, and hence this dealer gets the silver loving cup that was posted as the award for the winner. The Saxon six driven in the test by this concern averaged 34 2/5 miles per gallon.

In the non-stop run 206 Saxon sixes participated, traveling a total distance of 61,800 miles and having a grand average of 23.5 miles per gallon of gasoline and 175 miles to the quart of oil.

A newspaper man acted as observer in each case and, while the tests were not official, the results obtained are accurate in all cases so far as known. Some of the contestants encountered bad roads and hilly country, while rain interfered in other localities.

Some of the results obtained are:

Place	Dealer	Average mileage per gal.
St. Louis	Frye Motor Car Co.	34 2-3
Rochester	Wm. Knipper	20.1
Stockton, Cal.	Parnell & Letourneau	28
Portland, O.	Saxon Motor Sales Co.	27 3-11
Toronto, Ont	Saxon Sales Co.	24
Minneapolis	Northwestern Automobile Co.	33.96
Geneva, N. Y.	C. J. Allen	32.15
Los Angeles	Saxon Motor Sales Co.	27.57
Alva, Okla	T. W. Bickel	26.67
Lincoln, Neb.	F. B. Packwood	23
Memphis	Memphis Motor Car Co.	21.1
Hazleton, Pa.	G. S. Danke	21.3
New Castle, Ind.	E. R. Skinner	24
Grand Rapids, Mich.	Grand Rapids Saxon Co	27.5
Buffalo	Loveland Company.	25.7
Cincinnati	Heilman Motor Car Co.	26.1
Wilkes-Barre	Sterling Motor Car Co.	18.6
Chattanooga	Jones Automobile Co.	19.5
Kansas City	Bond Motor Co.	26.69
Galesburg, Ill.	Seacord & Sons.	21.9
Providence	Saxon Motor Vehicle Co.	24.6

"EVIDENCE OF PROGRESS"

Editor Motor World:

In casually glancing through the issue of June 28 of your paper the writer's eye was caught by your editorial, on page 30, covering what I suppose is the editorial which appeared recently in Hardware Age. Whether this is true or not, I wish

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to congratulate you upon the able manner in which you have put forth the position of the accessory jobbers' association. After reading the article I thought to myself, "There is certainly nothing more to be said." It is my intention to clip the two pages on which your editorial was written for future reference.

I believe that you will find your cooperation with the jobbers is thoroughly appreciated, although possibly their appreciation is not directly expressed. It is not the first editorial which I have noticed that has pleased me a great deal. I might also state at this time that within the last two weeks we have received a great number of letters asking us to make recommendations to manufacturers for issues in which to spread their publicity. I am more pleased than ever now that we have recommended in each case Motor World as being exceptionally strong in this particular territory.—S. E. Howe, Jr., Treasurer the Auto Equipment Co., Denver.

Duffield with Brunswick-Balke-Collender

NEW YORK, June 29—J. E. Duffield, formerly western manager for the Thermoid Rubber Co. and more recently with the United States Rubber Co., will be sales manager for the Brunswick-Balke-Collender Co., which, as was announced several weeks ago in Motor World, will enter the tire field. The company will produce practically everything of rubber which is used on a motor car, in addition to tires. Some of the products will be wrappe tread, single cure black tread and side wall non-skid shoe, styled "Skid-Not," and a self-healing tube.

Paige Improved; Higher Priced

(*Continued from page* 11)

on 14-in. steel drums. The face width of the brake drum is 2 in., and one set of brakes is internal expanding and the other external contracting.

The front axle is a one-piece drop-forged I-beam, heat-treated and provided with ball bearing spindles. The frame is high carbon steel, channel section, having a 4-in. web and a 3-in. flange. The thickness of the material is 5/32 in., and it is narrowed in front to permit of a short turning radius; at the rear there is a kick-up over the axle to reduce the height of the body. The springs are semi-elliptic front and cantilever rear. The front springs are 36 in. long and 2 in. wide. The rear are 48 in. long and 2½ in. wide. The tires are Goodyear or Firestone, with non-skid tread on the rear. The steering gear is the Jacox irreversible screw and split sleeve type, adjustable for wear in any direction. The steering wheel is 18 in. diameter, in one piece, and is made with a corrugated inner edge. The horn button is in the center of the steering wheel above the spark and throttle lever.

Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

Charles C. Meade will resign as manager of the Kansas City branch of the Ford Motor Co. Aug. 1 to open a business of his own. He has been negotiating with an eastern company for the local distribution of its cars, but is not ready to make the name public. R. C. Rice, manager of the Ford branch in Seattle, Wash., will succeed Meade.

A. E. Reid, who was formerly sales manager of the Serlis Motor Co., is now manager of the Oklahoma Chalmers Sales Co., Oklahoma City. Reid is vice-president and general manager of the new company, which will be sole distributer in the State of Oklahoma.

George H. Wright has been made sales manager of the Cole St. Louis Automobile Co., having charge of both retail and wholesale departments. Wright goes to St. Louis from Chicago, where he was assistant manager of the Cole agency.

Thomas H. Burris, St. Louis, has been made assistant manager of the Cadillac Motor Co. of St. Louis. He has been with this company 4 years.

E. C. Jewitt has been appointed supervisor of service in the Philadelphia branch territory for the Studebaker Corp., succeeding H. F. Hartman, who has been transferred to Detroit. Jewitt previously acted as service representative in the Indianapolis and Boston territories.

L. H. Leonard, who was service supervisor of the Studebaker Corp. for the South Bend territory, has been transferred to the recently opened Des Moines branch, where he will act in the same capacity.

J. B. Fry, formerly manager of the Detroit office of the Empire Rubber & Tire Co., has joined the Studebaker Corp. He is associated with the wholesale department of the Detroit branch.

L. M. Clark, Toledo, Ohio, has been made manager of the Toledo-Mercer Co., northwestern Ohio dealer for Mercer and Moon cars. He succeeds Lester C. Bailey, who has been manager since the organization of the company.

F. B. Norman, manager of the Portland, Ore., branch of the Ford Motor Co., has been promoted to the managership of the Ford branch in Des Moines. J. W. Capek, assistant manager of the Portland branch, is to become manager of the branch in Tacoma, while Charles E. Gordon and Walter Claphan, territory men in Oregon, will become assistant managers at Sacramento and Salk Lake respectively.

E. S. Hare has been appointed manager of sales of the Packard Motor Car Co. of New York, under E. B. Jackson, president of the company. Hare comes from Philadelphia. From 1909 to 1916 he was vice-president of the Commercial Truck Co. of America, Philadelphia, and joined the Packard organization Jan. 1, 1916, as a special representative of the motor truck department.

Charles M. Strieby, formerly manager of the Cottrell Motor Sales Co., at Boston, and before that assistant sales manager at the Regal factory, is now in charge of the retail sales of the Hawley-Cowan Co., Saxon dealer.

Frank Coveney, formerly with the Studebaker forces in Boston, has been placed in charge of the retail sales force of the Chandler Motors Co. in that city.

E. M. Elliott, formerly in charge of the production of the United Motor Truck Co., Grand Rapids, Mich., and since then in charge of the sales of the Mais trucks, has been made production manager of the Haynes Automobile Co., Kokomo, Ind.

J. H. Guy, vice-president and treasurer of the Advance-Rumely Co., Laporte, Ind., who has been with that organization since the spring of 1913, has resigned and in a short time will return to New York.

Frank H. Smith, assistant sales manager of the Chalmers Motor Co., Detroit, has resigned to become associated with the Harry Newman organization, Milwaukee, Chicago and Springfield, Ill., as manager of the northwest division of the Chalmers distribution system built up by Harry Newman.

L. W. Watkin, Jr., who for the past 9 years has been connected with the sales and engineering department of the Standard Roller Bearing Co., has recently become sales manager of the Wright Roller Bearing Co., Philadelphia and Spring City.

Lawrence H. Earle, sales manager, and **George A. Boggs,** assistant sales manager of the Continental Motors Co., have resigned and will become actively engaged in business together in the East, the nature of which has not been made public.

Hamilton W. Jones, Hartford, Conn., has resigned as sales manager of the Britton Co., Stearns-Knight distributer, to become associated with Milton J. Budlong, of the firm of Gaston, Williams & Wigmore, 140 Broadway, New York. Jones was formerly secretary of the Columbia & Electric Vehicle Co. and later associated with the New Haven Carriage Co.

W. H. Vinal, Hartford, Conn., of the Reo sales force, has been appointed assistant sales and publicity manager.

C. D. Hayward, Hartford, Conn., of the sales department of the Elmer Automobile Co., has been made assistant sales manager of the Milburn Car Co. of Connecticut.

Fred J. Wood, head of the service department of George D. Knox, Hartford, Conn., has taken a similar position with the Colonial Automobile Co.

S. S. Lindsey, sales manager of the Kansas City branch of the Buick Motor Co., has been promoted to branch manager of the Oklahoma City branch. He assumed his new duties July 1.

L. H. Mesker has been appointed sales manager of the Kearney & Trecker Co., Milwaukee. He will retain direct supervision of sales in the Ohio territory for the present time.

Kansas City Trade Widening

KANSAS CITY, July 10—New contracts and renewals being made this month are very generally larger than a year ago. The experience of the Maxwell is illustrative. One dealer in a large Kansas city had a sixty-one contract in 1915 and sold somewhat beyond that; he has contracted for 115 cars this year. Dealers' quotas generally are increased 20 to 50 per cent, and even 100 per cent, over the entire territory, and no contracts are made involving shipments of less than a carload. Seventy-five car contracts are being made in such cities as Abilene, Salina, McPherson, Smith Center and Horton. The Maxwell company is discouraging drive-aways, which involve additonal expense to both dealer and customer. The dealer pays about $24 for each car by freight in carload

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lots to his store, and he pays about $30 on each car when drive-aways are arranged. The customer must pay his fare to Kansas City. The contracts on basis of carload lots eliminate the dealers who can hold a territory with one or two cars and so prevent its development.

Reo Buys National Coil

LANSING, MICH., July 10—The Reo Motor Car Co. has bought out the National Coil Co., which employs about 100 men. The building will be used to extend the manufacturing facilities of the Reo company. Although no figures are given out, it was stated by an official of the Reo Motor Car Co. that it has been decided to build 50 per cent more Reo passenger cars for the season of 1917. This will probably mean a total production of from 38,000 to 40,000 cars. A proportionate schedule has been adopted by the Reo Motor Truck Co.

More Room for Moline Plow

MOLINE, ILL., July 10—The Moline Plow Co. will enlarge its plant in order to take care of its tractor department and plans are under way for the construction of buildings which will cost $1,000,000 and give employment to 1500 men. The company proposes to erect a machine shop, 100 x 765; foundry, 180 x 360; pattern vault, 64 x 230; core room, 60 x 122; mill room, 80 x 200; and cupola room, 60 x 60.

General Motors Directorate Includes Chrysler

DETROIT, July 10—Further revision of the directorate of the General Motors Co. was made at the quarterly meeting, when Walter P. Chrysler, the newly elected general manager of the Buick company, was made a director following the resignation of Samuel F. Prior, who is prominent in the Union Metallic Cartridge Co. and the Remington Arms Co. Thomas Neal, former president of the organization and chairman of the board, is again an officer by his election as vice-president at this meeting. He will share the duties of the vice-presidency with Arthur G. Bishop, the Flint banker, who was elected a vice-president last fall.

In placing Chrysler on the directorate another of the General Motors subsidiaries was given representation on the board. Not long ago W. C. Leland of the Cadillac company was elected to the board, and, with the placing of W. L. Day of the General Motors Truck Co. and Fred W. Warner of the Oakland Motor Car Co. also on the directorate, there are four of the subsidiaries directly represented.

These recent director changes followed the resignations of J. J. Storrow, Albert Strauss, Emory W. Clark and S. F. Prior. The revised board as it now stands follows:

Pierre du Pont, chairman; J. H. McClement, C. S. Mott, C. W. Nash, Lammont Belin, A. H. Wiggin, C. S. Sabin, J. A. Haskell, J. J. Roskob, F. W. Warner, W. L. Day, W. C. Leland, W. P. Chrysler, Thomas Neal, W. C. Durant, L. G. Kaufman and A. G. Bishop.

Studebaker Assists Enlisted Men

DETROIT, July 10—The Studebaker Corp. has arranged to place all men who go to the Mexican border in Uncle Sam's service on full pay for the balance of the year.

Factory News of the Week

Buick Four at $665

FLINT, July 7—The General Motors Co. has again entered the four-cylinder field with a four-cylinder runabout, known as D-4-34, and touring car, known as D-4-35, selling at $650 and $665, respectively, f.o.b. Flint. The company will concentrate on this model and its small six, having discontinued the large six. The new four-cylinder model will be designed for an initial production of about 75,000. The motor is of the same overhead valve construction as the present six and is 3⅜ x 4¾, developing 35 brake horsepower. Other specifications include: 106-in. wheelbase, Delco ignition, Stewart vacuum fuel feed, 31 x 4-in. non-skid tires, three-quarters floating rear axle, semi-elliptic springs on both front and rear, the front being 30 x 2 in. and the rear 48 x 2. The car has three speeds forward and is geared 4 to 1 on high.

Armleder Raises Prices

CINCINNATI, July 10—On and after July 15 the prices on Armleder motor trucks, produced by the O. Armleder Co., will be: Model HC, 2-ton chain drive, chassis, $2,200; Model EC, 2½-ton chain drive, chassis, $2,350; Model HW, 2-ton worm drive, chassis, $2,400; Model KW, 3½-ton worm drive, chassis, $3,250. The Armleder Model HW-2 will be on the market within the next few weeks and will practically be similar to the HW with the exception that it will have many refinements throughout.

Fostoria Raises Prices Slightly

FOSTORIA, OHIO, July 10—The Fostoria Light Car Co. has made a number of improvements in its models and has increased prices. The touring model now lists at $735; the delivery wagon with open body $695 and with closed body $715. The width of the rear seat has been increased from 39 to 46 in. and the front seat from 37 to 42 in. A floating axle now is used, as is Remy ignition. There is also a natural wood dash carrying the various instruments.

Gearless Differential Prices Down

DETROIT, July 10—The Gearless Differential Co. has reduced the prices of its differentials for Ford, Overland and Chevrolet "490" cars. The Ford and Chevrolet prices were $20 and are now $15; the Overland price was $25 and is now $20.

Perfection Heaters on Cole-Springfield

CLEVELAND, July 10—The Perfection heater, manufactured by the Perfection Spring Service Co., is to be part of the standard equipment of the 1917 Cole-Springfield models.

Sparks-Withington is Expanding

JACKSON, June 30—Additions to the plants of the Sparks-Withington Co., maker of the Sparton horn and other accessories and parts for cars, are well under way and when completed will practically double the size and production possibilities of the factory. Paralleling the older plant, the new factory is 70 x 334 ft., half being two stories and the rest one story. It is to be white brick and steel and will be modern in every way. Much of the additional space will be devoted to radiator manufacture, it is stated.

Eights Coming From Los Angeles

LOS ANGELES, July 10—The Homer Laughlin Engineers Corp. has taken over the building and equipment of the McCan Mechanical Works, 2652 Long Beach Avenue, and is building a car to be known as the Homer Laughlin eight. The Los Angeles concern is building its own motors and every part of the car with the exception of the tires and electrical equipment. The paramount feature of the Homer Laughlin eight is its front drive. The car is to sell at $1,050. Three have already been built and a lot of ten is going through the factory now.

Holihan Doubles Capacity

DETROIT, July 8—The Holihan Mfg. Co. has purchased 3½ acres of ground on Milford Avenue and Pere Marquette Railroad and have let contract for the immediate erection of a factory 80 x 400 ft., with adjoining buildings for steel storage, shipping and enameling. By Sept. 1 the new plant will be occupied and production doubled. This is the second time the company has been compelled to seek larger quarters and it will employ about 500 men in the new plant.

Benford May Continue "Reliable"

NEW YORK, July 10—The decision of Judge Hand recently rendered in the case of the Champion Spark Plug Co. insures to the Benford Mfg. Co. the right to make and sell its Reliable type ½-in. plug exactly in the same form and proportions as before the initiation of the suit, the only stipulation being that none of these plugs shall have the black finish or the brand in red.

Thomas 2-Tonner Now Ready

NEW YORK, July 10—The Thomas Auto Truck Co., Inc., which was organized early this year by C. K. Thomas, formerly vice-president and general manager of the Federal Motor Truck Co. of New York, now has its 2-ton model ready for the market. Eventually there will be three other models, rated at ¾ ton, 1 ton and 1½ ton.

The 2-ton model is built entirely of standard units, the principal specifications including a four-cylinder 4⅛ x 5½ Buda motor, selective three-speed gearset, dry-plate clutch in unit with the motor, worm drive, with Timken-David Brown worm, and propulsion and torque taken through the springs. The frame is pressed steel, with a total overall length of 214 or 232 in. Wood wheels are fitted with 34 x 4 front and 34 x 4 dual or 34 x 6 single rear tires. The steering wheel is at the left, with control levers in the center. The standard wheelbase is 150 in., with 168 in. optional, and the tread is 58 in. The loading space is 112 in., with 130 in. optional. Regular equipment includes Bosch lighting generator, electric lamps, 6-volt 110-amp.-hr. battery, electric horn, bumper, windshield, front fenders, tools, etc. The company does not manufacture bodies, but will furnish conventional designs on orders. Special designs will also be produced.

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Signal and Commerce are Merged

DETROIT, July 8—Merging of the Signal Motor Truck Co., maker of Signal trucks, and Commerce Motor Car Co., manufacturer of Commerce trucks, has been effected. The new organization taking over these two properties is to be known as the Signal-Commerce Motor Truck Co. and it is incorporated under the laws of New York with a capital of 600,000 shares of no par value. The proposition is to be underwritten by fourteen members of the Detroit Stock Exchange, and active in its management will be Thomas Neal, head of the present Signal concern, and W. E. Parker, who is the head of the Commerce company.

The capital of the Signal company was increased from $85,000 to $450,000 in January of this year, and by a stock dividend the Commerce company was also raised some time ago to $250,000 capital. It is planned to concentrate the production of a very complete line of trucks, ranging from light delivery types to heavy-duty vehicles, in the new plant of the Signal company, located on Commonwealth Avenue, this city, removing the Commerce manufacturing business from its present location.

These two truck manufacturers are strictly Detroit companies, their stock being largely held here. Each makes a range of models of different capacities, and their merger will eliminate a competition between them. Neal, at one time president of General Motors Co., later chairman of the board of directors of that organization, and now one of its vice-presidents, is to direct the policies of the Signal-Commerce concern as chairman of the board. Among the directors will be W. E. Parker, who is also connected with the Mexican Crude Rubber Co.; Myron Neal, of the Acme White Lead & Color Works; A. H. Buhl. T. J. Bosquette and W. K. Hoagland. There are also several other prominent automobile men interested whose names have not been disclosed. It is understood that the stock will be offered for subscription at about $6 per share.

Gillette Takes Over Amplex

SOUTH BEND, IND., July 6—It is unofficially stated that William Gillette, the millionaire razor king, will take over the Amplex Auto & Machine Works, Mishawaka. The price said to be paid to Rudolph Kamm for the plant is about $150,000. An option has been held on the plant for several months, but owing to an error in title the deal has been held up until the present time. The title has now been cleared by action of the court. The new company will be known as the Gillette Motor Co. and will manufacture the Wilmo rotating sleeve motor. It has been patented by M. L. Williams, formerly of South Bend, now of Chicago. Williams will be interested in the plant and will move to Mishawaka. The company will also manufacture accessories. Ray Austin of Mishawaka will be the chief engineer and C. E. Erickson of Chicago will be the general manager.

New Westcott Incorporated at $500,000

SPRINGFIELD, OHIO, July 10—The removal of the plant of the Westcott Motor Car Co. from Richmond to Springfield, Ohio, has been completed and the company re-incorporated under Ohio laws. The name of the company is unchanged and the authorized capital is $500,000. Incorporators are: B. J. Westcott, F. C. Johnson, C. W. Bringman, F. S. Anthony and Charles R. Reid.

Coming Events

General Events

July 9-18.....Detroit, World's Salesmanship Congress, Detroit Board of Commerce Building.

September .....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Races, Contests and Tours

July 8.....Grand Rapids, Mich.; 100-mile track race, Automobile Business Assn.*

July 15.....Newark, N. J.; track race, Olympic Park Automobile Assn.

July 15.....Omaha, Neb., track racemeet.*

July 15.....North Yakima, Wash.; track race, Hiller-Riegel Co.

July 15-16.....Los Angeles; Commercial Vehicle Reliability Run, Motor Truck Dealers of Los Angeles.

July 16.....Portland, Ore.; track race, Northwest Auto Assn.*

July 20.....Uniontown, Pa.; hill climb, Uniontown Motoring Assn.*

July 22.....Oriskany Falls, N. Y.; hill climb, Automobile Club of Utica.*

July 22.....Kansas City; dirt speedway race, Kansas City Speedway Co.

July 29.....Newark, N. J.; track race, Olympic Park Auto Racing Assn.

Aug. 5.....Tacoma; speedway races, Tacoma Speedway Assn.*

Aug. 11-12.....Pikes Peak, Col.; hill climb, Pikes Peak Auto Highway Co.*

Aug. 12.....Portland, Ore., track race, Hiller-Riegel Co.

Aug. 17.....Boise, Idaho; track race, North West Auto Assn.

Aug. 18-19.....Chicago, Ill., Elgin road race.

Aug. 26.....Kalamazoo, Mich.; 100-mile track race.

Sept. 1-2.....New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. L., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

July 17-21.....Dallas, Tex.
July 24-28.....Hutchinson, Kan.
July 31-Aug. 4...St. Louis, Mo.
Aug. 7-11.....Fremont, Neb.
Aug. 14-18.....Cedar Rapids, Iowa.
Aug. 21-25.....Bloomington, Ill.
Aug. 28-Sept. 1...Indianapolis.
Sept. 4-8.....Madison, Wis.

Shows

Aug.2-9 .....Hollywood and West End, N. J.; show, Atlantic Exhibition Co.

Aug. 23-Sept. 1...Des Moines, Iowa, show, State Fair.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 11-16.....Milwaukee, Wis, second annual Fall show, Milwaukee Automobile Dealers, Inc.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

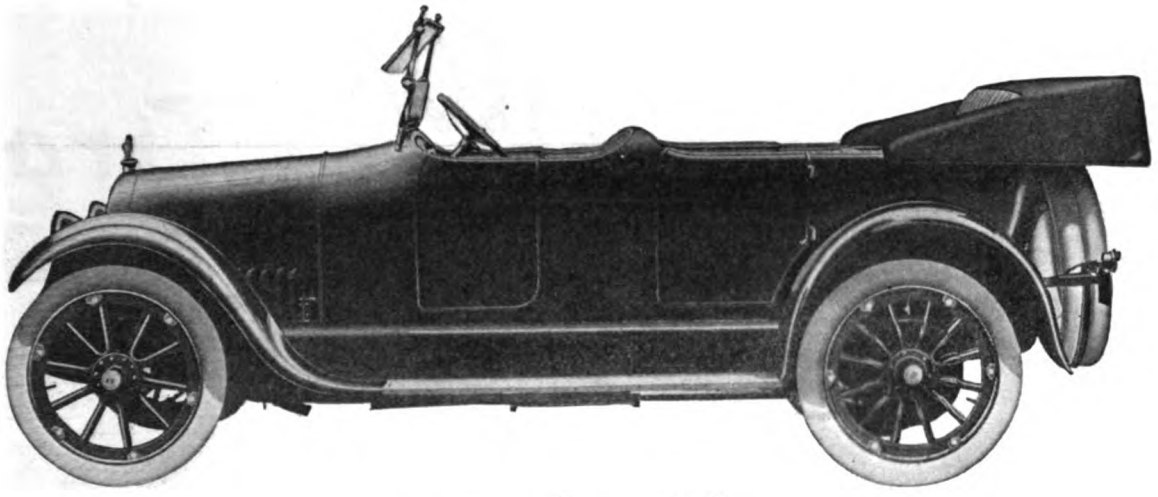
Motor Car Securities Quotations

	July 8, 1915 Bid	Asked	July 8, 1916 Bid	Asked
Ajax-Grieb Rubber Co. (new)	..	..	65	67
J. I. Case T. M. Co., pfd	70	79	82	90
Chalmers Motor Co., com	90	93	175	185
Chalmers Motor Co., pfd	96	98	98	101
Chandler Motor Car Co	..	..	110	112
Chevrolet Motor Co	..	..	230	240
Fiske Rubber Co., com	..	..	..	100
Fiske Rubber Co., 1st pfd	..	..	114	120
Fiske Rubber Co., 2nd pfd	..	..	120	..
Firestone Tire & Rubber Co., com	500	506	880	..
Firestone Tire & Rubber Co., pfd	109	111	112	114
General Motors Co., com	156	158	480	540
General Motors Co., pfd	101½	102¾	112	113
B. F. Goodrich Co., com	51	53	75	75¼
B. F. Goodrich Co., pfd	103½	104	113¼	113½
Goodyear Tire & Rubber Co., com	270	273	225	230
Goodyear Tire & Rubber Co., pfd	106	107	105	107
Grant Motor Car Co	..	..	12	13½
Hupp Motor Car Co., com	..	..	8	8¾
Hupp Motor Car Co., pfd	..	..	80	110
International Motor Co., com	12½	13½	8	12
International Motor Co., pfd	35	37	22	27
Kelly-Sprfld. Tire & Rub. Co., com	161	162	70	72
Kelly-Sprfld. Tire & Rub. Co., 1st pfd.	85½	87	95½	98
Lee Rubber & Tire Corp	..	..	47	47½
Maxwell Motor Co., com	34	36	79¼	79¾
Maxwell Motor Co., 1st pfd	82	84	85¾	87¾
Maxwell Motor Co., 2nd pfd	30¾	32	56¼	57¼
Miller Rubber Co., com	190	192	225	250
Miller Rubber Co., pfd	103	106	104	106
Packard Motor Car Co., com	..	112½	..	180
Packard Motor Car Co., pfd	96	100	100	104
Paige-Detroit Motor Car Co	..	..	..	50
Peerless Truck & Motor Corp	..	..	25	27
Portage Rubber Co., com	35	38	117	120
Portage Rubber Co., pfd	92	95	118	119
Regal Motor Car Co., pfd	..	..	18	23
*Reo Motor Truck Co	15¼	16	36	37¼
*Reo Motor Car Co	30	31	42¼	42¾
Saxon Motor Car Co	..	..	81	83
Standard Motor Co	..	..	5	7
Stewart-Warner Speed. Corp., com	67¼	68	100	101
Stewart-Warner Speed. Corp., pfd	105	107	..	..
Studebaker Corp., com	77	79	134⅝	135¼
Studebaker Corp., pfd	99	100	108	110
Swinehart Tire & Rubber Co	77	78	86	88
United Motor Corp	..	..	72½	73¾
U. S. Rubber Co., com	45	47	53¼	53½
U. S. Rubber Co., pfd	105½	106½	108⅞	110¾
White Motor Co. (new)	103	108	55	55¼
Willys-Overland Co., com	123	124	75	75½
Willys-Overland Co., pfd	100½	102½	107½	108

*Par value $10; others $100.

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Stearns-Knight "character"



accords with

Waltham accuracy

The special Waltham construction for automobile clocks produces a timepiece which lives up to the Waltham standard under any and all conditions of motoring.

As a feature of equipment, the Waltham is one of those "big little things" which are unfailing indications of a car's "character." The world-wide prestige of the name "Waltham" supports in the public mind the high standing of the car which uses this clock as part of its regular equipment.

Waltham accuracy, Waltham prestige, Waltham beauty of appearance—you owe it to your car and to yourself to have them.



The makers of the following cars include the Waltham automobile clock in their regular equipment:

Brewster	Haynes	Pierce-Arrow
Cadillac	Locomobile	Rauch & Lang
Cole	Lozier	Rolls-Royce
Crane	Marmon	Simplex
Detroit Electric	Owen Magnetic	Stearns
Franklin	Packard	Winton

WALTHAM WATCH COMPANY
WALTHAM, MASS.

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United States 'Balanced' Tires



Chain Tread
One of the Five



'Nobby' Tread
One of the Five

"Quick Turnovers"

The Motto of B. Altman & Co., John Wanamaker, Marshall Field & Co., Filene's and the like.

These great concerns built their businesses on quick turnovers. Just as you can build your business with amazing rapidity by selling United States 'Balanced' Tires—

tires that go out of your store as fast as they come in—

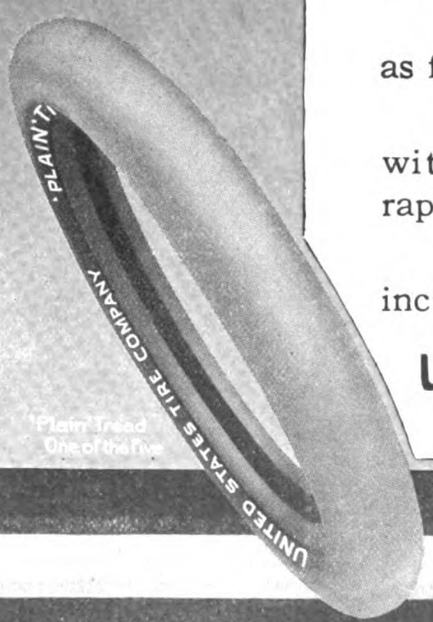
tires that today are selling with constantly increasing rapidity.

Proof—our astounding sales increases.

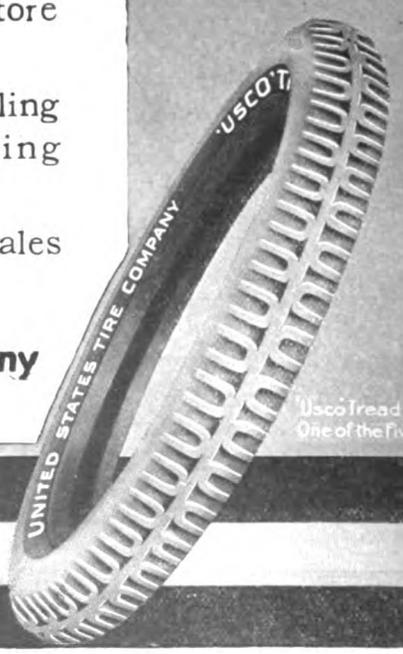
United States Tire Company
1790 Broadway, New York



'Royal Cord'
One of the Five



'Plain' Tread
One of the Five



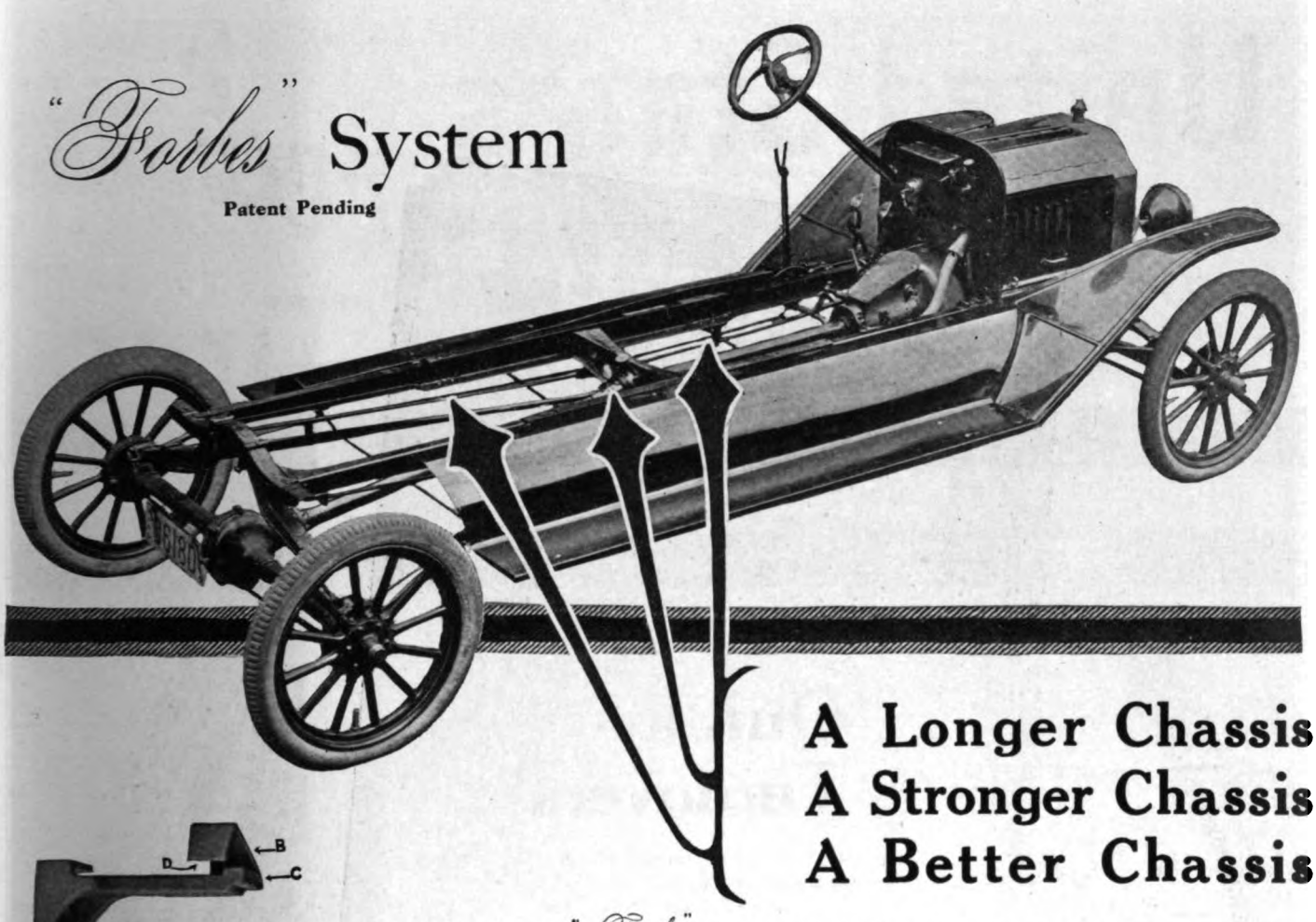
'Usco' Tread
One of the Five

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

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"Forbes" System

Patent Pending



A Longer Chassis
A Stronger Chassis
A Better Chassis



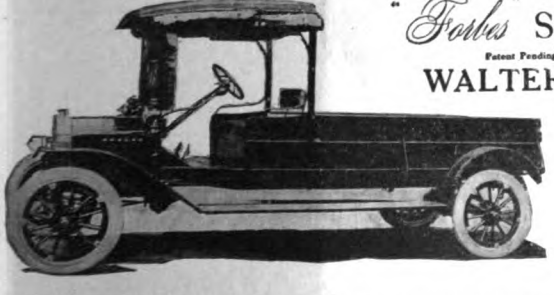
Rear Truss Bracket



Truss Brace



Front Truss Bracket



results from applying the "Forbes" System Patent Pending to Ford cars, lengthening the chassis for commercial purposes without in any way reducing the simplicity and efficiency of the original construction.

The "Forbes" System Patent Pending is an *addition* to the chassis—*not* an *alteration* of it. Any garageman carrying Ford parts can make all repairs or adjustments on lengthened Fords with the same ease and promptness as on the model as it came from the factory.

In the "Forbes" System Patent Pending each side of the extension section is made of steel channel and between them a *cross member* of cast steel carries the *thrust* of the drive shaft, allowing the motor to deliver its full power to the driving wheels.

Each side of the frame is trussed through its entire length and the brackets supporting the ends of the truss rods clamp round the frame making it

UNNECESSARY TO BORE ANY HOLES IN THE FRAME

The intermediate shaft floats between the motor drive plate and the universal and transmits a direct, positive drive.

We supply *every* part, every nut, every bolt and rod with complete instructions so that any mechanic can make the whole addition with despatch.

THE BEST PROOF

of the thorough effectiveness of the "Forbes" System Patent Pending is the repeat orders received from concerns after they have tested them in their own every day service.

We use only the highest grade material obtainable, and positively guarantee results.

We have a highly interesting proposition for distributors. Send for it today. The demand for the "Forbes" System Patent Pending will surprise you.

WALTER J. FORBES

243 Columbus Ave.
BOSTON, MASS.

Please send me full details of the "Forbes" System Patent Pending

Name .....

Address .....

.....

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A NEW BOOK

—in handy size, that will enable you to find and repair your starting and lighting troubles.
Keep it in your car, for ready reference.
It will save you time and repair bills.
Size 5 x 8 inches—36 pages.
Two bindings:
Flexible leather—75 cents
Heavy cardboard—50 cents

Book Department

MOTOR WORLD

237 W. 39th Street **New York**

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This distinctively American emblem will mark a new luxury car. The name will be announced next week

Distinctive and Irresistible
A New Luxury Car

A NEW luxury car has been created for the individual who prefers distinction in his motor car as well as his personal appearance. If all people dressed in dark colors, how monotonous Fifth Avenue would be.

This new luxury car, so distinctive in line, will not be difficult for the owner to find at the curb or at the country club, and he has a choice of brightness or the conservative in color.

Women with a natural appreciation for comfort, atmosphere, and poise will feel this car irresistible in its appeal.

Each custom style body is the result of a practical study of the comfort requirements of driver and passengers, in point of leg room, body support, location of steering pillar, auxiliary seats, cushions, pedals, levers, and foot rests.

It is the most comfortable body that can be built on a chassis with 127 inch wheel base and weighing only three thousand and fifty pounds.

Engineers know that it is only by fixing with extreme accuracy the delicate points of spring suspension and steering gear location that proper balance, distribution of weight, and ease of manipulation can be attained.

In point of balance, this car is supreme. It holds the road, speeding forward without a tremor; bouncing and swaying never.

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Red-blooded Americans love a car that will get away and run like a cottontail when dust threatens.

This car will crawl along at snail's pace through crowded traffic on high gear.

It will move with the speed of an express train on a country road and demonstrate on hills with any stock car made.

If any well informed, critical individual set out to build a car to suit himself from the finest units available in the world to-day, he would, if he chose to build without experiment, pick the same units as are found in this car.

It is produced by a company with ample capital, a modern plant, efficiently and economically organized, and inspired by a great ideal:

To build a car of mechanical excellence, equipped with advanced body styles, superior in finish, comfort, power, and durability, and to acquire a reputation based on quality, production, and careful inspection, regardless of quantity.

Only one hundred well established dealers who are in sympathy with this policy can be assured deliveries.

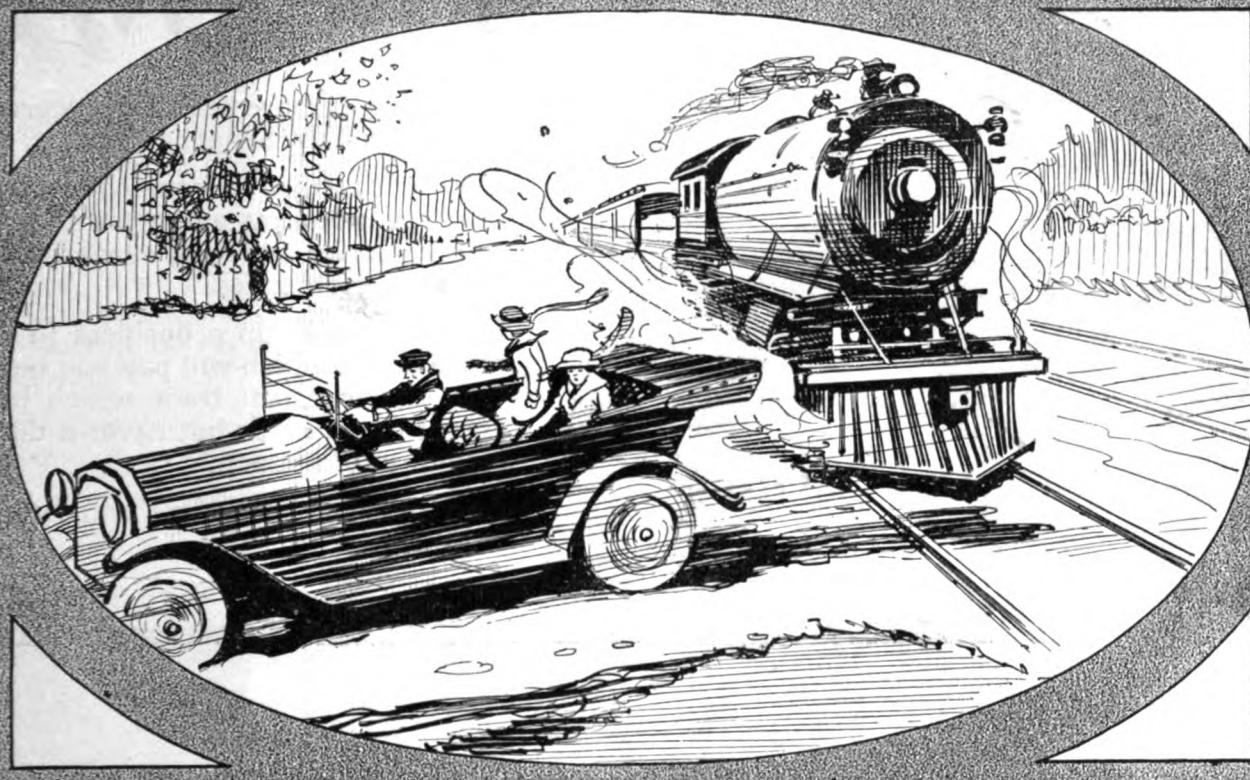
The complete announcement will appear next week.

Dealers and individuals desiring advance information may address



The New All American Car
Care of Motor World. Chicago.

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"The Quick 'Pick-up' Saved Us!"

When a fraction of a second is all-important, when the motor **must** respond **instantly**—then Eisemann Ignition shows its superiority most plainly.

EISEMANN
MAGNETOS

give a sure, hot spark **even at extremely low speed.** Powerful, durable, dependable, they guarantee maximum motor efficiency—ready responsiveness power, gas economy!

THE EISEMANN MAGNETO CO.
Sales and General Offices:
32-33rd Street Brooklyn, N. Y.
Indianapolis, Ind. 415-417 N. Capitol Ave.
Detroit, Mich. 802 Woodward Ave.

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"The Swin

You will get more than the tire profits as an agent for Swinehart Tires.

You will attract to your counter the grade of motorists who want the best in accessories and who can afford to gratify their desires.

You will build up a business in one make of tire which will pay you better than the transient trade which buys one of many kinds but never a duplicate of any of them.

As a Swinehart agent you will develop

Swin

a mail order and telephone business with out-of-town customers. They know Swinehart Quality and Swinehart Mileage and know that the Swinehart Tire you send them will be a better tire than any make that they could personally pick out.

In creating a demand for Swinehart Tires among newcomers, and in supplaying the demand which has been created by us through years of tire making you will be building a business which will be yours for all time.

THE SWINEHART T

AKRON

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hart Dealer"

WE WILL NOT OPEN A FACTORY BRANCH IN YOUR TERRITORY.

Our enlarged plant is capable of taking care of our tremendously increased business and we are preparing for the further expansion we will need next year.

Our tire is hand-made and we use only the double cure wrapped tread process.

We have perfected a positive NON-SKID (Depression Type) of tire.



This tire is Guaranteed not to skid on a wet asphalt or macadam, and will hold the pavement better than any other make of tire equipped with chains.

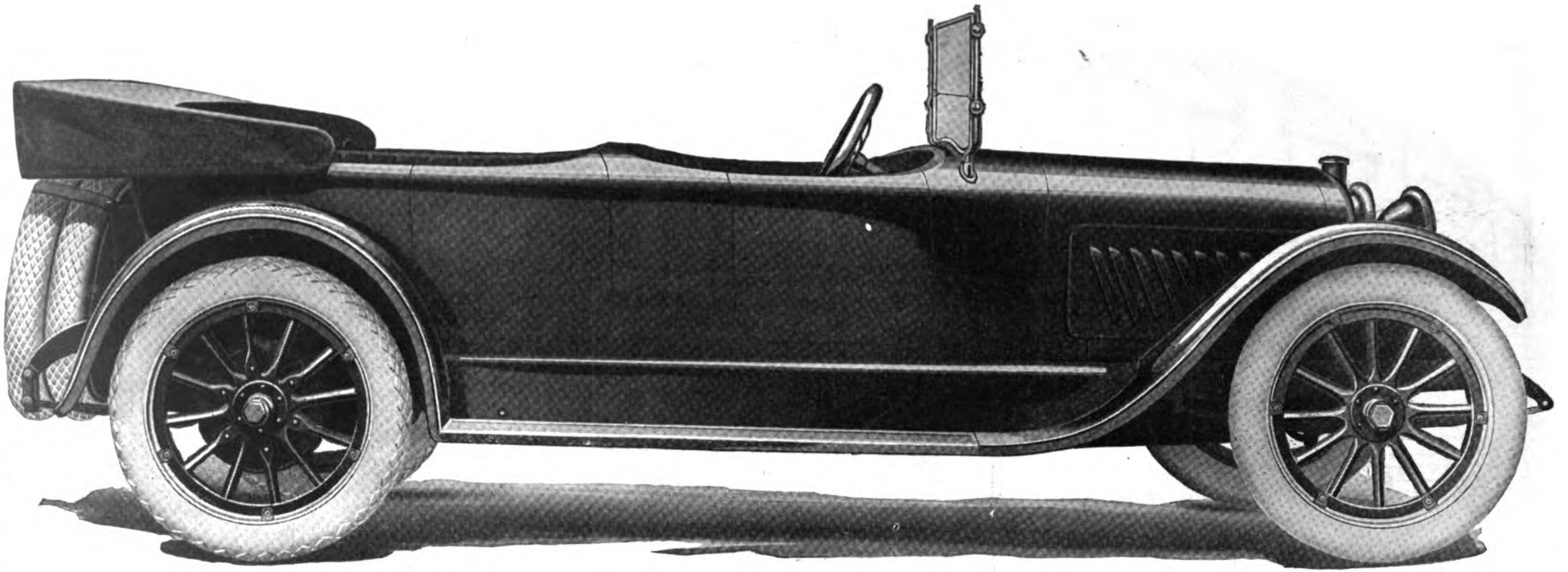
There is plenty of Swinehart business for all. Don't be cajoled by "exclusive agency" propositions. There is little honor and no profit in having the exclusive rights to a tire few motorists will buy.

Write today and see what sort of a proposition we will make to the better class of agents.

RE AND RUBBER CO.

OHIO

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ROSS EIGHT

$1350

F. O. B. Detroit

Manufactured by

ROSS AUTOMOBILE COMPANY

DETROIT, MICHIGAN

Many people never look further than the price tag. They rate a car by its price.

They never stop to think that back of a price may be a dozen viewpoints—that the price to-day is no criterion of automobile value.

For example, if you were told that a certain car had an 82 H. P. Herschell-Spillman motor, the most finely engineered and manufactured eight cylinder motor extant.

That it had a wheelbase of 130 inches—that it weighed, by dint of clever engineering skill only 3180 lbs; that it was built to endure, that it had the finest quality equipment and accessories—

You would probably say—"Well they will certainly have to get a fancy price for that car"—

But, you would be wrong in this particular case. For the Ross Eight has all these features, and many more earmarks of high quality and yet, it is priced at only $1350.

If the discerning dealers and buyers who question Ross quality because of the low price will go a step further and challenge *any* detail of construction—and then get a Ross Eight and literally pick it to pieces, they will do some revising of value standards.

We believe the Ross Eight, mechanically and from the standpoint of daily performances challenges any eight cylinder car at any price.

When writing advertisers please mention Motor World

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Save Your Back

Your motor *can* be made to start easily, even with low grade fuel, or cold or lean mixtures. Others' experience is proving every day that a shower of sparks is what you need. You get them every time with a

PFANSTIEHL Starter Coil

Gives a Shower of Sparks instead of one for Starting

You know your motor will *run* on mixtures that it won't *start* on. Why? Heat when running helps it. But in *starting*, all the heat has to be supplied by the *spark*, and the best single spark will only fire a mixture that is *exactly right*.

So with a *single* spark, the only way to start a motor is to keep on cranking and adjusting *till the mixture is right*. You can see that *more* heat from the *spark* would mean easier starting — less dependence upon a *certain mixture*.

The *only* way to get the *maximum possible heat* is to use a Pfanstiehl Starter Coil in your ignition system. It delivers to the spark plug a *continuous shower* of sparks while each cylinder is at the firing point. This intense heat will fire practically any mixture that a motor will run on.

The Pfanstiehl Starter Coil is easily applied to *any battery or magneto ignition system*, either with or without electric starter. Even if you have a starter on your car, the Pfanstiehl Starter Coil will be worth its price to you *in saving your batteries*. On any car it will also save gasoline, because you can have your carburetor adjusted for a *running* mixture instead of a starting mixture.

Our complete catalog sent free on request, showing wiring diagrams for every ignition system. See how the Pfanstiehl Starter Coil applies to your system. Fill out and mail blank below now while you think about it. Dealers write your jobbers or direct to us.



Model D or E
Pfanstiehl Starter Coil

Made with removable lock switch to be mounted in dash. Price $12.

Model F, without switch, for mounting under hood, price $9.

PFANSTIEHL COMPANY, NORTH CHICAGO, ILLINOIS

There is good money for Garages, Repair Shops, Supply Dealers handling this much needed coil. Our advertising in the automobile papers is educating your customers to want the Pfanstiehl Starter Coil. Write for our trade proposition.

When writing advertisers please mention Motor World

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The Short Cut to Quick Sales

HERE'S another new KisselKar worm-drive Truck. **Built to carry two tons and to sell for $1875.**

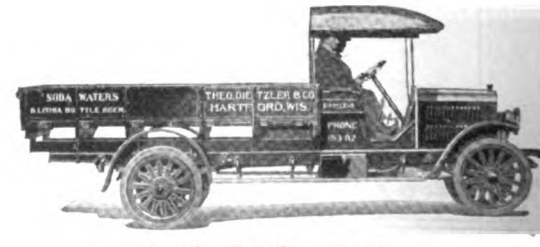
With a modern line of worm-drive trucks Kissel is giving dealers a wonderful opportunity to close up immediate and profitable sales, by submitting what now, it must be admitted, is without doubt the market's best buy—plus a selling plan that interests purchasers and makes the question of financing the sale easy for the dealer.

Get in Front of the Selling

What more could you ask? A line of the most modern worm-drive trucks on the market—a range of sizes to fill every need. A line back of which is established reputation and financial strength, eight years of truck building experience—a line that is already firmly established in over 200 lines of business—that is well advertised and firmly grounded.

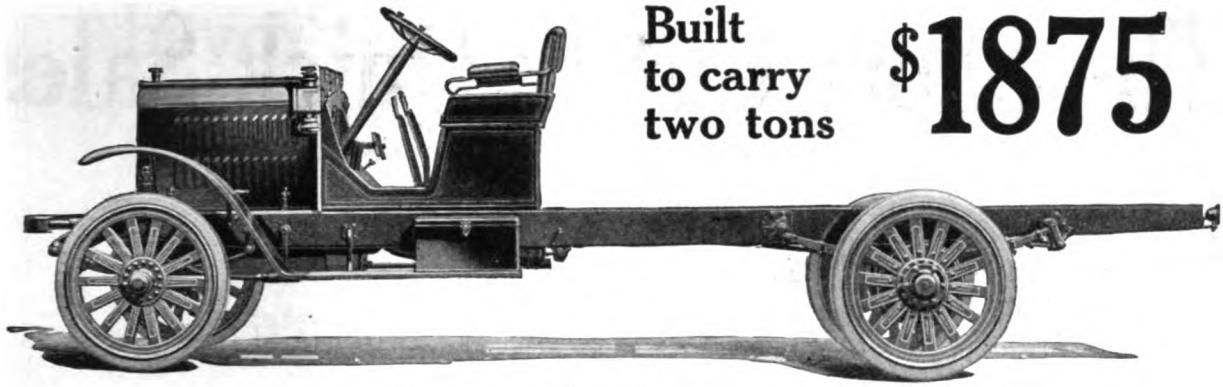
KisselKar Trucks fit your customers' hauling and delivery problems. They are the trucks they will most readily buy. You don't have to make the job fit the truck. Kissel has the truck that fits the job. Take the shortest cut to truck sales by handling KisselKar Trucks. You will find them the easiest selling trucks in your territory, aside from our plan which enables you to sell your customer on time.

$1875
Chassis Price



In the Bottling Trade

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Built to carry two tons

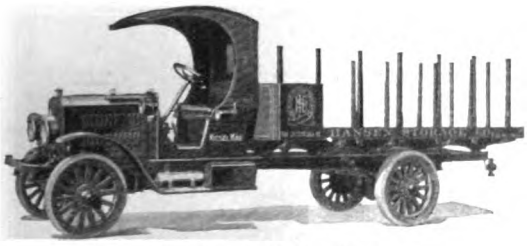
$1875

The New Worm Drive KISSELKAR TRUCK

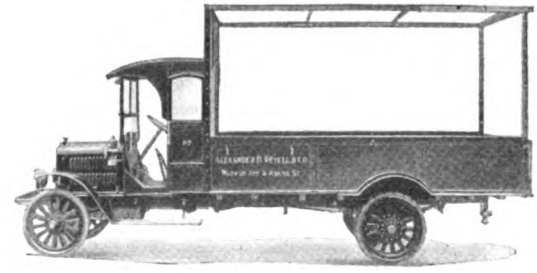
Line with KisselKar Trucks

Now is the time to get started in the truck business. Take advantage of the opportunity now available to tie up with a good line—good enough to crowd out competitors—large enough to be in on every sale.
Write at once for specifications on the ¾-Rapid Delivery, Tonner and 2-Tonner and 4-Tonner jobs. Also details regarding our plan of assisting the dealer in financing the sale. Don't put it off—the time is ripe.

KISSEL MOTOR CAR CO., Hartford, Wisconsin, U. S. A.



In General Haulage



In the Furniture Trade

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The Only Safe Time-Proved Treatment To Stop Punctures

Here is the first practical treatment to eliminate puncture troubles. Bales Puncture Plugger is a long-time tested treatment which constantly circulates a charge of plastic, synthetic rubber against the inner walls of the tire. It quickly, positively and unfailingly plugs every puncture. *It is not a filler*—cannot harden, or dry up. It is—

Absolutely Guaranteed Not to Injure the Tire

We absolutely guarantee to replace your entire set of casings and tubes if Bales Puncture Plugger injures them in any way.

And we will refund your money if the treatment does not do everything we claim for it.

Read the guarantee!

Could any evidence be stronger?

35 Months—19,000 Miles

This is the only treatment that has been in use for over two years and has proved itself practical and perfect. It has frequently run over 19,000 miles in one tire. We have actual signed proofs of its value, waiting for you. It is not an "experiment."

Here is the GUARANTEE That Proves it

For a consideration hereby acknowledged, we, the undersigned, by this indenture, make the following guarantee, under penalty stated below, that—

Bales Puncture Plugger

Will not injure inner tubes or casings nor interfere with the resiliency of tires.

Will not harden, gum, dry up or deteriorate with use or be affected by heat or cold.

Will not stick inner tube to casing.

Will stop any kind of puncture in a pneumatic tire, from the smallest to the size of a twenty-penny spike.

That where we are shown that the use of Bales Puncture Plugger has resulted injuriously to the tire or tube, to replace said tire or tube, and also refund money paid for Plugger.

Bales Distributing Co.

Indianapolis **Indiana**

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Backed by A Profitable Proposition For Every Dealer



The Bales sales plan is backed by big men who have successfully marketed automobile accessories since the dawn of the industry. Their proposition is a business plan which insures a profit and fair, satisfactory dealings with every distributor and dealer. There have been many "fillers" and "puncture cures" in the past. Here is

Why This Treatment Is Different

It has been time-tried and proved practical—35 months of use—thousands of miles of service stand back of it.

It is backed by an iron-clad guarantee, over the names of responsible men, not only to do the things where other preparations have failed, but we will replace the entire set of tires—casings and tubes—if it injures them in any way.

Read the big sales features on this page.

Act Now! Don't Wait!

Master distributors have been selected covering practically the entire country. There are a few master distributor territories still open. There are a considerable number of towns and counties in the various territories open. There are unlimited opportunities for retailers. Your inquiries will be properly handled for quick action. Write or wire today.

Bales Distributing Co.
Indianapolis, Indiana

Here are the BIG FEATURES That Sell It

Absolutely guaranteed not to rot or injure the rubber.

No cement—guaranteed not to stick tube to casing.

Holds tires up to standard pressure—no running on partly deflated tires. Makers guarantee tires from 3,000 to 5,000 miles—this treatment should give up to 20,000 miles.

Replaced casings and tubes and your money back if it injures your tire.

Treatment made by the dealer—not sold in bulk for the customer to use improperly.

Moderate in price—complete guaranteed treatment in the tires costs from $12 to $18 per set, according to size.

Backed by responsible men of experience and guaranteed by them in every way.

USE THIS COUPON

Bales Distributing Co.
Indianapolis, Indiana

Please send details of BALES PUNCTURE PLUGGER and your proposition for

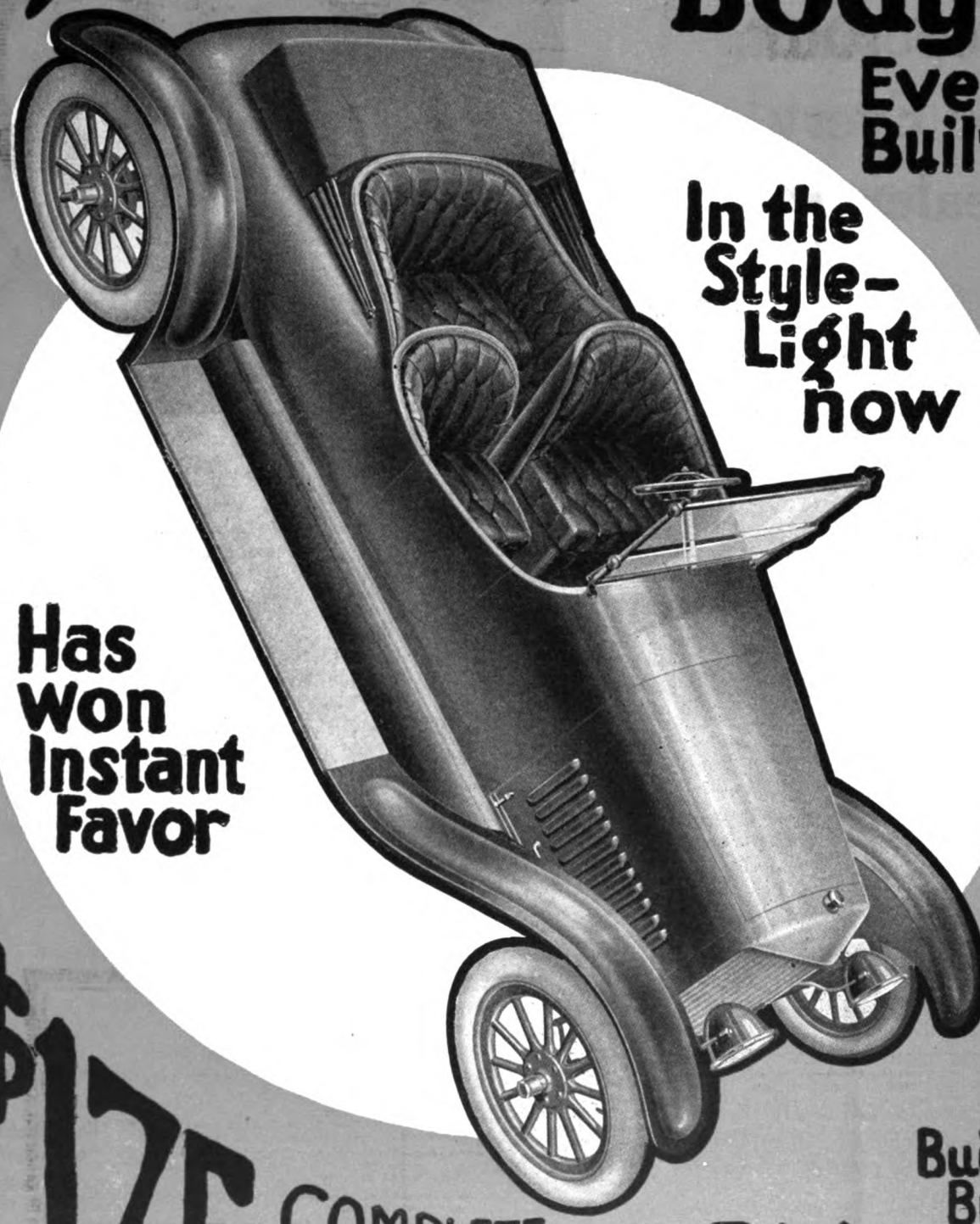
☐ **Car Owners**
☐ **Dealers and Garages**
☐ **Distributors and Jobbers**
(Check proposition you are interested in.)

.....
.....
.....

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The Classiest Ford Roadster Body Ever Built

In the Style-Light now



Has Won Instant Favor

$175 COMPLETE F.O.B. Owensboro, Ky.

Built By The F. A. Ames Co. INCORPORATED

When writing advertisers please mention Motor World

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Elegant Style For Your FORD $175

Dealers' Money-Making Offer on The Amesbuilt Cloverleaf 3-Passenger Roadster BODY

Ford Owners: Dress up your Ford now in this classiest 1917 style with this classy Amesbuilt 3-passenger roadster body, which not only makes your Ford distinctively distinctive, but individual —in a class all to itself alongside any other car.

Dealers: It's your big opportunity to cash in big. Grasp it. Liberal discounts to live ones. Write or wire today.

SPECIFICATIONS:

Construction—20 gauge cold rolled, stretcher sheet steel. Ample leg room. Pure streamline.

Sills—Selected hardwood frame, substantial, reinforced and ironed by hand.

Doors—Nicely hinged, entrance from both sides.

Upholstery—Extra quality imitation leather stuffed with natural curled hair.

Top—One-man top, highest grade silk Mohair with Jiffy curtains and dust hood.

Windshield—Cowl fitting, folding, rain vision, ventilating windshield.

Gasoline Tank—Filler pipe and cap; also gas-line furnished. Tank carried in rear.

Hood—Graceful streamline hood and bullnose radiator shell, with special dash ledge.

Fenders—Crown fenders of 20 gauge fender steel, cold rolled and finished in high gloss enamel, thoroughly baked, free from rattling. 9 inches wide.

Painting—Standard colors, deep Brewster green, or a very glossy black. Any other color $10.00 extra and three weeks delivery.

Equipment—All necessary attachments for mounting on Model T chassis.

Weight—Crated ready for shipment, about 450 pounds. Net weight, 270 pounds.

Price—Complete, $175.00, f.o.b. Owensboro, Ky.

The F.A.Ames Co. Owensboro Ky.

INCORPORATED

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PROPHYLAXIS

PROPHYLAXIS means preparedness that prevents—

FEDDERS RADIATORS represent prophylaxis. They are not only guaranteed against failure—they do not fail!

You purchase an article and give your money in exchange because you want that article more than you want the money. You are, therefore, not so much concerned about getting your money back if the article proves worthless, as you are about getting true worth in the article itself.

John Chinaman pays his Doctor to *keep* him well; when he is sick the Doctor gets *no pay!*

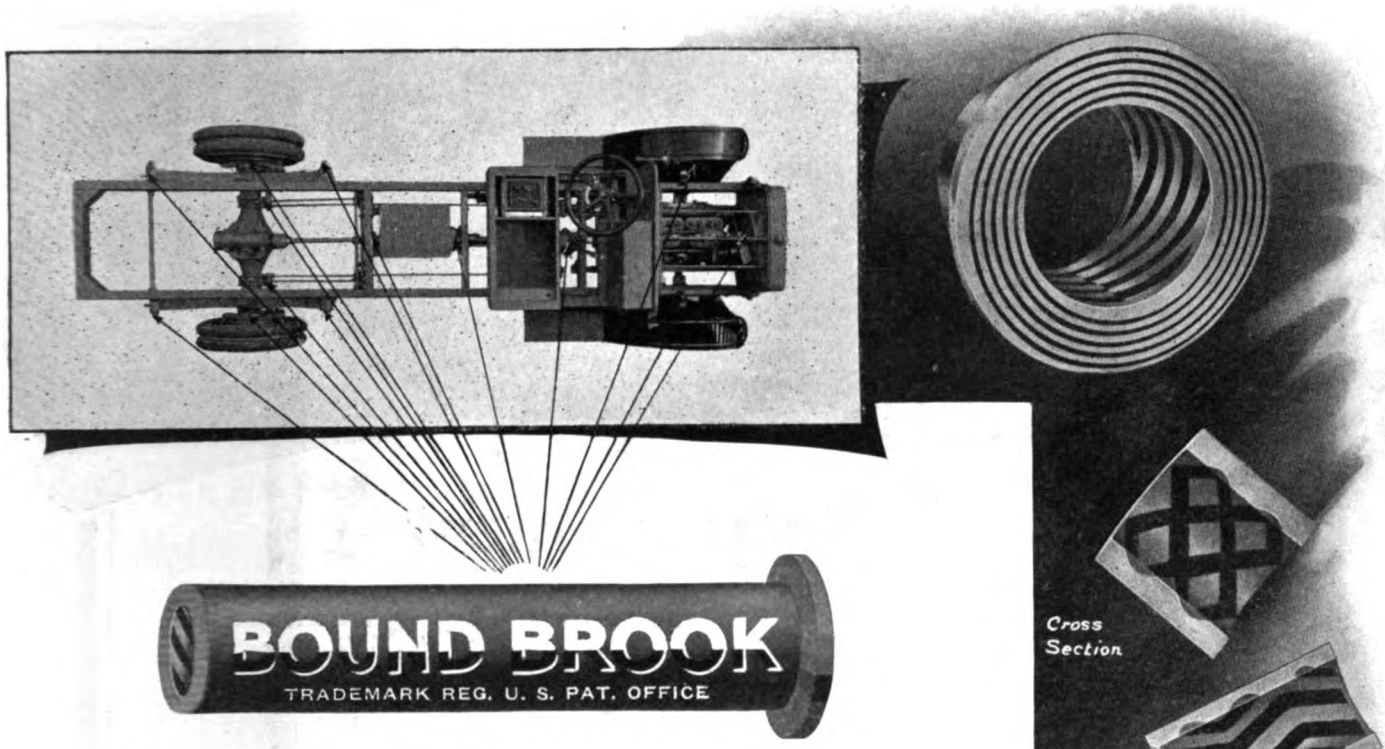
FEDDERS RADIATORS stand for *True Worth* and they work like a good physician —*they keep the engine well.*

The Proof of this lies in their *long-continued presence* in the *best makes* of automobiles, both pleasure cars and trucks.

FEDDERS MANUFACTURING CO.
Buffalo, N. Y.

FEDDERS RADIATORS

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Oil-less Bearings are Saving American Motorists Many Thousands of Dollars Each Year

HOW?

Oil-less bearings are bearings that do not require oiling. They are self-lubricating. They remain perfectly lubricated, almost indefinitely *without attention.*

Any bearing, you know, must be kept constantly lubricated to allow the shaft to work freely within it. When a bearing is not kept lubricated, then both shaft and bearing soon become ruined.

Consequently, a bearing which will remain perfectly and constantly lubricated, without attention, is a mighty fine thing to have in those parts of an automobile that are difficult to keep lubricated.

In some places it is not only difficult *but impossible* to keep an ordinary bearing properly lubricated, even when you have the time and inclination to do so.

For this reason *far-sighted* automobile manufacturers no longer use ordinary bearings in inaccessible places or in places difficult to keep lubricated. They use OIL-LESS BEARINGS which, because of their construction remain permanently lubricated, *without attention.*

*Bound Brook Oil-less Bearings are made of the finest bronze commercially obtainable. They are specially designed and constructed to retain *Graphite.* Hence the name "Bound Brook *Graphite and Bronze* Oil-less Bearings" Oil does not hurt Bound Brook Bearings. As a matter of fact, oil slightly reduces the co-efficient of friction. Yet they do not *need* oil like ordinary metal bearings.

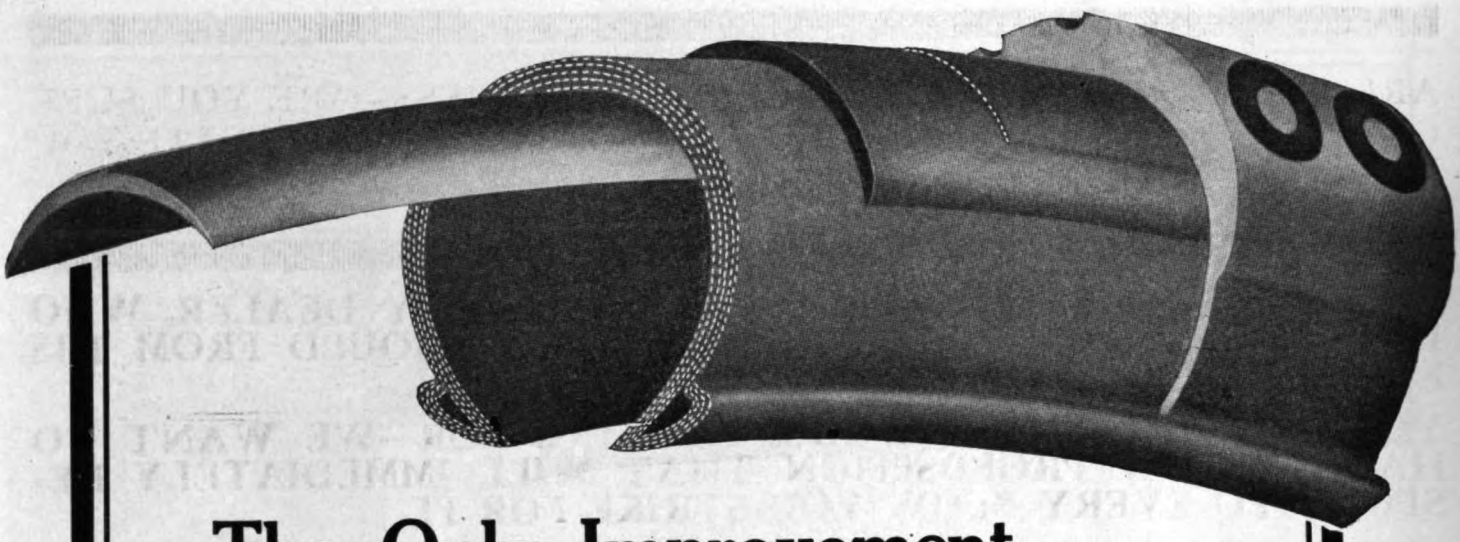
Manufacturers are invited to tell us their needs. We will then be able to suggest the best type of bearing suitable for their requirements. We have specialized in the production, use and installation of Oil-less bearings for more than 30 years.

BOUND BROOK OIL-*LESS BEARING COMPANY

**All genuine Graphited Oil-less Bearings have always been made at Bound Brook, U. S. A.*

BOUND BROOK, NEW JERSEY

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The Only Improvement

—you can possibly make over using a Woodworth Trouble-Proof Casing—is to use **both the Woodworth Casing and Inner Tube combined.**

That combination means absolutely the greatest safety and comfort and the finest wearing qualities you can procure in an automobile tire.

No matter what you pay, you cannot possibly beat it—and from the puncture-proof standpoint you cannot anywhere near equal it. It is the greatest advance made in tire manufacture during the life of the automobile industry.

And ours is a **REAL GUARANTEE!**

WOODWORTH TROUBLE-PROOF // TIRES //

We assure you of at least 5000 miles without puncture or blow-out, in addition to adjustments for ordinary wear.

The Woodworth Tire is made as well as present knowledge and material will allow—we have spared neither time, effort nor expense upon it—then, in addition, we **add** a strip of non-heating chrome leather on the inner side of the casing, making the tire "Trouble Proof."

Write at once for our offer to dealers.

It will interest you exceedingly.

And territory is going fast.

Woodworth Inner Tubes are made of finest live rubber. They are strong and durable. It is economy to use the best.

The Leather Tire Goods Co.

Niagara Falls, **New York**

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ARE YOU SATISFIED WITH YOUR TIRE BUSINESS—ARE YOU SURE OF IT—IS YOUR FUTURE SECURE? IF SO, WE CONGRATULATE YOU —BUT—

IF YOU ARE A LIVE, DEPENDABLE, FAIR-PLAY DEALER, WHO IS NOT GETTING THE "COME-BACK" HE SHOULD FROM HIS EFFORTS—

YOU ARE THE MAN WE ARE LOOKING FOR—WE WANT TO HAND YOU A PROPOSITION THAT WILL IMMEDIATELY RESPOND TO EVERY BLOW YOU STRIKE FOR IT.



¶ CARSPRING TIRES, as you know, are rapidly increasing in popularity. We are selling them faster and faster as the motorists learn their real value through actual use.

¶ OUR DEALERS are making a big thing out of this—BECAUSE THE INCREASE IS THEIR OWN.

¶ We offer you, if your territory is still unoccupied, the full Carspring rights for that territory. Once you have it, it is yours for good. Every tire sold in your territory means a profit to you.

¶ You may appoint your own sub-dealers as the business grows. But we will appoint none, nor will we open any Factory Branch to eat up your profits after you have built them up to a fair size.

¶ We will help you—we will consider you as part of our organization—we will let you make your own adjustments and back you up in every possible way.

¶ We have thousands of satisfied dealers now, who—with our aid by advertising and otherwise—increased the demand for "Carsprings" 460% in a few months, forcing us last spring to decline many agency propositions.

¶ But now, with new machinery and increased factory space, we are in position to appoint additional representatives and guarantee immediate deliveries.

¶ We want one in your district. Are you the man?

NEW JERSEY CARSPRING & RUBBER CO.
JERSEY CITY, NEW JERSEY

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

Mitchell Buyers

The Sort of Men Who Choose Bate-Built Cars

Our dealers report that most of the Mitchells are now sold to leading men.

Chicago, in one week, sold Mitchells to officials of five big banks.

New York reports an overwhelming demand from the most critical class of buyers.

Everywhere the main demand comes from big business men. They are first to recognize, of course, the value of efficiency.

But 37 noted engineers—men of national fame—have also selected the Mitchell. And all because of John W. Bate.

The demand for Mitchells, on every hand, has trebled since last summer.

The New Appeal

Efficiency is a new factor in Motordom. It has, until lately, been almost impossible.

Models and types have been constantly changing. Tools and machines became out-of-date in a year. It was cheaper to buy parts than to make them. And profits permitted extravagance.

But the Mitchell concern—82 years old—had watched many an evolution. And we knew that in this line, as in others, efficiency would sometime rule. So years ago we brought John W. Bate here—the leading efficiency expert in the machinery-making line.

Now We Are Ready

Now we are ready—now when so much depends on factory efficiency. We have a model plant, all designed by John W. Bate. We have modern equipment which he has selected. We have the trained men.

We can build a car of the Mitchell grade for less than any other plant in America. We can give better value. And we can include—as we do in this Mitchell—26 wanted features which others omit.

Men are Learning

Men are learning what the Mitchell represents. We are spending this season $500,000 in advertising. And we shall never stop.

Mr. Bate's work is done. He has brought this great factory to the top mark in efficiency. In the car he has worked out 700 improvements.

Now we are telling the facts. And the demand for Mitchells will be ten times greater when all men come to know them.

We want to hear from dealers in unoccupied territories who feel that the Mitchell offers a great opportunity. And who feel that they deserve it.

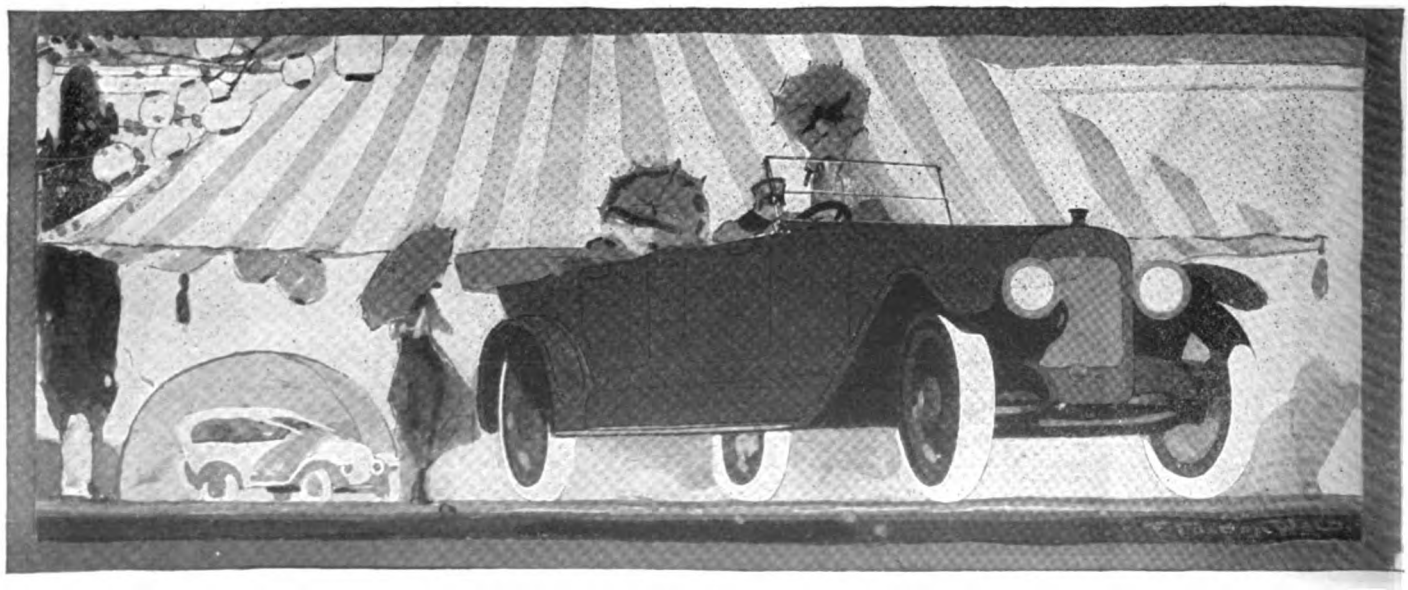
$1325 F. o. b. Racine

For 5-Passenger Touring Car or 3-Passenger Roadster

7-Passenger Touring Body $35 Extra

High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment including 26 extra features.

MITCHELL-LEWIS MOTOR CO.
Racine, Wis., U. S. A.



When writing advertisers please mention Motor World

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Could You Sell Ford Owners a 100% Efficient Cooling System For $5?

Recommended by Smith Form-a-Truck Co., and Dearborn Motor Truck Co., for use on all con.erted Fords.

If you could find a cooling system for Ford cars that would live up to a 100% efficiency guarantee, costing but $5, you couldn't keep enough on hand, or sell them fast enough to supply the demand. Ford owners with overheated motors would bombard your shop from morning until night. You couldn't keep a wise one from buying.

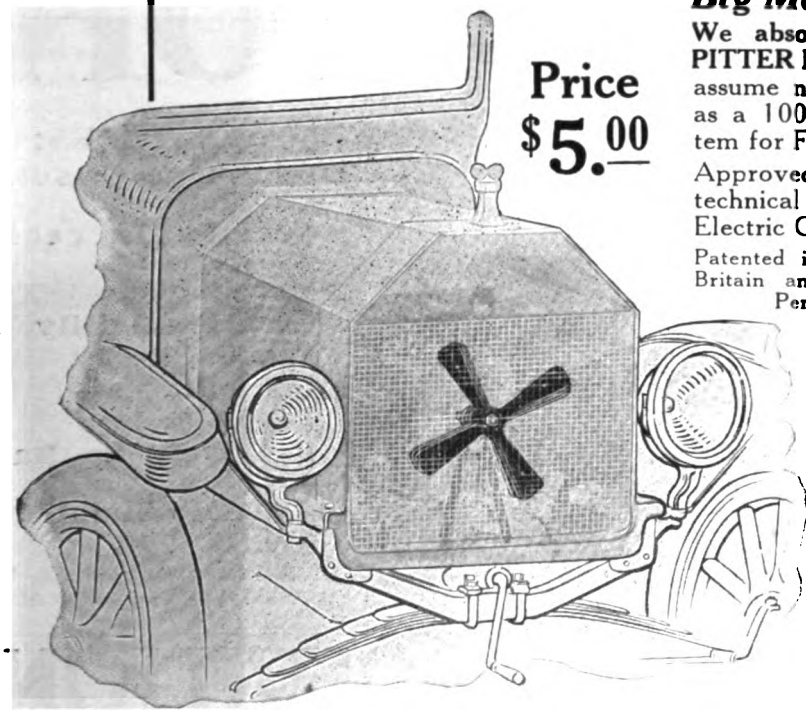
Recent experiments and actual road tests have proved that—

Ford Motors Will Not Overheat When Cooled with a PITTER MULTIBLADE FAN

That's not an entire cooling system for $5, but the PITTER Fan added to the cooling system furnished with Ford cars in place of the fan now included as equipment **will absolutely prevent the motor from overheating.**

The PITTER Multiblade Fan has 3 blades in 1. It draws 50% more air through the radiator than the old-style fan, and reduces cost of car maintenance at least 33⅓% by keeping the motor cool.

The PITTER Fan prolongs the life of the motor, reduces repair bills, and cuts the cost of gasoline by insuring more mileage from a better running motor.



Price $5.00

Draws air through every square inch of radiator surface—not just through the center.

Big Money For Dealers

We **absolutely guarantee every PITTER Fan to make good.** You assume no risk. As easy to sell as a 100% efficient cooling system for Ford cars, at $5.

Approved by leading engineers, technical magazines and General Electric Co., Ltd.

Patented in Germany, France, Great Britain and Canada. U. S. Patent Pending.

Write or wire for details and agency. Liberal discounts. Big sales. USE THE COUPON now.

THE PITTER FAN CO.
1842 Peoples Gas Bldg., Chicago

Mail This Coupon For Your Pitter Fan

THE PITTER FAN CO.
1842 Peoples Gas Bldg., Chicago.

Gentlemen: Date.....

Please send us.....Pitter Multiblade Fans, with the understanding that this fan is guaranteed to move 50% more air through the radiator than **any other type of fan.** If not found satisfactory to be returned at your expense.

Name .....

Address .....

Ship via .....

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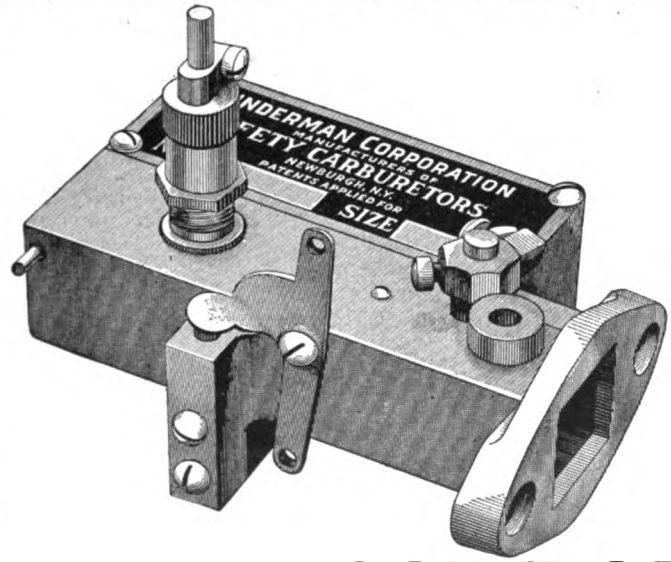
SUNDERMAN SAFETY CARBURETOR

The universal satisfaction given by the Sunderman Safety Carburetor brought an immediate great demand.

The demand brought a vast increase in production.

Increased production brought about manufacturing economies which cut the cost of production.

We give these economies direct to motorists by making a flat cash price of $5.00 for standard size F.



FEATURES:

Enormous Gasoline Saving
Greatly Increased Mileage
More Power
Great Flexibility
Fast Get Away
Quick Pick-up
Easy Starting
Positively No Back-firing
Absolute Simplicity
SPEED

A wonder for Fords—Does great work on big cars.

SUNDERMAN CORPORATION

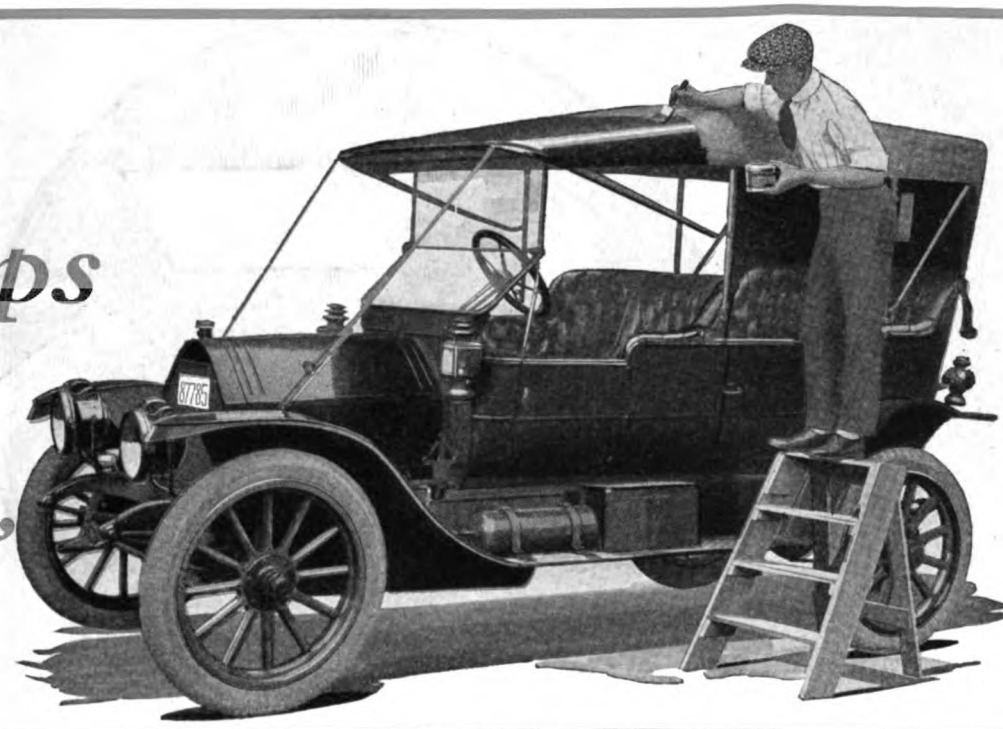
MANUFACTURERS OF SAFETY CARBURETORS

NEWBURGH, N.Y.

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"New Tops for Old"



THOUSANDS of automobile owners all over the country who are using Johnson's Prepared Wax and Johnson's Cleaner with such wonderful results will want to use our new product—

JOHNSON'S BLACK-LAC

It is unequalled for touching up **leather cushions—side curtains—tire covers—auto trunks—pantasote and mohair tops and linings.** One coat of Johnson's Black-Lac gives a rich, black surface just like new. It is easy to apply—dries in fifteen minutes—does not rub off on the hands or clothing—is permanent—water-proof and inexpensive.

It is splendid for blackening **fenders—rims—running boards—hoods—radiators—guards—lamps**—and in fact all worn metal parts. Prevents rust and keeps your car in a high state of repair.

Nationally Advertised

Our advertising campaign on **Johnson's Black-Lac** has already started. We will use half-pages in Saturday Evening Post—also large space in practically every motor paper. There is bound to be a large demand and we hope you will stock immediately. Automobile owners who have been in the habit of purchasing **Johnson's Cleaner** and **Johnson's Prepared Wax** from you will naturally turn to you for this new product.

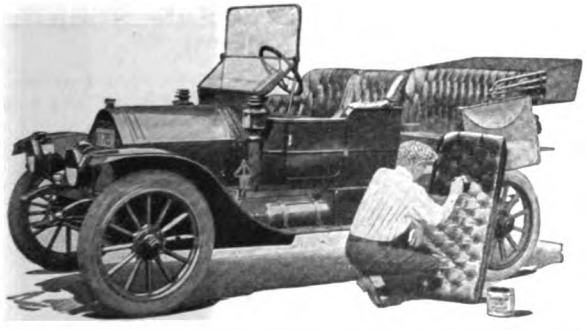
It is no longer necessary to stock three or four different articles for dressing up automobiles. Johnson's Black-Lac is six products in one:

1—It is a mohair top dressing.
2—It is a leather top dressing.
3—It is a lining dye.
4—It is a cushion dressing.
5—It is a metal enamel.
6—It is a rim paint.

Johnson's Black-Lac is put up and listed as follows:

Quarts ..... **$ 1.10** **Half-pints** ..... **$ .40**
Pints ..... **.65** **Also in gallons for large users.**

Liberal dealers' discount. Mail coupon for further information.



S. C. JOHNSON & SON, Racine, Wis. **MW7**

I am interested in stocking Johnson's Black-Lac. Please send me complete information—discounts and names of jobbers in this locality from whom I can purchase.

NAME.....

ADDRESS.....

CITY & STATE.....

MY JOBBER IS.....

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EVERY industry has its accepted leader, the manufacturer whose name carries instant conviction of supreme attainment.

When we buy his goods all thought of price is lost in Pride of Possession; the purchase of other makes calls for explanation—almost apology.

Such leadership comes not by chance. Only long years of unremitting effort enable us now, by reason of the present state of perfection of

GURNEY BALL BEARINGS

with their inbuilt superiority an actually demonstrated and determined quantity, safely to assert that

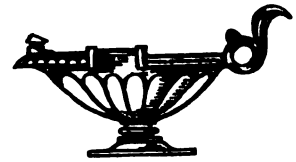
FROM THE STANDPOINT OF EFFICIENCY THEIR EQUAL DOES NOT EXIST

GURNEY BALL BEARING COMPANY

"Conrad Patent Licensee"

CHICAGO JAMESTOWN, NEW YORK NEW YORK

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"The Light That Failed"

Many dealers and garage owners throughout the United States have suffered defeat in business, because they did not adopt some adequate accounting system to direct them into profitable channels, and take them from the broad and too easily traveled path of loss—at the end of which was failure.

How much did you make in June?

Maybe you think so—but do you know?

How much will you make in 1916?

Does your repairshop gain or lose?

How much do you make when you charge a customer for an hour of labor?

How do your May and June collections compare?

If you don't know these things you are not on the road to business success. You should have an accurate and timely record of all parts of your business. You should have a simplified and easy to operate accounting system that will light up the dark corners of your business—that will make your business road safe to travel.

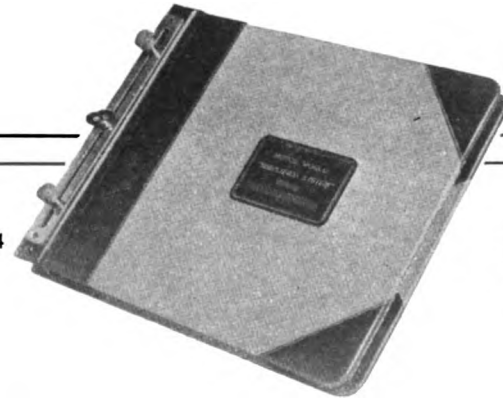
Motor World has devised such a system. It costs $12 complete. Everything in one book. We advise you to get SOME kind, whether it is Motor World's or some other. But if you want this one (which is designed by experts who have made a careful study of the various problems of YOUR business) send $12—check or money order—and plan to get started on the right track August 1st.

Booklet with a complete illustrated description of the system (price $1.00) will be sent complimentary with each system. Send your order at once. Address:

The Motor World Publishing Co.

System Department

239 West 39th Street New York City



This is the only book required—size 11 x 14 inches—canvas, leather corners.

Includes 100 income sheets—100 expense sheets—500 customers' sheets.

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ANNOUNCING



The New MARATHON "RUNNER" Ribbed Tread Tire

THE thick ridges of the new "RUNNER" tread give added control against side-slip, and more attractive appearance than possessed by the regular "Marathon" smooth tread —already famous for Speed and Endurance.

Now being sold at no advance in price over the regular smooth tread tire.

MARATHON

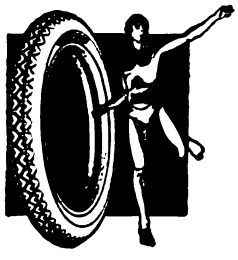
ANGLE TREAD

"The 100% non-skid Tire"

Both types of tread are furnished in Regular Fabric casing with White Tread, and the Elastic Whip-Cord casing with Black Tread; and all Marathon Tires are

Guaranteed for 5000 Miles Service

"Marathon" Red and Grey tubes, like all "Marathon" casings, are



"Made to meet the demand for Quality—not the competition of Price."



The Marathon Tire & Rubber Co.

Cuyahoga Falls, Ohio

Canadian Factory: St. Catharines, Ont.

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This Engine is No Playground for Spark Plugs



Red Head REG. U.S. PAT. OFF. BIG BOY

spark plugs are used as standard equipment, with satisfactory results, in the gigantic 50 H-P engines that drive the powerful motor rollers manufactured by the Kelly-Springfield Road Roller Co.

The road roller smoothens the riding on the highway—the Red Head Big Boy smoothens the running of the motor.

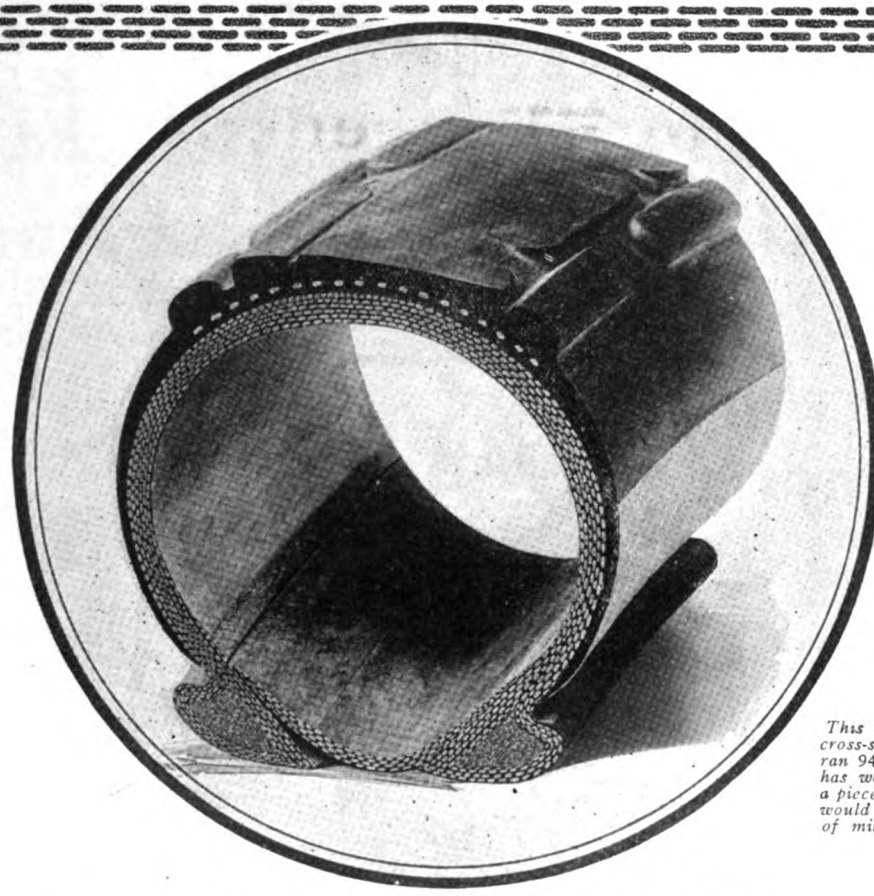
Is your car equipped with Red Heads?

EMIL GROSSMAN M'F'G CO., INC.

Bush Terminal, Model Factory No. 20
41st Street and Second Avenue, Brooklyn (New York City), U. S. A.
Chicago, 1253 Michigan Avenue

3 Points 1 Dollar

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This is a photograph of a cross-section of the tire that ran 9467 miles. Note that it has worn down as evenly as a piece of fine steel. This tire would be good for thousands of miles of additional wear.

9467 miles on this Republic Prōdium Process Tire

Toughest rubber in the world gives new solution of the tire problem

What the sole is to the shoe, the tread is to the tire. No matter how good the fabric or the inner tube may be, if the tread is weak, the whole tire is weak. With this principle before them, the Republic Rubber Company's experimental force has worked for years to perfect a tire tread stock that would overcome the difficulties of ordinary rubber. Prodium is their answer.

Prodium is a newly discovered substance, that, when compounded with high grade rubber makes the toughest material ever used on a tire. The tire section shown above is but one of many proofs of this statement.

Prodium, or the Prodium Process as it is now called, gives a tire tread that even fresh-cut rock does not cut or gash; that withstands extraordinarily high temperatures; that wears down as evenly as a piece of fine steel; that is oil-proof and grit-proof; that is more resilient than ordinary rubber.

In fact, Prodium Process Rubber is as near wear-proof as human ingenuity can make a material that must be flexible.

Stylish STAGGARD Black Tread

Trade Mark Reg. U.S. Pat. Off.

Republic Prodium Process Tires can now be had in the stylish black tread, so much in vogue among motorists. In the Staggard Tread or "WM" Tread non-skid styles, this new rubber furnishes immunity from skidding possessed by no other tire. And even the plain tread style has remarkable anti-skid qualities.

Make this test yourself



Write for a sample strip of Prodium Process Rubber. Try to break it. We have found few arms strong enough to tear a strand only ⅛ inch square. A strip 1 inch square will hold 3,400 lbs., or 20 average men. Get the sample today. Convince yourself that this is the toughest tread ever put on a tire.

THE REPUBLIC RUBBER COMPANY, Youngstown, Ohio

Branches and Agencies in the Principal Cities

REPUBLIC PRŌDIUM PROCESS TIRES

Digitized by Google

Every Motorist Needs a Vulcanizer to Stop Tire Troubles and Increase Mileage



Dealers:

Here is your opportunity to supply the vast army of motorists with this needed accessory and make money. Do you know that motorists bought more vulcanizers last year than any other single accessory—save one? Think what a valuable accessory it is. It helps the motorist increase mileage.

Remember, a Shaler Vulcanizer is not "regular" or even "special" equipment. None comes with the car; the motorist **must buy it.** You not only get a good profit from the vulcanizer but the motorist must come back to you for vulcanizing supplies—thus more profit.

SHALER Vulcanizer

They will repair any cut, rip, tear or hole in either casing or tube, in a few minutes, and make the repair the strongest part of the tire. The Shaler is the only vulcanizer that has Automatic Heat Control. It can't undercure or overcure a tire.

They come in a great variety of sizes and types—Electric, Gasoline, Alcohol and Steam, for every requirement of public and private garages. Shaler Tube-Kit (for vulcanizing tubes), $2. Ford-Kit (for Ford owners), $2.75. Vul-Kit (to carry in tool box for roadside repairs to tubes and casings), $3.50. Model D (electric equipment for private garages), $12.50. Public Garages and Repair Shop Model, $60. Sold by leading jobbers.

SEND FOR ATTRACTIVE OFFER

Mail coupon today. Get complete new catalog, special attractive offer price and terms for the handling of Shaler Tourist Vulcanizers. We advertise them nationally and furnish dealer help.

C. A. Shaler Co.

422 Fourth St. Waupun, Wis.

Largest Makers of Vulcanizers in the World

Canadian Distributors—John Millen & Son, Limited, Toronto, Winnipeg, Montreal, Vancouver.

Mail Coupon for Catalog!

C. A. SHALER CO.,
422 Fourth St., Waupun, Wis.

Please send me new Catalog Shaler Vulcanizers—Dealers' Prices, Terms, etc.

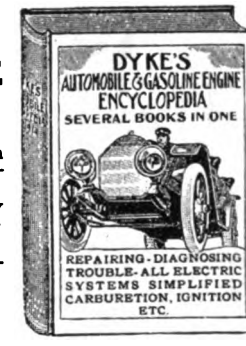
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Mechanical Instruction Books
For the Dealer

DYKE'S AUTOMOBILE and GASOLINE ENGINE ENCYCLOPEDIA



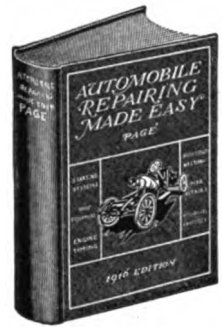
A teacher, guide and reference on everything pertaining to motoring—simple as the A-B-C's.

It's worth ten times its cost, if only placed on the shelf and used as a reference.

1750 Illustrations. 696 Pages. 49 Instructions.

Price, $3.00. (Add 25c. to prepay.)

AUTOMOBILE REPAIRING MADE EASY



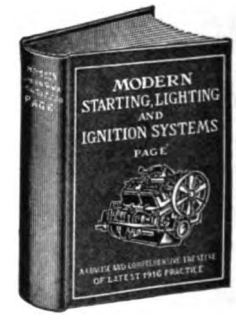
By Victor W. Pagé, M.E.

1000 Specially made Engravings on 500 Plates. 1056 Pages (5½ x 8). 10 Folding Plates.

Price, $3.00 Net.

A Comprehensive, Practical Exposition of Every Phase of Modern Automobile Repairing Practice.

MODERN STARTING, LIGHTING AND IGNITION SYSTEMS

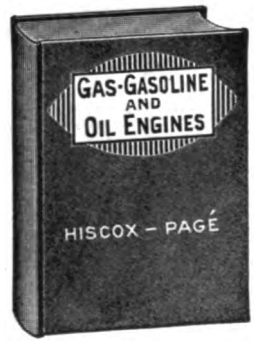


By Victor W. Pagé, M.E.

250 Specially Made Engravings. Nearly 400 (5½ x 8) Pages. Folding Plates. Price $1.50.

A Self-Educator on Electrical Systems. All the leading systems of Starting, Lighting and Ignition have been described and illustrated with the co-operation of the experts employed by the manufacturers. Wiring diagrams are shown in both technical and non-technical forms All symbols are fully explained. This is a book of real merit.

GAS, GASOLINE and OIL ENGINES



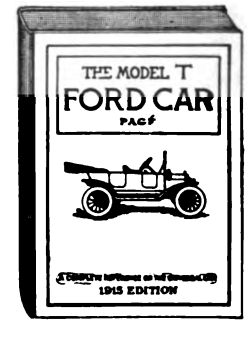
Enlarged and brought up to date

By Gardner D. Hiscox, M.E.

By Victor W. Pagé, M.E.

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This book is written for FORD DRIVERS and OWNERS, by a recognized automobile engineering authority and an expert on the FORD, who has driven and repaired Ford Cars for a number of years. He writes for the average man in a practical way from actual knowledge. All parts of the Ford Model T Car are described. ALL REPAIR PROCESSES ILLUSTRATED AND FULLY EXPLAINED.

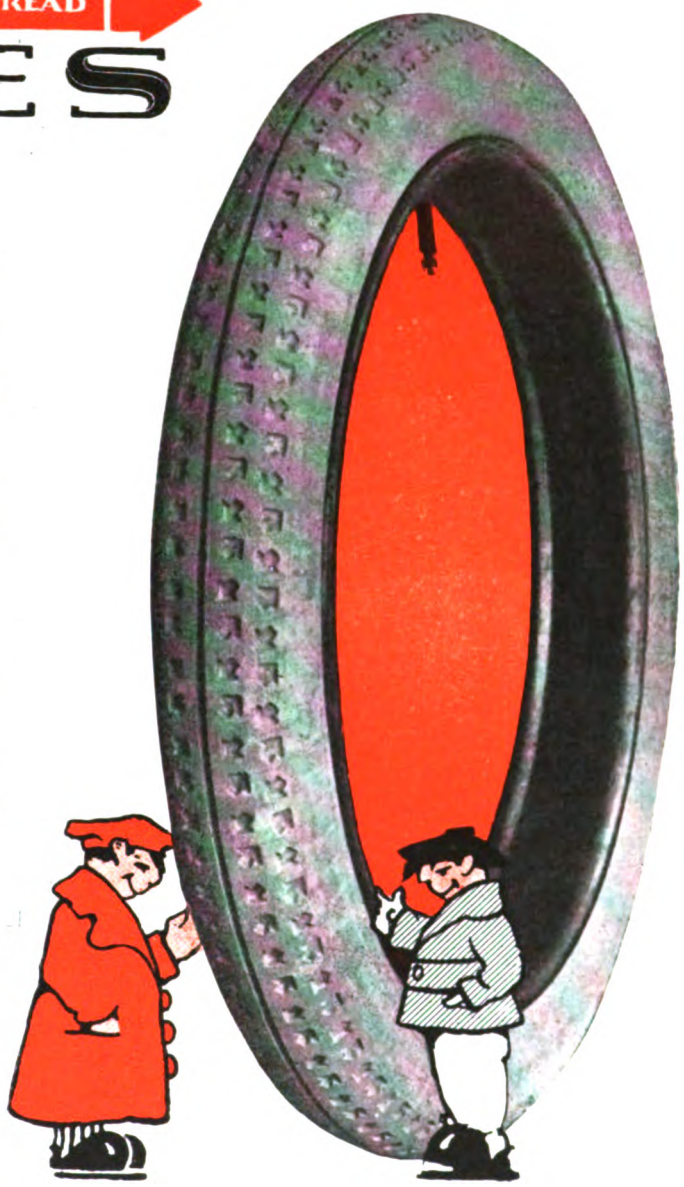
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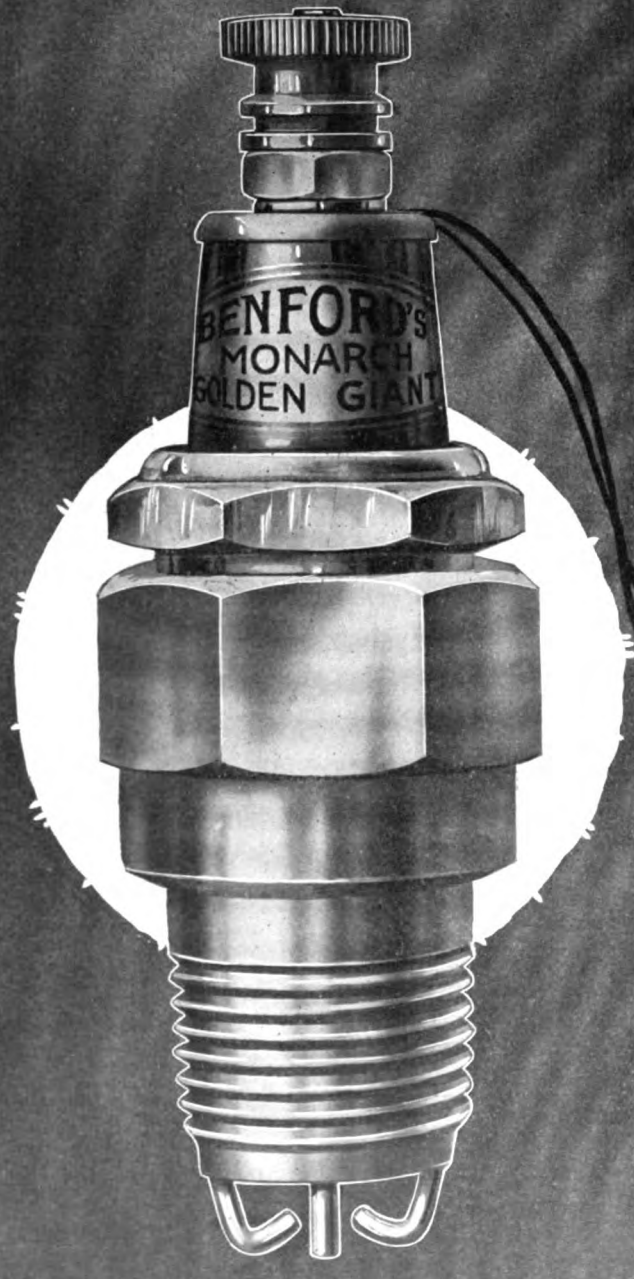


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THE greatest car builders in the world put beautiful bodies on their wonderful chassis, not because these bodies make the cars faster or more durable, but because they believe that only the best is fit for their great mechanical achievements.

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GOLDEN GIANT

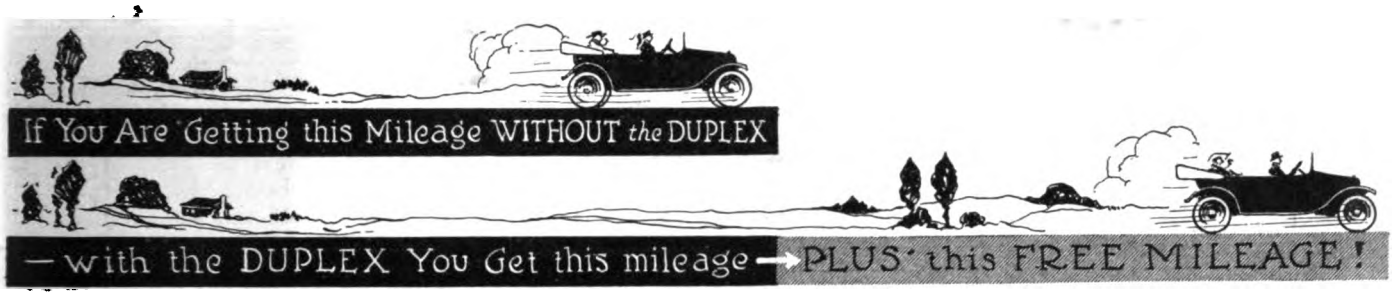
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PRICE **$1.00**

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If at any time you feel that you have not received your money's worth in satisfactory service, return the plug to us and it will be repaired or replaced free of charge. You are the sole judge. There are no restrictions.
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Is Exactly What It Amounts to if You Use

THE DUPLEX VITALIZER

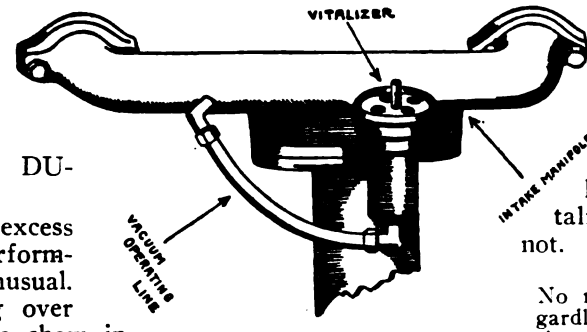
Actual Tests Show an 80% Increase in Mileage

When we GUARANTEE the DUPLEX Vitalizer to reduce the fuel consumption of any motor, we simply promise you the results being achieved by thousands of DUPLEX users throughout the country.

For instance, James J. Allen of Watkins, N. Y., made a gain of 54% in mileage through use of the DUPLEX.

Fuel savings, even in excess of this remarkable performance, are not at all unusual. Experiments extending over long periods of service show increases in mileage ranging from 10% to 80%.

It requires very little figuring on the basis of the above facts to determine in just how short a time the DUPLEX Vitalizer at $5 will pay for itself. In the long run, it really costs the car owner nothing. In fact, it makes handsome returns on his investment. In reality every day a motorist puts up with a fuel-thieving car he is paying dearly for his lack of a DUPLEX Vitalizer, whether he knows it or not.



ATTACHED TO MANIFOLD

No man who runs a motor car, regardless of what mileage he is getting, can consistently refuse to INVESTIGATE the DUPLEX in the light of the wonderful results it is showing for others. The story of DUPLEX performance costs nothing. We will send it free to anyone. Write for it—NOW. Use the coupon. Don't put up with low mileage a day longer. You don't have to.

GUARANTEE

If properly installed, we guarantee every DUPLEX Vitalizer to give increased mileage, power and motor efficiency. If at the end of 10 days it fails to do all we claim for it, full purchase price will be refunded.

Here is the little device that is smashing all sales records



Illustrating simple Construction of the Duplex

DEALERS AND JOBBERS: The high price of gasoline has created a tremendous demand for the DUPLEX. The ten day trial convinces.

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DUPLEX VITALIZER MFG. CORP.

ELMIRA, N. Y.

Remember that the DUPLEX Vitalizer differs from any other similar device on the market. It operates on the piston vacuum system. Its construction is unique. It not only holds all records for decreasing fuel consumption, but increases power and acceleration materially. It also lessens carbonization.

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Address .....

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SHELDON



Where demands are heaviest, there you will find worm gears most efficient, because the more you use them the better they get. This is literally true. Up to the point of absolute destruction a worm gear improves with use.

¶ And, what is of still greater importance, is the fact that worm gear outlasts any other type of drive many times.

¶ This is just one of the characteristics of worm drive that has played an important part in bringing about the dominant use of worm gear axles for truck work.

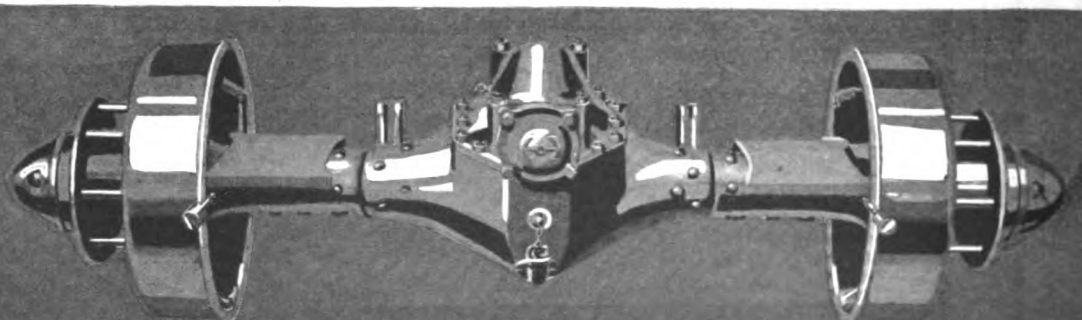
¶ At the present time 93 of the most successful truck manufacturers in the country are using worm gear axles, and about half of the models, and more than half of the trucks actually produced this year will be worm gear driven.

And from the standpoint of first cost, worm gear driven axles are the most expensive type. They dominate solely because of merit.

THE SHELDON AXLE AND SPRING COMPANY

Manufacturers of Springs and Axles for More Than 50 Years

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"25 Miles Per Hour Over Rough Road"

Weaver Auto Ambulance Makes You a Big Profit In the Time It Saves



You know that the only way to make money hauling in wrecked cars is to do it quickly and with as little labor as possible. That is why the

WEAVER Auto Ambulance

is just as necessary to your garage as a front door. We have built it to meet just the conditions you are up against.

The Weaver Auto Ambulance is scientifically designed and constructed by skilled mechanics who have made a study of the requirements of this particular service.

It is full roller bearing, so that heavy loads can be towed with least possible energy—its rugged construction and secure clamping mechanism enables cars to be towed over rough roads at 15 to 25 miles per hour.

It can be securely attached to either front or rear axle of the car—one man can throw it into your service car, run out to the wreck and make the "tow-in" alone.

It is the *efficiency* of our Ambulance, resulting from its proper design and construction, which enables it to pay for itself in a few trips.

Send for complete Weaver catalog TODAY—NOW—this minute. It is full of money makers for the live garage man. Ask for booklet 731

Weaver Manufacturing Co.
2173-79 S. Ninth St., Springfield, Ill.



AUTO AMBULANCE
List $30
Price



Weaver 20-Ton Press $56.00



Weaver Auto Twin Jacks Two for $20.00

WEAVER Garage Equipment

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EVERY CAR OWNER



—who enters your shop is a Gasco prospect.

Why?

Because Gasoline Economizers are now thoroughly established in the confidence of owners; they are getting real results, and they want one. They want the

GASCO ECONOMIZER

because it costs only $1.00, while others cost as high as $5.00; and it is simpler, easier to attach, more efficient and

Requires no holes bored or the slightest changes made in the engine.

We sent our representative, Robert Miller, to Ardmore with a list of 18 Autocar owners, and he made 15 sales in one day.

Mr. Wm. H. Kantner, Minersville, Pa., groceryman, sold 40 to his friends in the village.

Mr. Chas. Lee, Ashland, Pa., moving picture man, sold 60 to his friends in this small town.

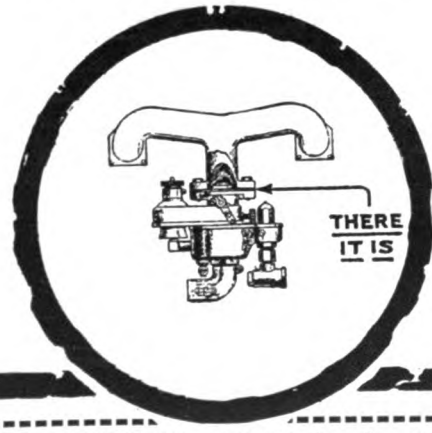
Mr. C. E. Wilhelm, Pottsville, Pa., sold 105 in and about Pottsville.

YOU CAN SELL THEM JUST AS FAST!

Fill out and mail coupon at once.

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1772 Ludlow Street, Philadelphia, Pa.
Mfrs. of "Right" Gaskets, Gasco Packings, Washers, Shafting, Punches and Dies



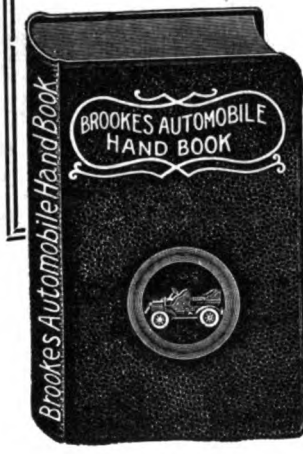
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Please let me know under what terms and conditions I may handle the Gasco Economizer.

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By L. Elliot Brookes
New Edition Revised and Enlarged
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And other experts.

A work of practical information for the use of

OWNERS
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AUTOMOBILE MECHANICS and TECHNICAL SCHOOLS

A strictly up-to-date treatise, dealing in a practical manner with all the various questions relating to the construction, care and operation of gasoline, electric and steam automobiles, including illustrated descriptions of the many different parts, together with clear and concise explanations of the principles governing their action. Correct methods are given for dealing with

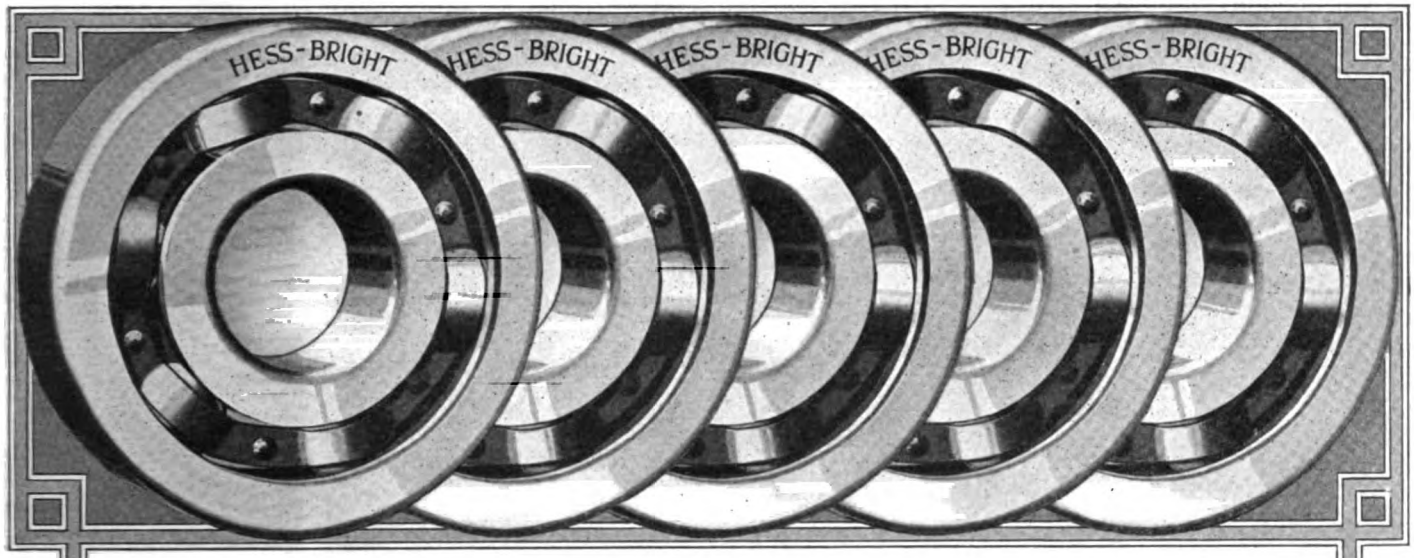
Road Troubles, Motor Troubles Carburetor Troubles and Ignition Troubles

Also valuable information pertaining to ignition systems, carburetors, magnetos, etc., etc. Valve setting is dealt with in detail, also indicator work, with numerous tables, useful rules and formulas, diagrams, and over three hundred illustrations.

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have been chosen by the makers of the finest American trucks because of their superior efficiency, durability and economy

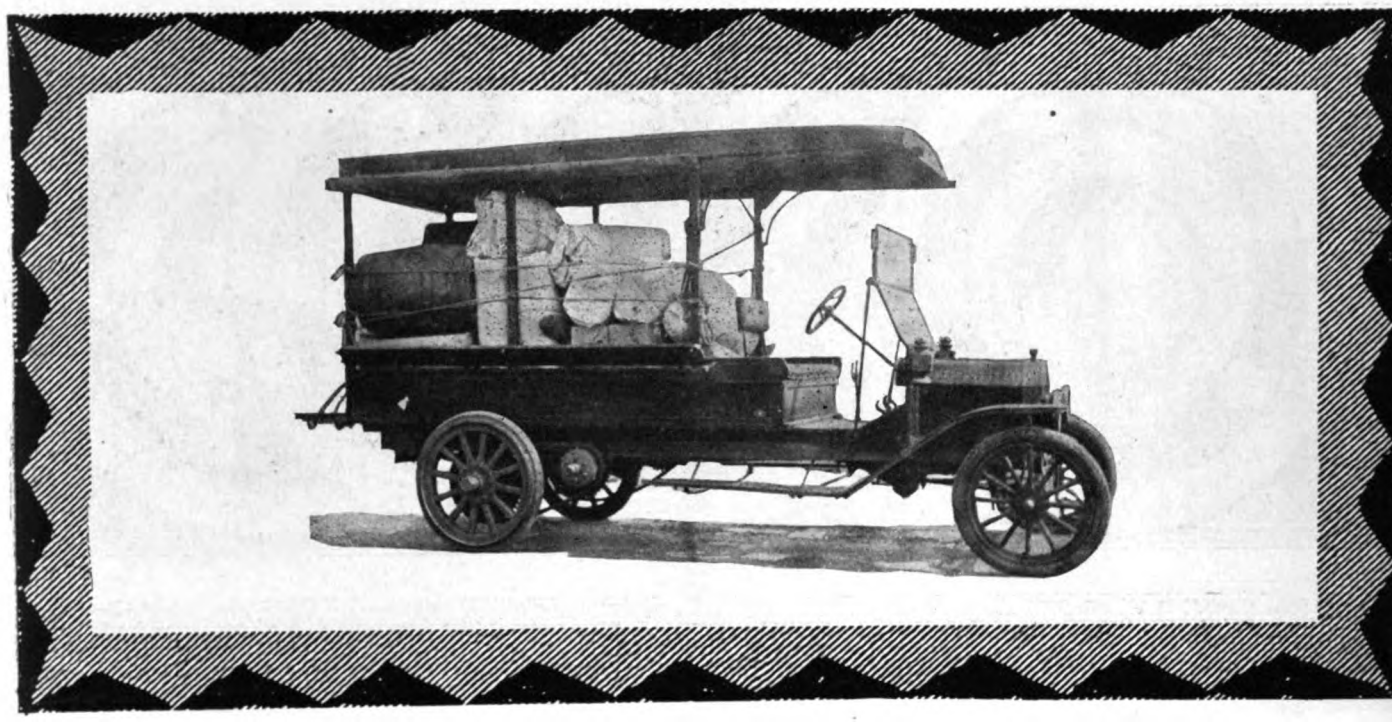
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THE INIMITABLE BEARING

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A FORD



Rayford Company,
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Philadelphia, Pa.

Dear Sirs:—
Kindly send me details regarding your Unusual Distributor's proposition.

Name .....

Address .....

Unique Dealer Proposition
Immediate Delivery—Exclusive Agency

You will forget all other truck propositions when you understand The RAYFORD method—and The

RAYFORD
COMMERCIAL CHASSIS

Our dealers are making new records for quick sales and satisfactory service.

We give you a fair chance—without obligation to sell any certain quantity. We offer you an exclusive agency for the best 1-ton truck at the most attractive price. From the moment you order your demonstrator you receive a commission on every RAYFORD sold in your territory.

Get Our Proposition Now—

fill out attached coupon and save your territory for yourself.

The RAYFORD unit is a complete assembly which converts the Ford car into a one-ton truck.

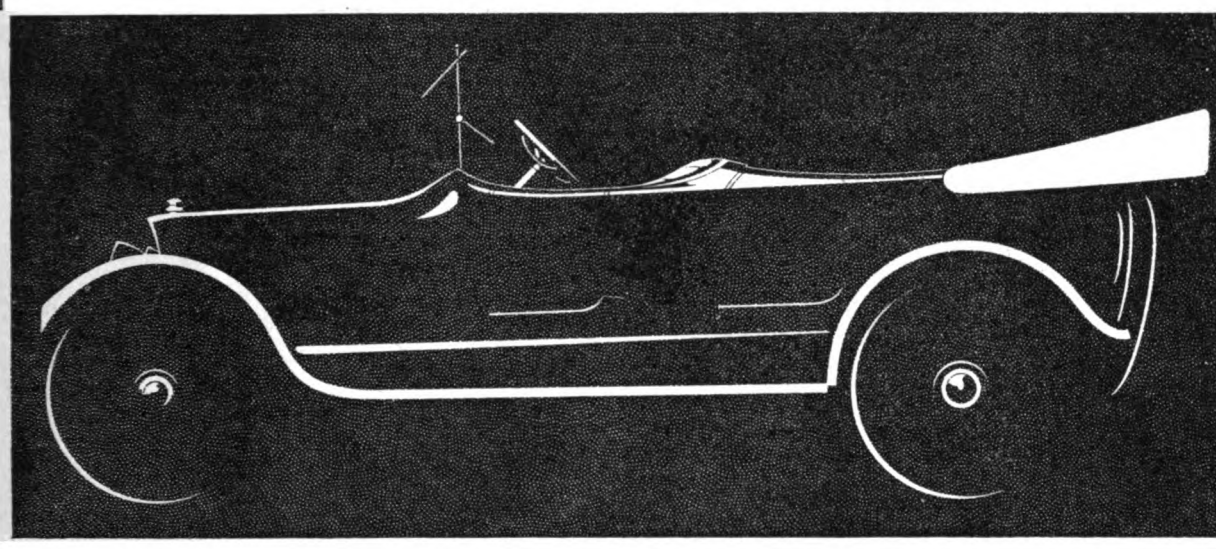
There is no alteration, changing, machine work or substituting of inferior parts. Standard 56-in. maintained without touching Ford axle.

90% of the dead load is carried on this unit, which, though rated at one ton, is guaranteed to carry 1½ tons.

It has a wheelbase of 124 inches; a 10-foot loading space; semi-elliptic springs; heavy, artillery type wheels; Bower roller bearings; strong, dependable brakes and a further gear reduction (in addition to the 3.63 to 1 of the Ford) of 2 to 1.

Rayford Company
Palethorp and Indiana Aves.,
Philadelphia, Pa.

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Can You—

before reading the copy below Name The Car of these dominant lines

?

¶Of course you can. It's the new Reo Six—the "fashion plate" from which so many other makers are now designing their next year's models. ¶Those familiar lines—those graceful curves—catch your eye as the Reos glide by you on the road. ¶We said "glide" —not speed. Note the distinction, for our ambition has been to build cars, not for those afflicted with the speed mania, but who crave the utmost in luxurious riding. Reos are for touring, not for the boulevards alone or the speedway. ¶If you never have owned a Reo, never held the wheel yourself on a Reo Six, then you can but dimly appreciate what we mean when we say Reos "glide" by you. ¶Just try it—the Reo "one-rod" control is so simple anyone, woman or man, who has ever driven any automobile, can drive a Reo without instructions. ¶Note the smoothness with which the car accelerates—none of that tremor, that "palsied tremble" that indicates the flimsily made car. ¶And you'll be surprised to find, when you actually put them side by side, how little difference there is in the "get-away" of this sturdily made, durable Reo Six, as compared with those for which that quality is the chief claim. ¶Consensus of opinion is an excellent guide. Watch for the Reos—you'll be surprised at the number you'll see. ¶Then, too, note the class of people who drive Reo Sixes—car owners are divisible into distinct classes, you know, and the comparisons furnish an interesting diversion on the road. ¶You'll like the kind of people you see in Reos. They are your own kind. They are a class who desire real qualities in a car, not mere novelty. ¶You can't mistake a Reo Six for any other. The lines of the Reo Six are distinctive as well as graceful and artistic. They are "the lines they are all quoting"—which is trade vernacular for copying. ¶From that Reo radiator to the tire holder this car is distinctively Reo. ¶You will enjoy the distinction of being seen and numbered among those who own Reo Sixes—it is the hallmark of good taste, evidence of faultless mechanical judgment and a knowledge of values.

Reo Motor Car Company, Lansing, Mich.

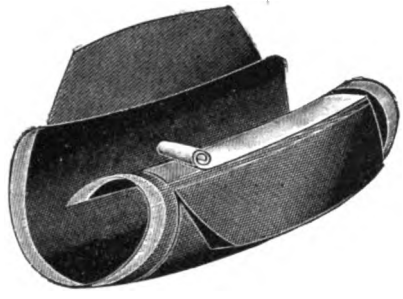
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K-C TIRE ACCESSORIES are known as the **self-selling** line. They have new, easy-to-apply features which make a big hit with motorists. K-C sales are quick and profitable. K-C accessory customers stick. Note the selling-punch in the two items illustrated.

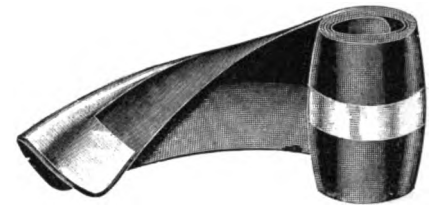
K-C "VULC-TITE"



SELF-VULCANIZING PATCH

Strip protector cloth from the vulcanizing gum; fold extension flap under; the patch adjusts itself to fit casing and pressure of inflated tube automatically vulcanizes patch to itself; forms complete cylinder around the tube —can't bulge—holds any blow-out or rim-cut.

K-C "RED-COAT"



SELF-VULCANIZING RELINER

The holland cloth strips down the center and across the end of this reliner protect quick vulcanizing gum, and the entire surface of the reliner is coated with a special red cement. Dampen with gasoline and the "Red-Coat" is ready for the casing. It vulcanizes instantly; can't creep; can be removed to use again.

Write for complete catalog of K-C Accessories

THE GENERAL TIRE & RUBBER COMPANY

MAKERS OF THE GENERAL TIRE AKRON, OHIO



METHOD OF MOUNTING

TWIN-RIM

PATENTED FEB., 1916

A Demountable Rim for FORD CARS

AND ALL OTHER 30"x3½" OR 30"x3" CLINCHER RIMS

IN CASE OF TIRE TROUBLE the Twin-Rim with inflated tire is placed beside the damaged tire, the four bolts tightened and you are ready to run again. Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is "They would not be without the TWIN-RIM."

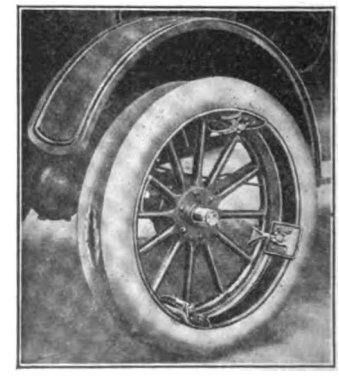
You Don't Have to Remove Damaged Tires

It is strong and durable; looks well on your car. Fits either front or rear wheels. An absolute necessity for Doctors, Salesmen, Tourists, Taxicabs and Deliveries.

TWIN-RIM $5.00

SPECIAL TIRE HOLDER FOR $2.00

DEALERS—Through our advertising campaign we are reaching the Ford Car Owners all over the United States. Get your share of this business. Write now for our dealer proposition.



MOUNTED READY TO RUN

TWIN-RIM CO., INC.

103 Massachusetts Avenue Boston, Mass.

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No Car Can Be Better Than Its Bearings



When it comes to the crucial test of long life and endurance, the car with poor bearings will be weighed and found wanting in this one most important detail.

Bower Bearings will "weigh up" in quality with **any** and every detail of construction in **any** motor car of today.

Bower
Roller Bearing Co.
Detroit - - - - Mich.

BOWER SAVES POWER

BOWER SAVES POWER

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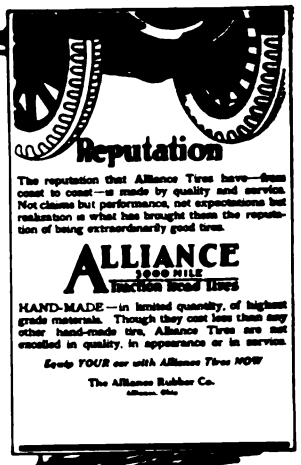


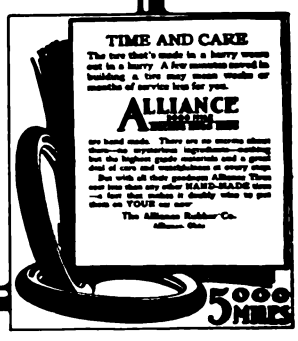
THESE are miniature reproductions of advertisements now running in newspapers all over the country for DEALERS who sell

ALLIANCE
5000 MILE Traction Tread Tires

We don't ask our dealers to pay half the advertising cost. We pay it ALL—and treat the large dealer and the small dealer just alike.

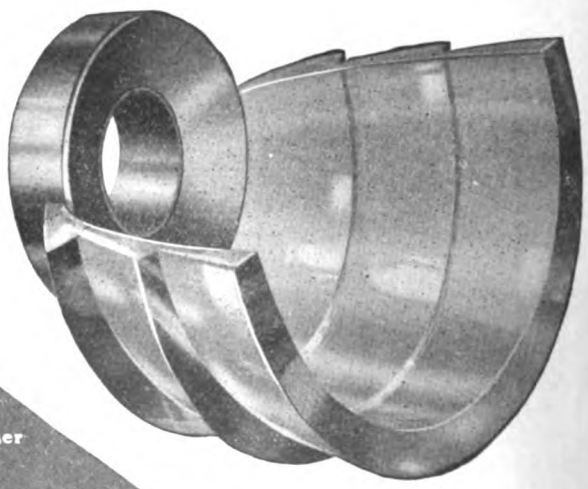
ALLIANCE RUBBER COMPANY
Alliance, Ohio





"FRACTO"

$2.75 PER PAIR



—gathers up every bit of light in the lamp and puts it where it is most needed.

Dealers are making big money with it. Their customers' satisfaction and consequent demand make large sales, and our liberal policy insures generous profits.

"FRACTO" fills every requirement of law and necessity. With absolutely no glare it gives a clear, steady light on the road, leaving just sufficient upward rays to illumine overhead obstructions.

It consists of a 2-oz. glass cup-shaped lens, attached under the bulb. Easy to attach, it is strong, durable, steady in place. It will not break the bulbs.

Gives perfect projection to a greater distance than any other similar device.

Write at once for our liberal terms.

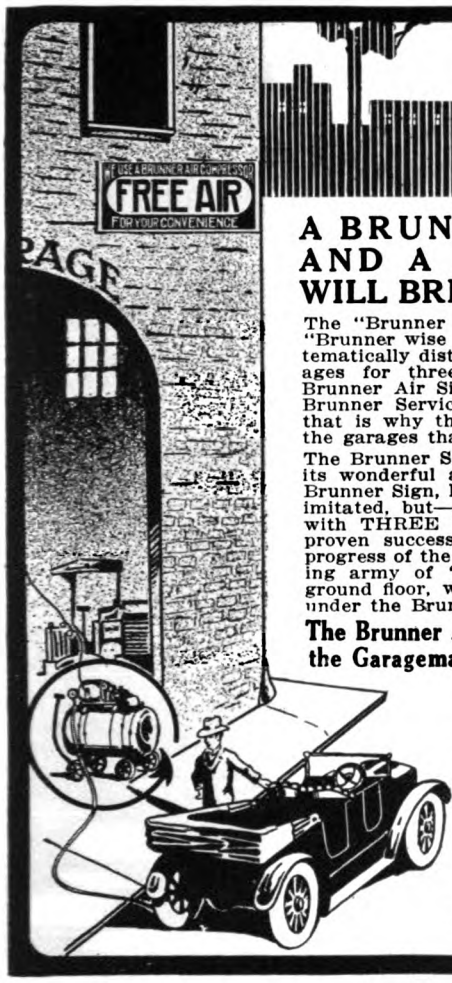
Price, $2.75 per pair

FRACTO SPECIALTY CO.

356 Newbury Street - - - Boston, Mass.

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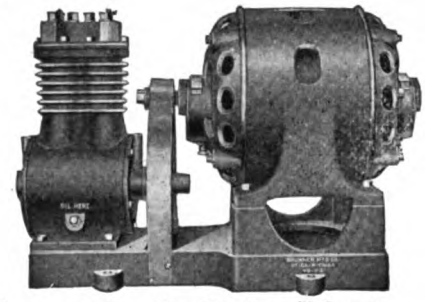
BRUNNER AIR COMPRESSORS



A BRUNNER AIR COMPRESSOR IN YOUR GARAGE AND A BRUNNER AIR SIGN ON YOUR GARAGE WILL BRING "BRUNNER WISE MOTORISTS" TO YOUR DOOR

The "Brunner wise motorist" is a fact—we created the "Brunner wise motorist" for you, Mr. Garageman by systematically distributing among the Brunner equipped garages for three years the three color enamelled iron Brunner Air Sign, educating the motorists to know that Brunner Service meant efficient, high class service and that is why the "Brunner wise motorist" is patronizing the garages that display the Brunner Sign.

The Brunner Sign is another Brunner Idea, it has proven its wonderful advertising value to the garageman. The Brunner Sign, like all other successful innovations, will be imitated, but—remember the Brunner Sign is backed up with THREE YEARS practical demonstration and is a proven success, it has a three years' start—watch the progress of the Brunner Sign and the growth of the standing army of "Brunner wise motorists"—get in on the ground floor, we are going to bring business to the door under the Brunner Sign.



The Brunner Air Compressor Has Been Consistently Demonstrating Its Sterling Value to the Garageman *in the Garage* Ever Since the Garage Business Has Been a Business.

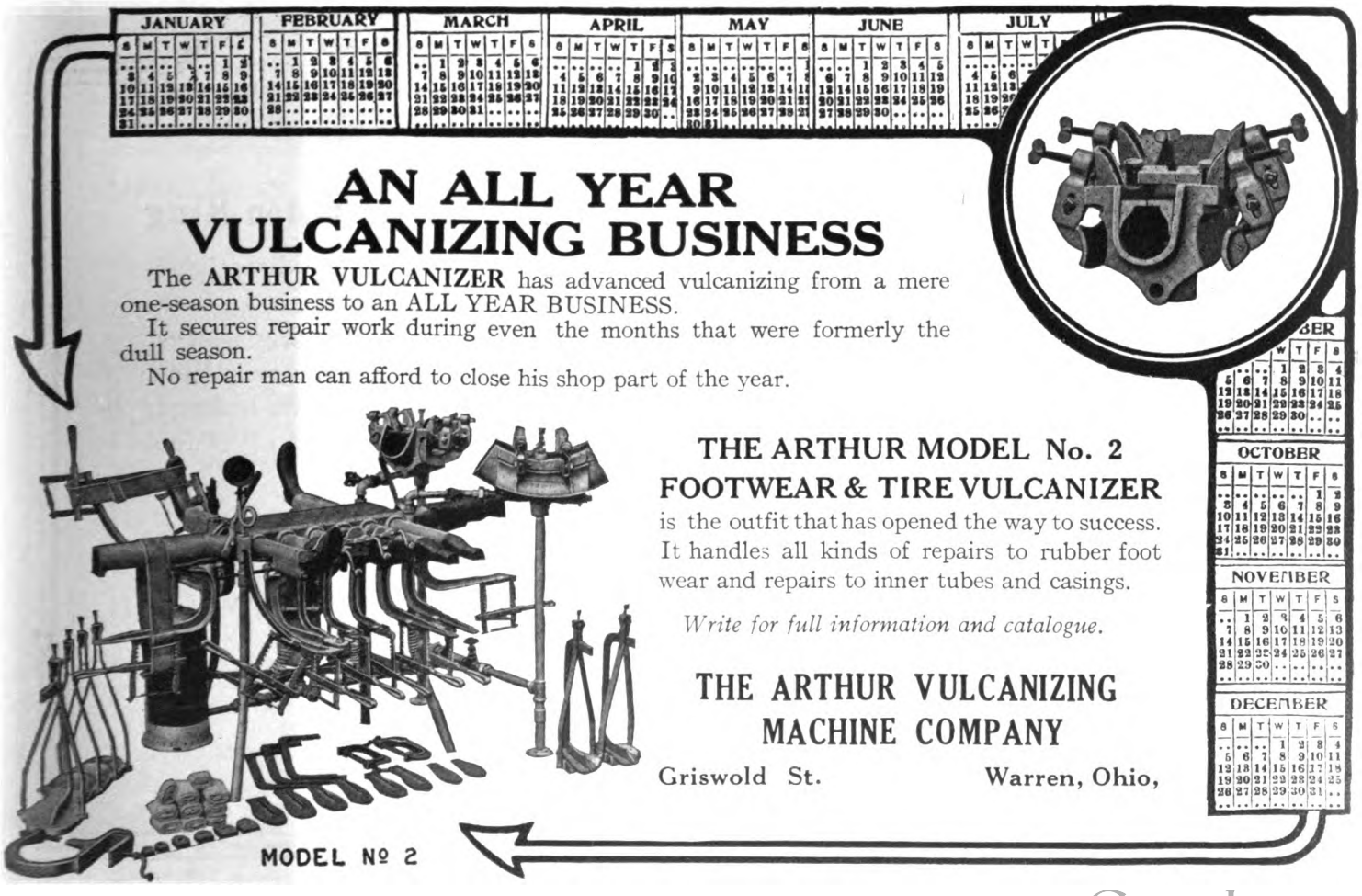
The Brunner Line was designed and built for the garageman's special requirements, it has developed with the garage business, it has always been honestly built and honestly advertised, it has always been sold on a bonafide guarantee that we have always stood squarely back of, and is a good sound business proposition worthy of the garageman's explicit confidence. No freakish construction, no reckless advertising claims, no cut price inducements, everlasting guarantees or unlimited free trial offers, but—simply the good sound business proposition that it has always been.

WRITE FOR CATALOGUE AND HANDBOOK ON COMPRESSED AIR AND THE NAME OF THE BRUNNER JOBBER COVERING YOUR TOWN

BRUNNER MANUFACTURING COMPANY

Dept. E
UTICA, N. Y.

Cincinnati Branch,
419 First National Bank Bldg., Cincinnati, Ohio



AN ALL YEAR VULCANIZING BUSINESS

The **ARTHUR VULCANIZER** has advanced vulcanizing from a mere one-season business to an ALL YEAR BUSINESS.

It secures repair work during even the months that were formerly the dull season.

No repair man can afford to close his shop part of the year.

THE ARTHUR MODEL No. 2 FOOTWEAR & TIRE VULCANIZER

is the outfit that has opened the way to success. It handles all kinds of repairs to rubber foot wear and repairs to inner tubes and casings.

Write for full information and catalogue.

THE ARTHUR VULCANIZING MACHINE COMPANY

Griswold St. Warren, Ohio,

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THE UNIVERSAL AUTO PRESS

Possesses More Power, Higher Speed, Greater Capacity

EXCLUSIVE ADVANTAGES

1ST.—HIGH SPEED leverage of 1000-1 for ordinary work.

2ND.—HIGH POWER leverage of 2200-1 for extraordinary work.

42 IN. CLEARANCE. This clearance is necessary to handle all work that comes.

LOWER TABLE instantly adjustable on pins (no bolts to remove, no danger to workmen).

BOTH TABLES have wide faces to properly support the work.

SCREW 2 in. diameter 4 pitch square thread, 12 in. travel. It does not revolve.

CHANNEL BLOCKING, properly braced (will not crush).

"V" PLATE which automatically adjusts itself to any size arbor, mandrel or shaft.

CAPACITY, 22 TONS Exclusive to this Press, for less than four times its cost.

than anything else of the kind. A glance at its exclusive features will show its superiority.

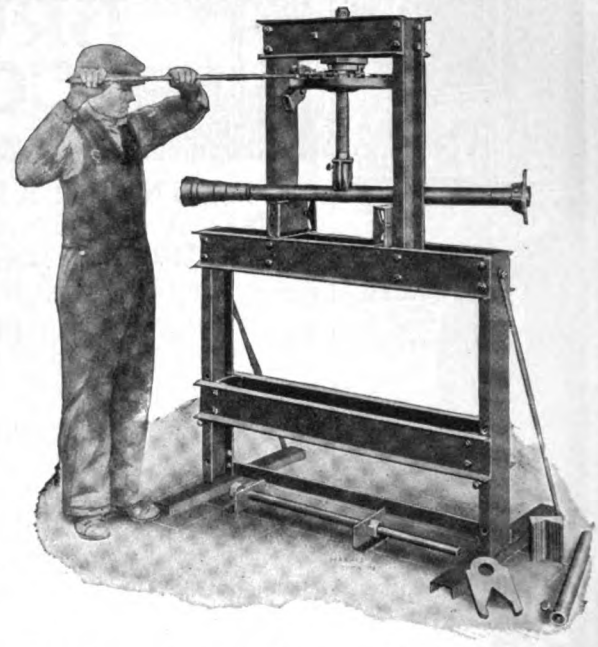
If you want a press that will take All work coming to your shop and do it quicker, better and easier than any other—write to us now for full information.

The 42-inch clearance will take every wheel (truck or pleasure car) that comes to your shop.

The two leverages enable you to do light work quickly and heavy work easily and perfectly.

The screw, exposed at the top, can be struck a hard blow without the slightest damage to the press. This is of great service in obstinate cases, such as a rusted shaft, which pressure alone will not move. No other press possesses this advantage.

Price : Complete : $46.75



The Universal Auto Press stands upon the floor independent of other support, and may be moved to suit conditions or turned over for pressing long work.

THE Manley SHOP AND GARAGE EQUIPMENT

United Engine & Mfg. Co.

"Pioneers in Garage Equipment"

Hanover Penna.

Equipment—Everything You Need

CHANNEL BLOCKING, properly braced.
"V" PLATE for arbors up to 3 inches.
SPINDLE NOSE.
VISE BLOCK.
TIE ROD and Straps.
EXTENSION PIECE for screw, to reach work on lower table.

The Largest Gasoline Cars in the World are fired by Splitdorf Plugs

The 300-H. P., self-propelled, McKeen gasoline rail cars are used for most difficult service in Austraiia, Mexico and the United States. The high efficiency of these great gasoline cars is another testimonial for the

SPLITDORF SPARK PLUG

With the Green Hexagonal Jacket

Ninety per cent. of all engine troubles are due to faulty ignition. Seventy-five per cent. of them can be remedied at once and forever by the use of Splitdorf Plugs.

These plugs are practically indestructible, positively gas and oil tight. They are as nearly soot-proof as a plug can be. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned.

Made in all sizes and in types to suit every car, motorcycle, motor truck, motor boat, aeroplane, tractor, and stationary gasoline motor. Write for Splitdorf Directory which tells which plug to use in *your* motor.

Splitdorf Plugs sell for one dollar everywhere. If you can't get them from your dealer, send to us for them.

Splitdorf Electrical Co.
Newark, New Jersey



Eclipse PISTON RINGS
PATENT APPLIED FOR
ECCENTRIC

The Eclipse Piston Ring

is the result of our dissatisfaction with other rings. In it we have attained the ring nearest perfection at the present time. It **positively prevents leakage;** develops power, and saves fuel and oil.

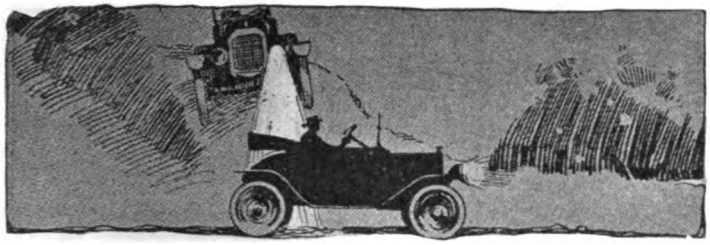
Send for Catalog and Price List
—Dealers Wanted

Manufactured by

Hope Machine Co., Philadelphia, Pa.

THE EDWIN T. CRAVEN CO.
Sole Distributors
2310-12 North Second St., Philadelphia, Pa.

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A Safe, Certain, Bright Light at Slow Speeds for FORDS

The VAN SICKLEN Concentrator assures such a light at slowest engine speed, when you need it most.

At 5 m. p. h., 10 m. p. h. or 15 m. p. h. with a VAN SICKLEN Concentrator you always have sufficient light for every driving purpose. $2.00—the price of the Concentrator—is a very small price to pay for so necessary a convenience.

$2



VAN SICKLEN
AUTOMATIC
HEAD LIGHT CONCENTRATOR
FOR FORD CARS

The VAN SICKLEN Concentrator at all speeds below 15 m.p.h. automatically disconnects the right headlight, shunting double current into the left headlight. At 10 m.p.h., for instance, the left headlight burns as brightly as it ordinarily would at 20 m.p.h. Above 15 m.p.h. the regular Ford 2-lamp system automatically re-asserts itself.

Price, $2.00 complete, ready to put right on. Easily installed. Full instructions with each order. Installed under hood on dash. Guaranteed not to injure magneto or bulb. Neat, compact, handsome.



Note simple installation

Obtainable from most good dealers or sent prepaid direct upon receipt of price.

Dealers: Some desirable territory still open. Over 600,000 prospects. 40,000 sold in last two months. Wire or write.

The Van Sicklen Company
14 Chicago Street, Elgin, Illinois

Hotel Marie Antoinette

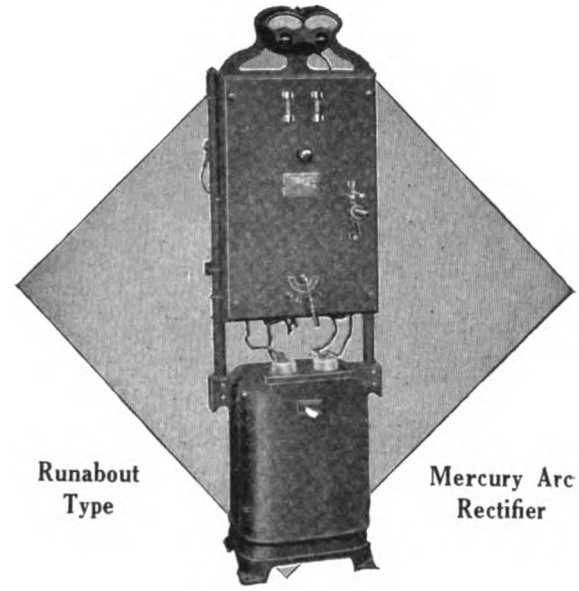
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NEW YORK CITY

SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

Restaurant of Unusual Excellence

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Runabout Type

Mercury Arc Rectifier

Profits in Electrical Accessories

Electrical vehicle owners know the necessity of keeping batteries fully charged. The convenience and ease of home charging is brought home to them in such periodicals as Motor, Motor Age and other magazines.

Ignition battery charging with the small, portable rectifier is also a necessity for the gasoline car owner.

There is a big profit for every dealer in the resale of these battery charging devices. Many good territories are still open for an agency to handle all goods made by us for gas or electric cars.

We make MAZDA lamps, sockets, switches, wire, cable, trouble lamps, insulations, etc., for the car owner's use.

Write us for particulars on dealer discounts and prices on all G-E Automobile accessories.

General Electric Company

General Office Schenectady, N. Y.
6257



Form K Portable Mercury Arc Rectifier

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This Is The Plug



These Are the Manufacturers Who Equip With

AC Spark Plugs

Packard	Buick	Enger	Knox
Pierce-Arrow	Oakland	Glide	Lambert
Cadillac	Oldsmobile	Lexington-Howard	Maxwell
Marmon	Stearns-Knight	Austin	McLaughlin (Canada)
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Chalmers	Stutz	Case Tractors	Monroe
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Chevrolet	Apperson	Federal	Singer
Dort	Davis	G. M. C.	Stephens
Cole	Detroiter	Gramm Trucks	United Truck
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Reo	Moon	Kissel Kar	Palmer-Moore
Paige	McFarlan		Bour-Davis
Peerless	Westcott		Murray

No Greater Recommendation Can Be Given a Spark Plug

Champion Ignition Co. Flint, Mich.

Have You This Plug On Your Car?

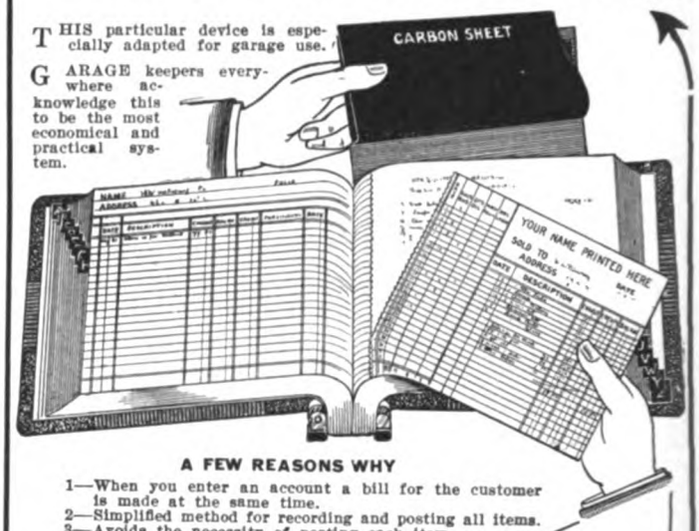
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SAVE TIME AND MONEY

Our SPECIAL GARAGE Bookkeeping Plan Gives You the HIGHEST Possible EFFICIENCY

THIS particular device is especially adapted for garage use.

GARAGE keepers everywhere acknowledge this to be the most economical and practical system.



A FEW REASONS WHY

1—When you enter an account a bill for the customer is made at the same time.
2—Simplified method for recording and posting all items.
3—Avoids the necessity of posting each item.
4—Requires the minimum amount of labor.

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THE ONE UNDERNEATH IS YOUR COPY

SEND FOR DESCRIPTIVE FOLDER AND FULL PARTICULARS

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Loose Leaf Specialists

KESTER



CRYSTAL-CORE SOLDER

Cuts Soldering Work and Time In Two

A seamless tube of solder, the core of which is filled with just the right amount of flux for every job. Does more than twice the amount of work in a given time, and gets neater, cleaner, quicker results. No time lost in preparing either flux or acid.

Use It In The Garage For—

Battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use.



Sold in coils of ½ or 1 pound, and on spools of 1, 5 or 10 pounds.

Order Today From Your Jobber

Manufactured by

CHICAGO SOLDER CO.
218 N. Union Ave., Chicago

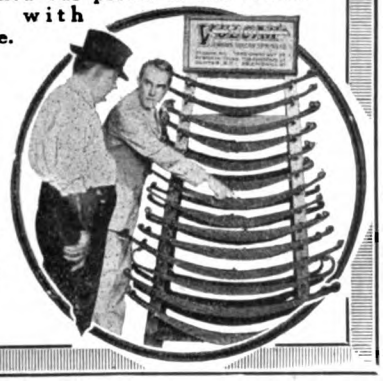
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Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.
Years of steady, unremitting effort have concentrated in

VULCAN QUALITY

SPRINGS a Quality of material and workmanship seldom equalled.
Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.
Our determination to divide fairly with dealer and consumer alike has fixed our prices at the lowest level commensurate with good business practice.



Write us today for liberal proposition in territory still open.

Jenkins Vulcan Spring Co.

1402 Chestnut St., St. Louis, Mo.
708 Commerce St., Fort Worth, Texas
29 Caldwell St., Sumter, S. C.



Shake Hands With Simon Sure, Mr. Dealer!

(Your customers have never shaken him since they saw him in our magazine and newspaper advertising.)

He's a good man to know, is Simon Sure. He's [the spirit of Security behind

BATAVIA
SECURITY NON-SKID TIRES

His job is to see that those indentations go into every Batavia—to make them easy-running in fair weather on dry roads, sure-holding on tricky wet pavements and hard-fighting in mud and sand.

He knows the indented tread is best because it helps his friend Sammie Speed in good weather by reducing the friction surface—helps his team-mate, Willie Wear, too, because no rubber is put where it would just wear out without doing any good.

A modest kind of chap is Simon Sure. On sunny days—and most days are sunny—he doesn't insist that you know he's on the job. He doesn't put any lumps on Batavia to call attention to himself. In fact the only way your customers know he's there is that the indentations let the engine pull easier than it would if it had to lift a solid flat surface off the ground.

But get him in a sudden shower or muddy or sandy road and watch him work! Every high spot on his design comes around to wipe dry the pavement for the next high spot. Like a sprocket wheel his rubber teeth bite into soft mud or sand and pull.

A fair and foul weather friend is Simon Sure—especially fair. Next advertisement tells about his team-mates, Kid Care and Hi Quality. Watch for it, but meanwhile—quick! the coupon!



The Batavia Rubber Co.
Batavia, N. Y.



MAIL THIS TODAY

THE BATAVIA RUBBER CO.,
Batavia, New York.

SEND me your proposition to dealers—and tell me what experience other dealers have had with them.

Name .....

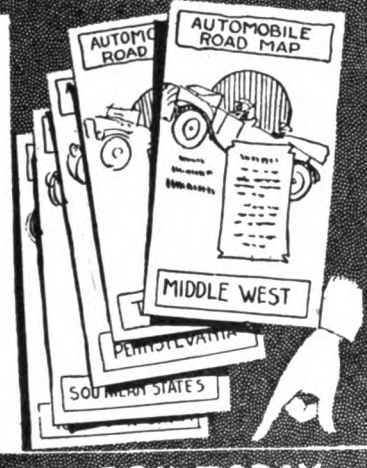
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FREE ROAD MAPS

Check Maps desired and mail to

GULF REFINING COMPANY

Dept. 1879
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Pittsburgh, Pa.



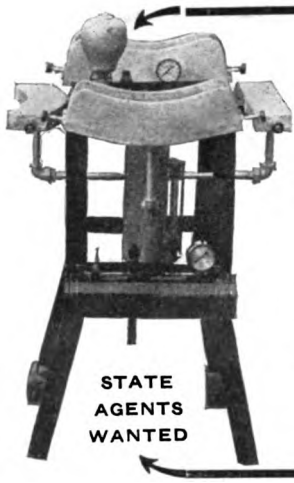
MAIL THIS COUPON TODAY

Gulf Refining Co., 1882 Fricke Annex, Pittsburg, Pa.—Gentlemen: Please mail me FREE as per your special offer the maps as I have checked:

- ☐ Middle West
- ☐ Transcontinental
- ☐ New England
- ☐ New Jersey
- ☐ Pittsburg to Philadelphia
- ☐ Pittsburg-Buffalo
- ☐ Southern States
- ☐ Pennsylvania
- ☐ Texas
- ☐ Allegheny County

Name .....
City ..... State .....

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STATE AGENTS WANTED

For Garages and Independent Plants

Our steam vulcanizer takes care of sectional repairs on all tires ranging in size from 1½" bicycle tires to 37" x 5" Automobile Tires. Capacity 3 casings and four tubes. Complete, with set of tools

ANDERSON STEAM VULCANIZER

and ready to operate. Send for prices and full particulars

Get our proposition on new model.

Anderson Steam Vulcanizer Co.
Worthington, Indiana



YOU NEED THIS

Gardner air pump in your garage. It is simple, durable and dependable. Lubrication by an automatic oil splash system. No oil or grease cups used.

The Gardner "Gee Gee" is completely described in booklet AC-15, as is the complete Gardner line of air pumping machinery. Ask for it today.

The Gardner Governor Company, 144 Williamson St. QUINCY, ILL.

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WARNER AUTO UPHOLSTERY COVERS

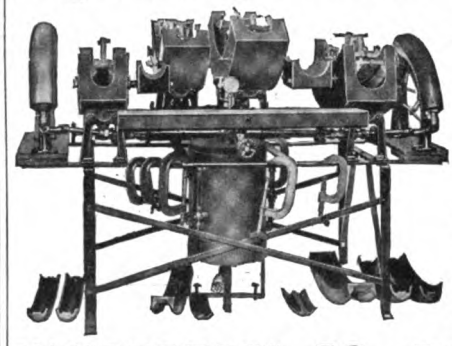
DUST-PROOF FIT LIKE A GLOVE WEAR-PROOF

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THE WARNER AUTO TOP CO.

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Cincinnati, O.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch.

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IF you are a Dealer, Jobber or Garage Owner, read MOTOR WORLD every week. It will help in the better conduct of your business. Send your subscription *NOW*.

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THE UNIVERSAL CAR

The Ford factory turns out a completed car for every car built by all the other manufacturers combined. The big reason is that everywhere, every day, Ford cars are demonstrating their utility and reliability.

The price of the Runabout, $390; Touring Car, $440; Coupelet, $590; Town Car, $640; Sedan, $740.

Ford Motor Company
Detroit, Michigan



Mosler VESUVIUS Plug

PRICE $1.00 AT ALL DEALERS
Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
New schedule of trade prices.

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ZENITH CARBURETOR

KNOWN the world over as the zenith of simplicity and efficiency.

A precision instrument giving permanently, exact carburetion for your car.

Zenith Carburetor Co.
Detroit, Mich.

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"Eklips" SPARK PLUGS

Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

Write for full description, prices and discounts.

THE FULTON CO.
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HORN and FAN Combined
MOTOR DRIVEN



$5

Beartone
Sounds Thru Radiator
for FORD

Oakes
Gets the Roads

No gears, motor, batteries or wires to give trouble. Gives warning signal by merely pushing the button at driver's seat. Increases efficiency of fan and motor. Keeps radiator cool. Never fails to sound. Long life. Is easily interchangeable with fan on any Ford in a minute's time. Most reliable and safest horn. Write for dealer's proposition.

Also Oakes Kranklock 50c. and $1.00

The OAKES COMPANY
Dept. A Indianapolis

STANDARD
for
Chevrolet "Four-Ninety"



Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

Guaranteed country-wide service assures your lasting satisfaction.

$15 DEALERS Write for Proposition

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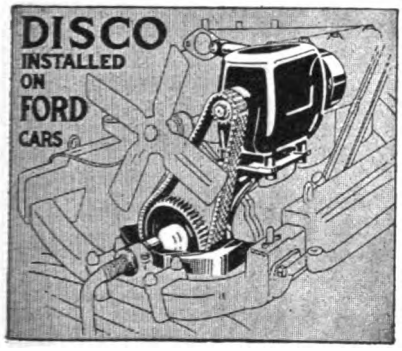


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The "Hold-On" Tread

are as superior in quality to ordinary tires, as the Combination liberal sales policy is superior to the "cut and dried" ordinary selling policy under which the ordinary tires are sold.

Get the exclusive territory proposition.

The Combination Rubber Mfg. Co.
Manufacturers of High-grade Rubber Products for 50 Years
Trade Mark
BLOOMFIELD, NEW JERSEY
Write or Wire for Particulars Regarding Our Proposition



ELECTRIC
STARTING
AND
LIGHTING
SYSTEM
FOR FORD CARS

The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system, simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

$75 Complete

Dealers Write for Agency
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Sharp Warning or-Long, Far Reaching Call

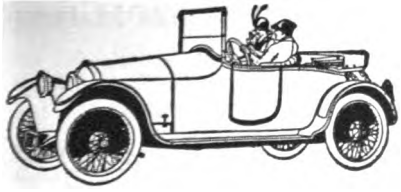


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Model "F" $4 Finished in satin, black and nickel, or all black.

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SCRIPPS-BOOTH

Luxurious light cars which in their first season have found the way into America's and Europe's most refined society. Scripps-Booth stands out as the most attractive motor car in the roadster class. A car of beauty, possessing comfort heretofore unknown in a motor car. Roadster $825 — Coupe $1450 Dealers wanted.



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Savings made please your patrons and pay good substantial profits

PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high-grade welding apparatus for $60.00 (Canada, $75.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

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Saves Gasoline
Increases Power
Gives Greater Speed



This valve is the best selling accessory of the season. Every dealer should get in touch with our proposition for selling the well-advertised

BRUGAN $4
Economy Valve

It automatically admits air to the intake manifold cutting down fuel consumption 15 to 35 per cent. It improves combustion, gives greater power, quicker response, and less cylinder carbon.
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Never—Stuck
Auto Puller
$6.25 Complete Outfit



Pulls your car out of any hole or rut. Hook it to your front axle. You will save the price in one emergency. Can also be used in many other ways. Money back if not satisfactory. Enclose $6.25 for one Never-Stuck Outfit complete. Only one of many values we offer.

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Kansas City Fort Worth Portland, Ore.
Write Nearest Convenient Branch

Inter-State

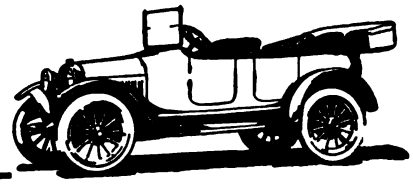
OWNER-PROVED VALUE

Every Inter-State has proved its value definitely and conclusively in the hands of owners.

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Powerful, high speed, long stroke valve-in-head motor. Beautiful streamline body, seating five passengers comfortably. Two unit Remy electric Starting, Lighting and Ignition. Over-size tires, both front and rear. Aluminum running boards. Heavily braced crown fenders. The most accessible medium-priced car on the market.

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DIFFERENTIALS and ACCURATELY CUT METAL GEARS

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NEW PROCESS GEAR CORPORATION
SYRACUSE, N. Y.



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Users Report Records of
8,000
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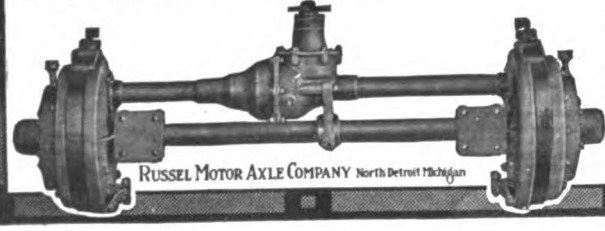
Settle the MILEAGE PROBLEM— Use

Quaker City Rubber Co.
Philadelphia

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Roller Bearings

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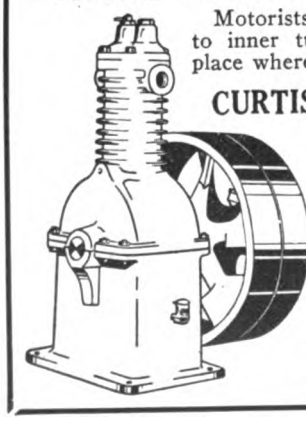
Let us send you the history of the Internal Gear Drive Axle and tell you how the RUSSEL has been a big factor in its success.



"TRADE GETTERS" FOR THE GARAGE

Motorists realize what a great menace oil is to inner tubes and, therefore, look for the place where they can fill their tires with

CURTIS AIR—FREE FROM OIL



Five different sizes of compressor.
125 different combinations of outfits.
In stock at most jobbers.
Price is right.
A result of 25 years' experience in compressor manufacturing.
Send for Bulletin C-5.

CURTIS PNEU. MCHY. CO.
1546 Kienlen Avenue, St. Louis
531-B Hudson Terminal, New York

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A non-flux Solder—no soldering iron required—joint stronger than aluminum. Absolutely guaranteed. Send one dollar for sample bar and convincing literature

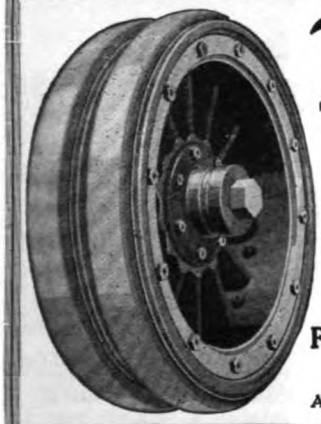
Lehne Aluminum Solder Co.
Stratfield Building Bridgeport, Conn.

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Should be on the engines of those who desire the utmost efficiency and the utmost reliability; also those who desire to be without the annoyance of constant battery attention.

Be Satisfied *Specify Bosch*

BOSCH MAGNETO CO., 224 W. 46th St., New York



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For every road, load and condition of service. Most Miles per Dollar. Write for catalog.

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"America's Largest Exclusive Tire and Rim Makers"
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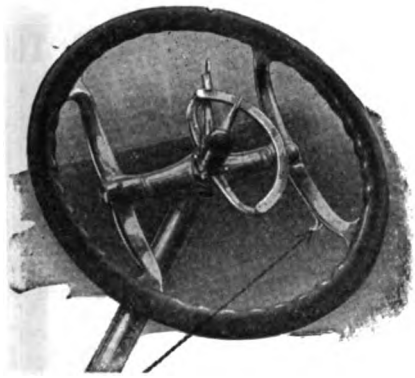
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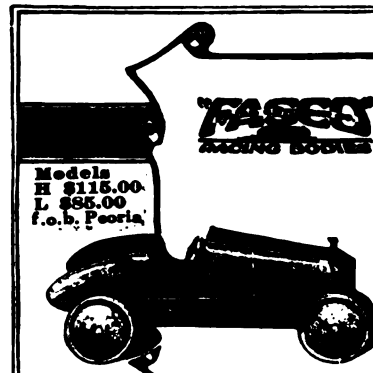
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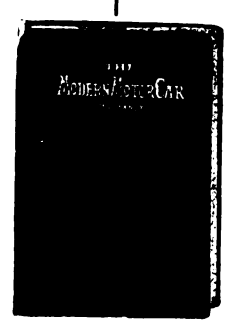


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32x4	14.10	14.85	2.75
33x4	14.65	15.45	2.85
34x4	14.95	15.75	2.90
35x4	15.55	16.50	3.00
36x4	15.80	16.60	3.10
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32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
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All Our Work Guaranteed.

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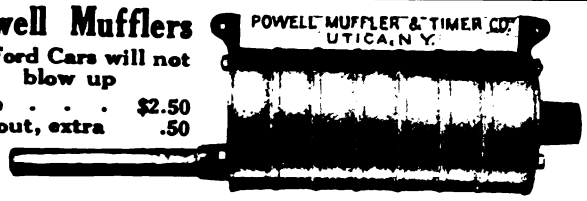
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for Ford Cars will not blow up

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Cut out, extra .50



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Guaranteed for the Life of the Car

STOCKED BY ALL JOBBERS

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It's poor policy to risk repeating the annoyance of a broken or weak spring—and the delay—by saving only a very little in buying or selling a cheaper spring instead of a "NEW ERA *BETTER* SPRING." Don't replace a broken spring with one no better. Wise dealers sell only the best. New Era "BETTER" Springs are the oldest and largest used line for replacement—at same price as from car factories. Made for all cars. GUARANTEED one year against breakage or sagging, graphited between leaves for two years' lubrication. Write for complete lists, discounts—or state requirements and class of business.



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879 Woodward Ave., Detroit, Michiga

1916 Catalogue of

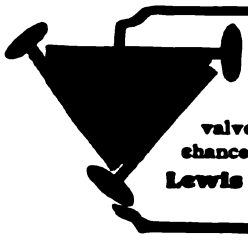
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will be sent upon request to all dealers in Automobiles, Automobile Supplies or Repair Shops or Garages.

Full stock at all times insures service—quality—price. Write at once as prices are advancing.

Chicago Automobile Supply House

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Lewis Electric Welding & Mfg. Co.
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MOTOR WORLD

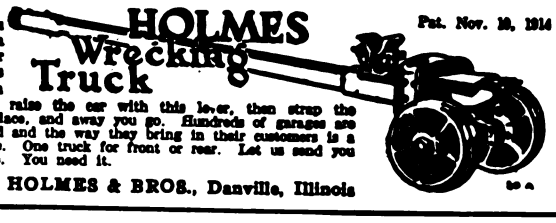
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Motor World Publishing Co,. 231-241 W. 39th St., N. Y.

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When you bring in a wrecked car you need this Truck. In a moment you raise the car with this lever, then strap the Tongue in place, and away you go. Hundreds of garages are now equipped and the way they bring in their customers is a great surprise. One truck for front or rear. Let us send you our literature. You need it.



ROBERT HOLMES & BROS., Danville, Illinois



PERFECTION PEDAL PADS

add to the comfort and the safety of motoring.

Every car owner will buy a set when he sees these live rubber foot cushions—their **reversible** feature doubles their life, and cuts in half their already low cost. We make them for the pedals of all cars.

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Pat'd Dec. 21, 1915

Auto Pedal Pad Co., 798 Seventh Ave., N. Y. City

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The Best-Selling

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—give perfect protection to wire insulation—can be driven over two or more wires without danger—double thickness insulation over staple head protects from leaks, rust and corrosion.

Easily driven.



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Mean Freedom From Spring Repairs



Guaranteed From End to End

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New Spring Book Now Ready

The Harvey Spring Book for 1916 is now ready for distribution. It is the most complete spring book ever issued and will be of great assistance to every Dealer, Garageman and Repairman. MAILED FREE.

THE HARVEY SPRING CO.

848 17th Street, Racine, Wisconsin

THE

ACME



Size 6x16 Inches --- Patent Applied For --- Weight 4 Pounds

Ford Steering Controller

PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

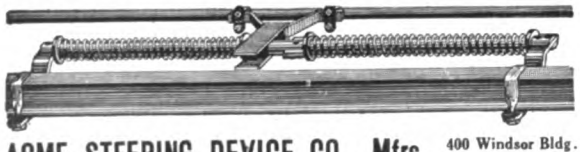
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this, not 1 per cent of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs. 400 Windsor Bldg. Philadelphia, Pa.

Advertisers' Index

A

Acme Steering Device Co. 106
Ahlberg Bearing Co. 105
Ajax Rubber Co. 105
Alliance Rubber Co. 86
Ames Co., F. A. 58-59
Anderson Steam Vulcanizer Co. 92
Arthur Vulcanizing Machine Co. 87
Auto Pedal Pad Co. 105

B

Bales Distributing Co. 56-57
Batavia Tire 91
Benford Mfg. Co. 76
Blake Signal & Mfg. Co. 105
Bosch Magneto Co. 95
Bound Brook Oil-less Bearing Co. 61
Bower Roller Bearing Co. 85
Brown-Lipe-Chapin Co. 96
Brunner Mfg. Co. 87
Brugan Co 94
Burnley Battery & Mfg. Co. 96

C

Cassidy, E. A. 96
Champion Ignition Co. 90
Champion Spark Plug Co. Front Cover
Chicago Auto Supply House 105
Chicago Fuse Co. 95
Chicago Solder Co. 90
Cleveland Paxton Co. 107
Combination Rubber Mfg. Co. 93
Connecticut Tel. & Elec. Co. 96
Corbin-Brown Speedometer Co. 3
Craven Co., E. T. 88
Curtis Pneumatic Mchy. Co. 94

D

Disco Electric Starter Co. 93
Duplex Vitalizer Mfg. Corp. 77

E

Eisemann Magneto Co. 49

F

Fedders Mfg. Co. 60
Firestone Tire & Rubber Co. 95
Fisk Rubber Co. 2
Forbes, Walter J. 47
Ford Motor Co. 92
Fracto Specialty Co. 86
Fried & Stonier Co. 95
Fulton Company 93

G

Gardner Governor Co. 92
Gasket Supply Co. 80
General Electric Co. 89
General Tire & Rubber Co. 84
Gibson-Hollister Mfg. Co. 96
Grossman Co., Emil 71
Gulf Refining Co. 91
Gurney Ball Bearing Co. 68

H

Hartford, E. V., Inc. 1
Harton & Co., Thos. J. 90
Harvey Spring Co. 106
Hess-Bright Mfg. Co. 81
Holmes & Bro., Robt. 105
Hood Tire Co. 75
Hotel Marie Antoinette 89
Houk Mfg. Co. 3rd Cover
Hyatt Roller Bearing Co. 94

I

Inter-State Motor Co. 94

J

Jenkins Vulcan Spring Co. 91
Johnson & Son Co. 67

Digitized by Google

Advertisers' Index

K

Kissel Motor Car Co. 54-55

L

Laird & Lee 96
Leather Tire Goods Co. 62
Lehne Aluminum Solder Co. 95
Lewis Electric Welding Mfg. Co. 105

M

Marathon Tire & Rubber Co. 70
Michigan Auto Trailer Co. 105
Mitchell-Lewis Motor Co. 64
Montgomery Ward Co. 94
Mosler & Co., A. R. 92

N

National Rubber Co. 95
New Departure Mfg. Co. 96
New Era Spring & Specialty Co. 105
New Process Gear Corp. 94
N. J. Carspring & Rubber Co. 63

O

Oakes Co. 93
O-So-Ezy Products Co. 95

P

Pfanstiehl Company 53
Pitter Fan Company 65
Powell Muffler & Timer Co. 105
Prest-O-Lite Co. 93

Q

Quaker City Rubber Co. 94

R

Rayford Co. 82
Reo Motor Car Co. 83
Republic Rubber Co. 72
Ross Automobile Co. 52
Russell Motor Axle Co. 94

S

Scripps-Booth Co. 93
Shaler Co., C. A. 73
Sheldon Axle & Spring Co. 78
Silvex Co. 105
S-J-R Motor Co. 96
Sparks-Withington Co. 93
Spitdorf Electrical Co. 88
Standard Thermometer Co. 93
Stevens & Co. 107
Stewart-Warner Speedometer Corp 2nd Cover
Studebaker Corp. 108
Sundermann Corp. 66
Swinehart Tire & Rubber Co. 50-51

T

Twin-Rim Co. 84

U

United Engine & Mfg. Co. 88
U. S. Light & Heat Corp. ..... Back Cover
U. S. Tire Co. 46

V

Vanderpool Co. 92
Van Sicklen Co. 89

W

Waltham Watch Co. 45
Warm Hand Steering Wheel Corp. 95
Warner Auto Top Co. 92
Weaver Mfg. Co. 79
Willys-Overland Co. 4

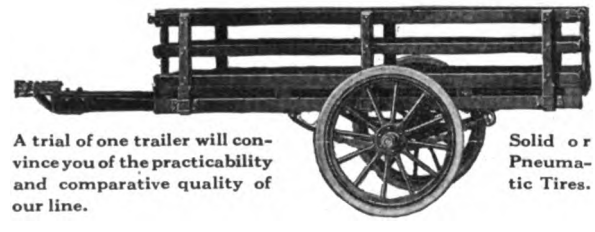
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Zenith Carburetor Co. 92



"Cleveland Trailers"

To meet the demands of all requirements



A trial of one trailer will convince you of the practicability and comparative quality of our line.

Solid or Pneumatic Tires.

Two wheel trailers 14 models 800 to 2000 lb. Cap.
$60 to $140

Four wheel trailers 4 models 1 to 5 ton Cap.
$200 to $1000

Any style bodies, send us your specifications.

Agents and distributors wanted at a liberal discount.

We assign and protect you in allotted territory which is being rapidly closed up.

Write or wire at once for catalogue.

Full information and trial offer.

THE CLEVELAND PAXSON CO.
457 Hippodrome Building Cleveland, Ohio

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Studebaker Opportunities

Another one in Illinois

—a city located about 178 miles from Chicago—a city nationally known for its production of plows, in fact, for all kinds of farm implements from harrows to tractors.

Population totals more than 25,000; leading industries—agricultural implements, carriages, wagons and motor cars. Rolling mills also form an important part of the industrial life, and extensive water power systems give promise of early and profitable business expansion. Such railroads like the Burlington, Rock Island and Illinois Central maintain large terminals in this city.

This is one of the few opportunities for energetic dealers that Studebaker has in the Middle West. Write for all the facts and details.

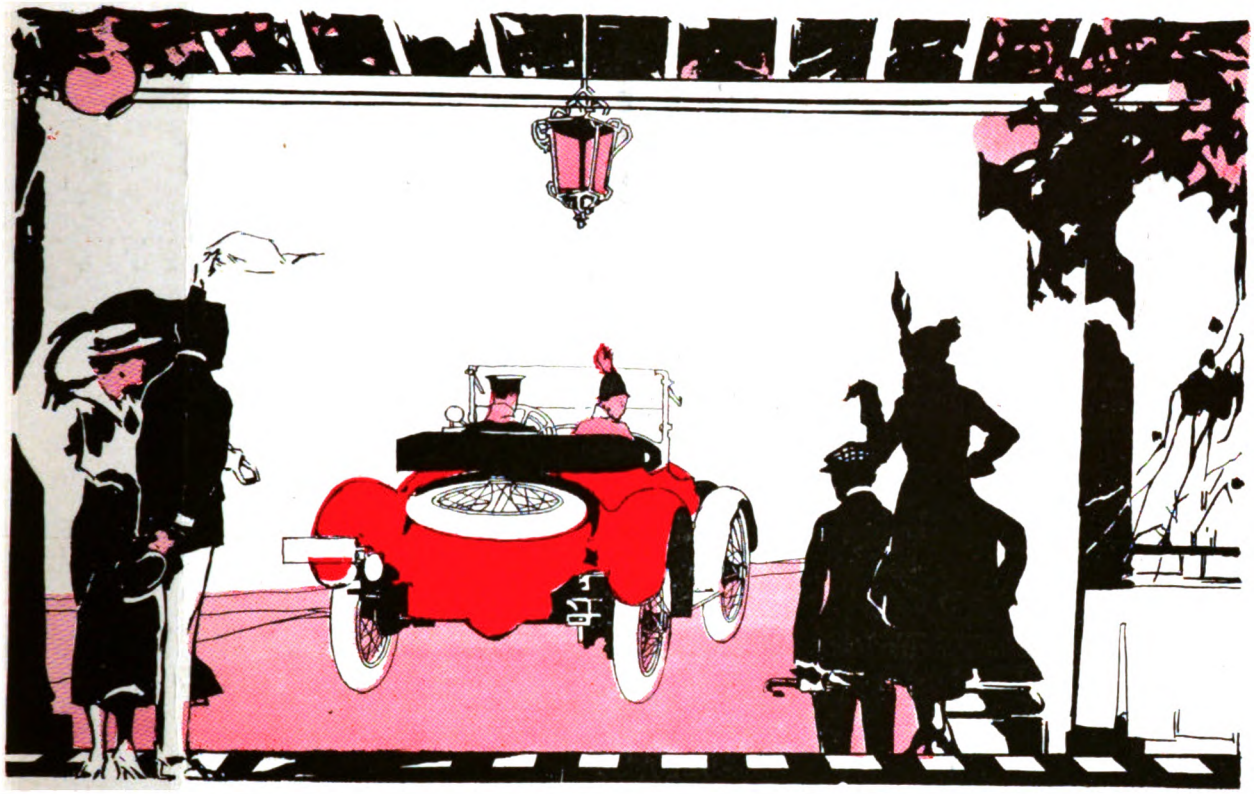


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South Bend, Ind. **Detroit, Mich.** **Walkerville, Ont.**

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HOUK WIRE WHEELS have become a requisite to motorists who appreciate the worth-while value they add to his car.

HOUK

QUICK DETACH

In them is combined a luxury of appearance, an assurance of safety and a degree of comfort which is essential to discriminating purchasers who demand that their cars be equipped in accord with the recognized standards of modern development.

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USL TRADE MARK STARTER BATTERIES

U S LIGHT & HEAT CORPORATION.

FREEDOM
From BATTERY TROUBLES

If you would solve your troublesome battery problems, get a USL and "Be Battery Happy."

Recent impartial tests made in competition with all well known makes of starter batteries, by competent manufacturers' engineers, have proved conclusively that the improved USL *machine-pasted* battery stands up longer and renders more efficient service than any other on the market today.

From the best information we can get, based on estimated outputs of cars, USL batteries will be specified equipment on more motor cars for 1916-1917 than any other. This ought to mean something to you.

Sold under a 15 months guaranteed adjustment plan. Built to fit all cars and all starting and lighting systems. Free inspection. Liberal "trade-in" arrangements. Service stations in all principal cities of United States.

U S Light and Heat Corporation

Niagara Falls, N. Y.

Branches in

Boston Buffalo Cleveland Detroit
Chicago St. Louis Kansas City
San Francisco Washington, D.C.

Service stations in principal centers



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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 3.

New York, July 19, 1916

Ten cents a copy
Two dollars a year

Hudson Super-Six Endures The Supreme Test

The Hudson Super-Six, in many a test, has proved itself the greatest car that's built.

No car has ever matched it in hill-climbing. No other stock car ever went so fast. None ever went so far at top speed. And no motor of its size ever showed such reserve power.

Best Record By 52%

A Hudson Super-Six with stock chassis was driven 1819 miles in 24 hours on the Sheepshead Bay track on May 2nd. The average speed was 75.8 miles per hour.

That car, in a single round of the sun, went the distance from New York to Denver. It went 52 per cent farther than any other stock car had ever gone in that time. One man drove it all the way. No man could do that in a car which was not vibrationless. That man went farther in 24 hours than a man ever traveled before.

50 Miles In One

Some engineers figure that one mile at racing speed equals 50 miles of ordinary driving, in wear and strain on motor.

This car had run 2,000 miles before that test, at average speed of 80 miles per hour. So this 24-hour run made 3,800 miles which the car had been run at top speed—as high as 102 miles per hour.

Yet no part or bearing, when the engine was inspected, showed any appreciable wear.

The Thing You Want

What you want in a car above all else is reliability. And that's what these tests are proving.

It would take ten years of road work, perhaps, to show what we prove in a few days of speed work.

In all our tests we use a stock chassis.

The motor is exactly the same as in every Hudson Super-Six. So every man who buys a Super-Six gets the same super-endurance.

Excels Costly Racing Cars

At Sheepshead Bay speedway, at Chicago, and on other race tracks Hudson Super-Sixes—practically stock—showed greater stamina than the costliest special racing cars.

While great racing motors went to pieces under the terrific strain, the Hudsons ran through grueling contests without a stop.

Their speed was not always equal to winning first prizes, though they always were "in the money" and always were the sensation of the race because of their marvelous staying powers.

A Patented Motor

The Super-Six motor is a Hudson invention, controlled by Hudson patents. The principle which gives its utter smoothness is entirely new. That is why it out-performs any other car that's built.

It develops 76 horsepower from a small, light Six. That is 80 per cent more than old types. You rarely use that power. In ordinary driving you run at half its capacity, so the motor is never strained.

But the owner of a Super-Six knows that he has the power. He knows that his car is a master. He knows that in speed, in hill-climbing, in quick pick-up, no car can do what his does.

He takes pride in those facts. But his chief satisfaction lies in the car's endurance. He knows that his car will last. That another car at half the price might cost more in the long run.

Don't consider a fine car until you know the Super-Six. You would surely face years of regret.

While we are not now in a position to add new dealers with assurance of immediate deliveries, still we solicit correspondence from established dealers who are now making plans for the future

7-Passenger Phaeton, $1475 at Detroit (Seven other styles of open and closed bodies)

Hudson Motor Car Company, Detroit, Mich.

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Why I am a Studebaker dealer!

Seven years ago we commenced selling Studebaker Autos, and during the interim we have had District Managers of all the other popular makes do their best to persuade us to change our line; but our years' of experience have thoroughly convinced us that Studebakers are the best and give the most value (by a large margin) for the money, the greatest amount of pleasure with the least amount of trouble. The longest service with the smallest expense, and last but not least, the Studebaker Corporation of America, is the fairest, best and squarest with their dealers and customers of any Automobile Manufacturing Company on earth, therefore I repeat the reason why we are still Studebaker dealers is obvious.

J. Clayton Backus

Backus Novelty Co.
Smethport, Penna.

AND the reasons, as he states, "are obvious". Any one of them is sufficient to hold the average dealer; but it isn't the "average dealer" that Studebaker seeks to tie up with. It is the above-normal type, who by keeping in close touch with the Sales and Service departments of the Company, and following systems that have proved successful, can build greater immediate and future profits.

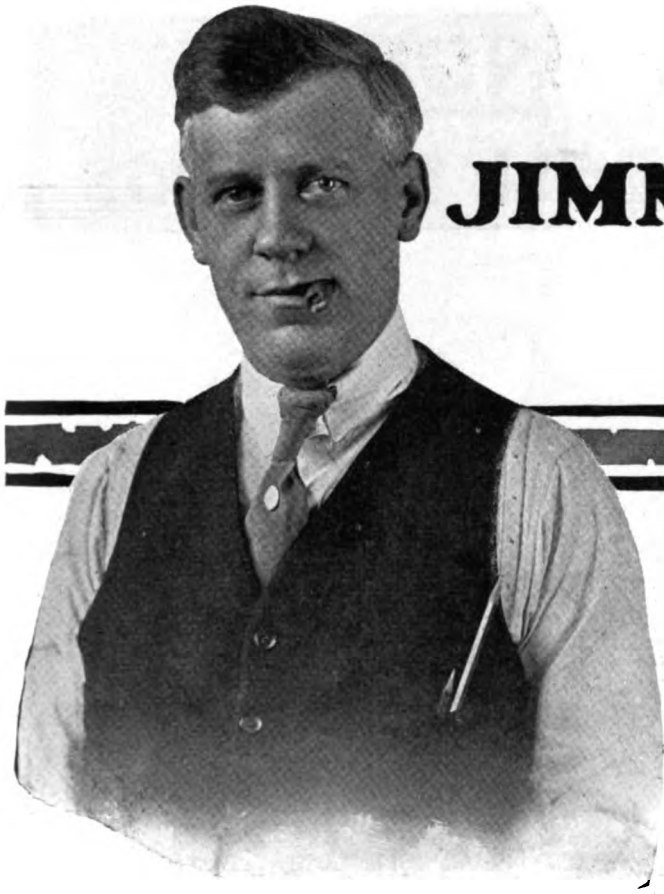
Are you a member of the "above-normal" group? If so, Studebaker has some facts for you to read—if you will write for them.

STUDEBAKER

South Bend, Ind. **Detroit, Mich.** **Walkerville, Ont.**

Address all correspondence to Detroit

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JIMMY TURNER Says —

—"There's no way that I know to build trade on regular articles better'n to show a man a new thing that I know is right. And, believe me

BENFORD
INDESTRUCTIBLE
Battery Testers

are the goods. I'm strong for 'em.

"For instance, a wise driver from Bayside comes to me one day and says: 'I'm stumped—I got a ——— electric outfit and it's all to the good—storage battery and auxiliary ignition with dry cells.

"'Worked all right till last night—the storage battery went out of commission and I tried to work on the dry cells—and they sure *were* dry—nothin' doing. I had to take the old lady to the theatre in New York, and, believe me, I was sore; lost half an hour and my goat getting new cells, and now I'm "off" that system for life.'

"I found out that he never tested his cells, so after explaining to him the use of these BENFORD Battery Testers I sold them to him—one for his storage battery and one for his dry batteries.

"Sure, I made a good profit—but I did something for *him* too, and it's a cinch I'll get more of his business than his local man.

"You see, you don't have to be afraid of these Battery Testers. They're always right; they're handy, and you can't break 'em, and the maker guarantees them for 5 years.

"So, you see, I cash in every time I get a new thing for my trade."

Storage Battery Tester...	$1.50
Dry Battery Tester.....	1.00

DEALERS

Are you getting these extra profits?

Write and ask us for them.



Testing a Storage Battery



Testing a Dry Battery

Benford Manufacturing Co.

Mt. Vernon New York

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

World's Salesmanship Congress.....6-9
Organization is formed in Detroit to make salesmanship a science. Motor trade men among the leaders.

Reilly Attends Salesmanship Congress..... 14

Tractor Demonstrations 40-41
The first of a circuit is staged at Dallas. Motor World is covering these with special stories. Watch for them!

New Cars for 1917—
Buick 10-11
Jordan 15-16
Marion-Handley 35-37
Marmon 12-13
Velie 16

Important Changes Among Dealers.....38-39
Several agencies change hands in New York and a general alteration occurs on several Motor Rows.

Paul Smith, of Chalmers, Dies..... 39
Famous sales executive dashes to death from hotel window after completing big business deal.

C. W. Nash Buys Out Jeffery..... 39
General Motors executive takes over Thomas B. Jeffery business and will continue it. Jefferys to retire. Price, about $10,000,000.

News Pages.....38-44
Factory News..... 43
Association News..... 42
Coming Events..... 44
Those Dealers..... 17
A story that talks about the cartoon on page 5. Look at page 5 and then read the story on page 17.

Brooklyn Dealers Hold Outing.....22-23
Editorial Comment..... 30
Legal Department..... 21
Building Department.....24-25
Repairshop Short-Cuts.....26-27
Accessories and Supplies.....28-29
Query Department..... 31
The Retail News.....32-34
Selling His Service.....18-20
A story of how one garageman puts his case before his owners in a way they understand and makes them like his service.

Advertisers' Index on pages 122-123

"NORMA"
(PATENTED)
BALL BEARINGS

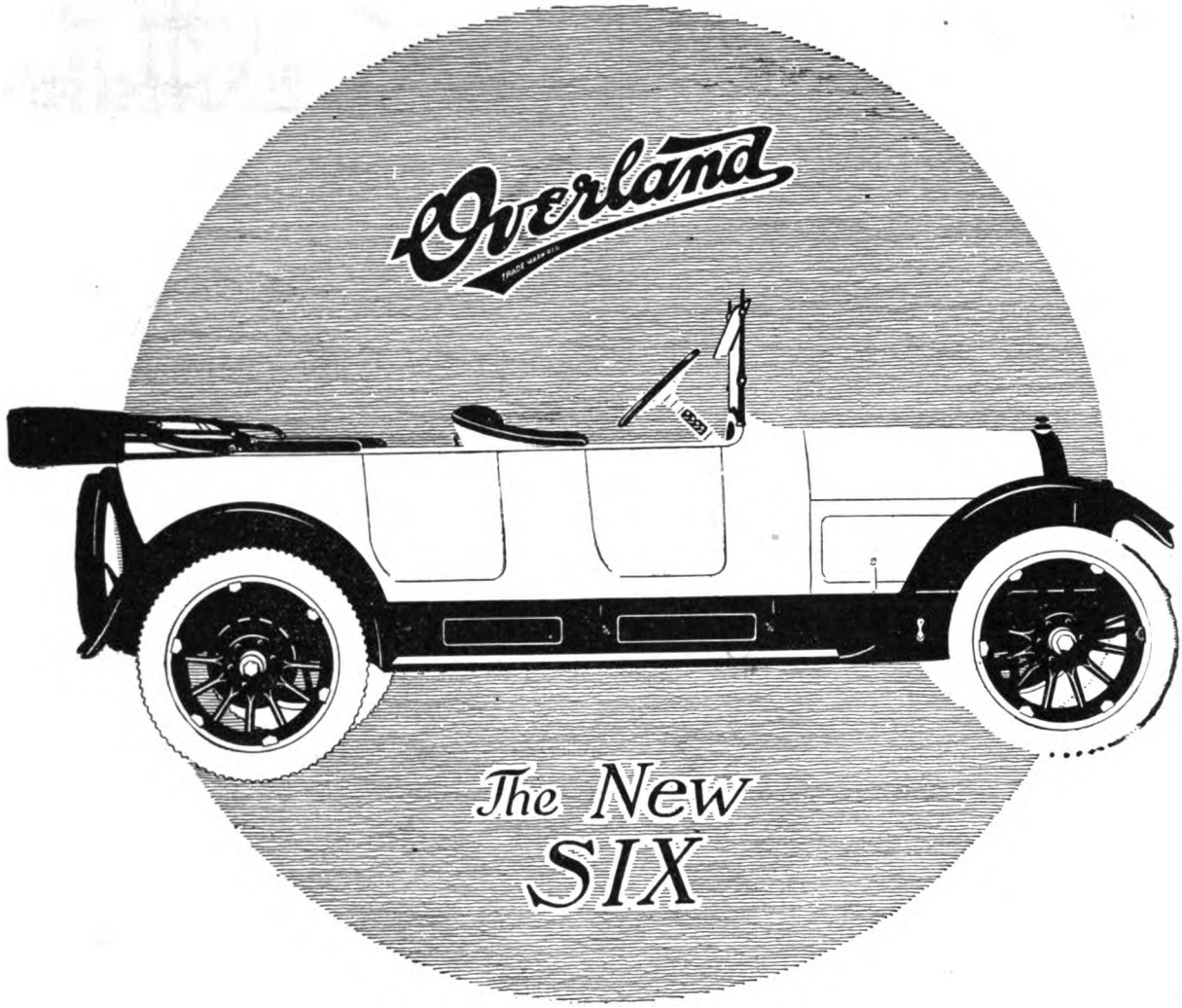


The almost universal use of "NORMA" Bearings in ignition apparatus, lighting generators and starting motors having a nation-wide reputation for dependable service, inevitably suggests that "NORMA" Bearings are an important factor in maintaining that service.

Are Your Electrical Accessories "NORMA"-Equipped?

THE NORMA COMPANY OF AMERICA
1790 BROADWAY —— NEW YORK
BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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Here is the Six of Sixes

No less a pace maker than the new Overland Four is the newest Overland Six.

It is the Six of Sixes! A snappy five passenger long stroke 40 horsepower model—easy to handle, light, economical, mighty comfortable, having all the advantages of higher priced Sixes, yet it comes *absolutely* complete at a lower price than any other Six of its size.

Its smart body design is long and low—having lines of artistic simplicity.

And the motor! This will warm the heart of every six cylinder enthusiast in the country.

The New Six
$925
f. o. b. Toledo
Model 85-6

35-40 horsepower en bloc motor
116-inch wheelbase
32 x 4 inch tires, non-skid rear
Cantilever rear springs
Auto-Lite starting and lighting
Vacuum tank fuel feed
Gasoline tank in rear with gauge
Electric control switches on steering column.

You've heard all about fast getaways—smoothness—crawling and climbing on high. This Six does all that and then some!

The tires are four inch. It has the complete Auto-Lite electric starting and lighting equipment with control switches on the steering column.

The wheelbase is 116 inches. It has cantilever rear springs and even-flow vacuum system with the gas tank in rear.

Some Six! Yet the price is lower than any other Six of its size.

The Willys-Overland Company, Toledo, Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII New York, U. S. A., Wednesday, July 19, 1916 No. 3

Water 'em All!



(*Read the story on page* 17)

Sales and Business Aid for the men who sell the distributer's cars will work wonders in adding to the distributer's profits.

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WORLD'S SALESMANSHIP CONGRESS ORGANIZES FOR

"Better Salesmanship!"

World's Salesmanship Congress Takes Form in Detroit With the Backing of World's Ablest Sales Executives and Business Men

WHAT THE CONGRESS IS

IT is an organization representing all trades and businesses and its object is the Betterment of business through the Betterment of Salesmanship. The idea grew out of the Detroit Salesmanship Club. The Congress plans to embrace the whole world and to meet annually. It will work for sales instruction in schools and colleges and for more scientific effort by sales organizations.

WHAT THE CONGRESS DID

IT organized permanently, went into a detailed discussion of salesmanship and intensive methods, went on record in favor of sales courses in schools and colleges, advocated better training of sales managers that they may the better train their salesmen and furnish the start in reducing to a scientific classification the world of scrambled data that exists on the subject of selling.

DETROIT, July 13—The World's Salesmanship Congress closed its first session to-day.

The work of reducing selling to a science instead of permitting this world-old profession to continue in a scrambled condition has been started.

So far as the big work itself is concerned not a great deal has been done, for selling, as a science, is to-day much unclassified as knowledge. But more was done this week than ever was done before in the history of the world, for a start toward classifying selling data was never before made with such success.

Heretofore there have been facts and opinions regarding salesmanship. And many of the opinions have differed. This week clouds of these opinions filled the air, theories were aired, the conglomeration of data was stirred into motion and things now are in position for reduction to science.

This congress, which is now a permanent organization, is made up of executives from many trades. Since the movement had its inception in Detroit, and since the motor car men have developed several prominent sales executives, it is but natural that Detroiters should be among the leaders; but the leadership also numbers business men from coast to coast.

The resolution adopted which gives promise of the most effective and immediate results was one recommending the establishment of sales courses in schools and colleges, and the congress pledges itself to support that movement.

It also made "Service" its motto, and is endeavoring to surround the word with a fitting atmosphere and strip from it what President Wilson in his address to the congress termed "sickly sentimentality."



PRESIDENT NORVAL A. HAWKINS

"Let my action and my work be my expression of what I think of what you have done for me."—From the acceptance address of President-elect Hawkins.

The man chosen to head the organization is Norval A. Hawkins, general sales manager of the Ford Motor Co. The vice-president is Bartley J. Doyle, president of the Keystone Publishing Co., Philadelphia. The secretary-manager is to be chosen by the executive board, and D. M. Barrett, chairman of the temporary organization, originator of the idea and editor of a magazine devoted to selling, may be chosen. The association plans to publish a magazine or house organ.

The congress opened Sunday, July 9, with addresses in eighteen Detroit churches on "The Ethics of Salesmanship" by the nation's leading executives. Monday morning, July 10, the formal opening in Arcadia Hall was addressed by President Woodrow Wilson; also by Secretary of Commerce William C. Redfield and Arthur Brisbane, editor of the New York Journal.

President Wilson, as told last week in Motor World, touched upon national issues and complimented the congress on its ideals. Secretary Redfield spoke on the foreign trade possibilities of the United States, and said that manufacturers must study foreign fields and adopt methods to suit those fields.

Monday afternoon there were further addresses on sales topics; Tuesday morning and afternoon general sales sessions were held in the Board of Commerce building, which organization assisted in staging the convention.

Wednesday morning and afternoon departmental sessions were held in the hotels Statler and Pontchartrain, and that evening the visitors went for a boat ride on Lake St. Claire.

Thursday morning (to-day) the final session and the completion of the organization work was effected in the Majestic Theater, and this afternoon the convention held a salesmanship circus at Bois Blanc, going by special boat.

The selection of the next convention

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city was left to the executive committee, but an expression of sentiment by the convention seemed to favor Philadelphia, which was well represented by official spokesmen. The date also is yet to be fixed, but doubtless will be in midsummer.

Nearly 3000 salesmen and executives registered at the congress headquarters, paying $3 each and securing credentials admitting them to all the sessions.

At the final session this morning solicitation was made for sustaining memberships of $100 each for 5 years and the total subscribed was approximately $36,000. It is planned to raise $100,000 for the promotion of the ideals of the congress.

The possibilities of the science of salesmanship are wonderful, as developed during the sessions. Various speakers touched upon special subjects and in their discussions disclosed leads to avenues of investigation that may enable salesmanship to be rendered more efficient by many fold.

Hugh Chalmers electrified the congress by a rapid-fire address in which he told how he selects men. He has laid down a set of ten points which govern his selection, and this was enthusiastically received by the hundreds who have selected by the hit-or-miss method.

Warren Hilton, president of the Society of Applied Psychology, San Francisco, made valuable contributions to salesmanship when he told how the science of the mind may be applied to the work of selecting men and making sales. Psychology has been regarded by many as a vague, valueless and mysterious matter.

Brown Landone, New York and Paris, a social investigator, told how even the tones of voice are effective in selling and how a study of the "other man's" tones may furnish a guide as to how to handle him. This was a phase of salesmanship new to most of those at the congress, and indicated the possible ramifications of the new science.

Norval A. Hawkins at the automobile sessions told how, by intensive methods, the Ford retail sales in the city of Detroit have been enormously increased, and he explained specifically how it was done.

At the same session Lee Anderson of the Hupmobile expounded his plan of "selling the obvious," which is selling to the prospect the things he can see and understand, and going light on the hidden internals which he cannot see.

L. D. Robertson, Detroit branch manager of the Packard, contributed with the story of how a well-worked-out plan had boosted the sale of Packard trucks in Detroit, and he also went into definite details.

F. H. Dodge of the Burroughs Adding Machine Co. interested the congress with the story of how quota plans have made the Burroughs business the success that it is to-day. And, as in many other talks, there was concrete data that could be used by others in their merchandising.

The addresses all the way through the sessions were equally valuable. The assignment of specific topics to the speakers caused to be brought forth a great array of facts, ideas and opinions, and disclosed the abundance of material that is available when the work of systematizing and classifying the knowledge of the profession really begins.

For their work before and during the convention awards of merit were given. These consisted of small diamond-set insignias for the lapel. The winners were: Woodrow Wilson, Norval A. Hawkins, Hugh Chalmers, Harry M. Jewett, Lee Anderson, Harry W. Ford, D. M. Barrett, Joseph Mack, W. C. Standish and Walter C. Cole, the latter secretary of the Detroit Board of Commerce.



D. M. BARRETT

The man who dreamed of the Congress and saw his dream come true. He probably will be its secretary-manager

Executive Board

President, Norval A. Hawkins, general sales manager, Ford Motor Co., Detroit.

Vice-president, Bartley J. Doyle, president, Keystone Publishing Co., Philadelphia.

Secretary-manager, to be selected by board.

John Wanamaker, New York and Philadelphia.

John H. Patterson, president, National Cash Register Co., Dayton, Ohio.

Edward A. Woods, president, National Association of Life Underwriters, Pittsburgh.

Hugh Chalmers, president, Chalmers Motor Co., Detroit.

B. P. Neff, secretary, F. A. Patrick Co., Duluth.

Harry W. Ford, president, Saxon Motor Co., Detroit.

Harry M. Jewett, president, Paige-Detroit Motor Car Co., Detroit.

Joseph Mack, president, Joseph Mack Printing House, Detroit.

One Man in One Day Sold 23 Fords

Norval A. Hawkins Tells How the Application of Scientific Methods Brought Phenomenal Sales

ONE of the most instructive and definite stories of sales success achieved through intensive salesmanship was contained in the address of General Sales Manager Norval A. Hawkins of the Ford Motor Co. at the motor car men's session in the Hotel Ponchartrain Wednesday morning of the World's Salesmanship Congress. Hawkins told how the city of Detroit was combed by a squad of salesmen, and his story explained the mystery from that much-rumored house-to-house sales method of the Ford company. He said:

"Ford Efficiency Clubs have been established in eighty-six Ford branches. We maintain that every man in the organization is a salesman. To date, little educational work has really been done. An approach to the dead-line of selling prompted us to see if salesmen could be taught to sell in units of one.

"First, we got a map of Detroit, 8 x 12 ft., and hung it on the wall. We took 2280 cards from our prospect file, sorted them by streets and put white tacks on the streets to represent the locations of the cards. We had twelve or thirteen salesmen and gave an individual map to each man, with instructions to tack his own map. One salesman had 400 prospects, scattered between Delray and Grosse Pointe, and spent two-thirds of his time traveling.

"We found that the prospect list of the different salesmen overlapped each other. We divided the city into districts and allotted a district to a salesman the same as we allot a county to a dealer. We made the districts by wards and precincts and worked upon a basis of voting population. The first district had 874 voters.

"We had forty-two districts and had only thirteen salesmen. We then picked a number of young men until we had forty-two, and graded them by what they had done the previous year. The best man had the first choice of districts, and so on. The salesman chose the district in which his own tacks were most numerous, but this left many tacks in other districts. He was given seven days to clean up outside his district, allowing one call to each prospect. Any that he failed to clean up went to the district in which they were located. On the strength of this 'last call' appeal, one

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man got eleven sales the first day, nine the second and ten the third. One man got twenty-three in one day.

"We then found it was difficult to direct so large a group of men, so we divided them into groups of fourteen and selected three men as retail managers, giving a group to each retail manager. We then made out a new prospect card. This allowed for three calls on each prospect. The line after the third call is a dead-line and is in red ink. There are spaces for further calls, but if the record runs down to the dead-line with no sale, the card is for the attention of the retail sales manager, who interviews the salesman regarding the prospect. The card tells whom the salesman saw and requires specific information. We found that many salesmen were noting down future calls on the prospect in a haphazard manner, setting down the fifth, tenth, fifteenth, twentieth or twenty-fifth of the month. The 'out' column on this card is for calls when the prospect is not in, but we planned to make our calls by previous arrangement at a certain hour, when the prospect would be in.

"Why Do You Call on Prospects?"

"Why does a salesman go to a prospect? It is to save the prospect's time; otherwise the prospect could just as well go to the salesroom to see the car. By our new method we reduce the number of calls per sale from twelve to five in four months' time. We believe it is possible to reduce it to three calls in many cases. What do you suppose this reduction from twelve to five will save us in the cost of our car next year?

"As to making future engagements with the prospect, I asked a salesman if he had a diary. If not, I told him to get one. Supposing I call on a prospect. He says, 'See me next Tuesday.' I say, 'What time?' He says, 'Nine o'clock.' I tell him I have an engagement at this hour and ask him if 10 o'clock will not do. This arranges a definite appointment between us.

"As to pulling the order blank on a prospect, I told some of the salesmen that if they were unable to judge by any other rule, to talk 5 min. and then pull the order blank, no matter where they happened to be in the conversation. Some of the salesmen had been starting their interview with the history of Henry Ford and how he pays $5 a day, whereas that story and all that goes with it is told to the prospect when the salesman presents his card. If the prospect asks how great a man Chalmers or Ford is, tell him. If not, tell him what the car can do for him. All of our salaries are based on 3 per cent. Why then, spend time entertaining people when we can made more money closing them?

"If a man in closing asks when he can get a car, ask him when he wants it; and when he specifies the date, make him think that you are going to some little trouble to get it for him. Don't tell him when he can have it until he tells you when he wants it. Keep it on him, don't let him get it on you.

"If a man has called three times and hasn't closed, we assume that the prospect wants a new face and a new conversation, and we send a new man. I think it is a crime to let one man control any group of prospects. They belong to the Ford Motor Co.

"Under the new plan, our men go out with a definite task, so many cards, so many calls, and then come back.

"If the prospect has a used car to sell, we refer the sale to one of five garages in Detroit with whom we made arrangements to sell Fords. These garages trade, we don't.

"One prospect made an excuse that before he could buy he would have to arrange for the garaging of the car. We found that of our forty-two salesmen, not one of them knew of a garage to which a prospect could be referred. Our office got garage information, and now when a prospect makes this excuse the salesman can at once tell him the nearest garage and its rates.

That House-to-House Plan

"In case the white tacks on a map begin to run ahead of the red tacks, which are sales, that analyzes the salesman as a prospect getter, but not a closer. We then put a salesman in to analyze the territory and assign the salesman to canvass work. This canvass work is an original plan with us. We sent men out to ring every door-bell in town.

"To begin with, no one could plan a proper approach, but we finally figured that the only approach could be one based on service, so when the man rang the door-bell he told the lady or man of the house that he was investigating Ford service to make sure the cars were operating with satisfaction, and that because there are so many Ford owners, the only way to make sure to see them all was to call on everybody in town. This, of course, made an impression upon the person called upon and this was followed by other questions. We also sent a catalog and other literature. On the back of the prospect cards is the owner's record, and it requires that the salesman who sold the car must call on the owner every 7 days for a month, in order to make sure that the car is giving satisfaction. We found that before we adopted the new plan there was collusion between the service mechanics and the salesmen, and this new method eliminated it.

Require Daily Report

"We also adopted a salesman's daily report, which is mailed to the home office every day and which gives us an accurate record of what every one of our men is doing. We found that before the new plan was adopted, a man might call on twenty prospects and actually see only three. We have found that the average salesman will get more business out of from three to five calls a day than from ten or twelve calls a day. The value of this plan to the men themselves is indicated by the fact that last year we had men who earned $11,000, $8,000, $7,900, $5,200 and $4,800.

"After we adopted this plan in Detroit, the Detroit branch made a noteworthy gain as compared with our other branches. The result was achieved through close, intelligent direction of the individual man."

"Sell What the Man Can See!"

Lee Anderson Gives to Congress of Salesmen a Common Sense Easy Way to Sell

"SELL the obvious" is the sales creed of Lee Anderson, commercial manager of the Hupp Motor Car Co., as explained in an extemporaneous talk before the motor car men's departmental session at the Hotel Pontchartrain Wednesday morning of last week at the World's Salesmanship Congress in Detroit. Anderson's advice constitutes one of the needs of selling. It furnishes part of the science that salesmanship is to become when the work of the congress becomes a greater reality. He said:

"There is no line where men have used such mental alertness as in the selling of motor cars. Our dream is a steady production and sales curve, but the dream probably never will come true, because cars are essentially a seasonable proposition.

"Selling cars calls for unusual ingenuity, for a car is the second highest priced article bought in a lifetime by the average man. The highest priced is his home.

"In connection with car selling I believe the best word of advice I can offer is to 'sell the obvious.' A car is, after all, a piece of machinery, and it requires some technical knowledge to understand it. Hugh Chalmers said the other day in his address that if I ask you how much eleven times nine is you can tell me, but that you must know the whole multiplication table in order to tell me. A car salesman must have technical knowledge, but I protest against its insistent use.

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"Many salesmen try to make it hard for themselves. Cars can never be sold by mail. The prospect must first see the car and ride in it in order to be convinced, and this usually requires a hard and strenuous verbal demonstration. Even then some prospects are never convinced.

"Where is the logical place to begin a verbal demonstration or sales talk? The place to begin, I believe, is with what the prospect can see and understand. I have heard some salesmen start with an elaborate description of the internals of the car, which are hidden from the prospect. I have seen the prospect touch the paint and open the doors at the same time that the salesman was telling him about the clutch, which he could not see and was not interested in at the moment. There are three reasons why this is wrong.

Get Point of Contact

"The first reason is that it is the salesman's duty to get the prospect's point of contact, and the easiest way is to find what pleases him most. You should sell him the thing he wants in the way he wants to buy it, or rather the thing you have to sell in the way he wants to buy it. We are surprised if the prospect talks his own natural language. It is an error for us to row against the current when to float is quicker.

"All people buy on what they see first. You see a girl and you like her looks, and on the strength of that desire her acquaintance. How often do you ask about the material and construction of the necktie you buy? How many of you know the material in your clothes, or, if you know it, how many of you know what the padding is? Our first inclination is to buy on sight. Sight is the first sense we use. Why not, then, sell first the thing a man can see?

Three Candy Ads

"I recently read three candy ads. Nothing was said of quality or construction. All of them were about a new and attractive style of package. Why was this, It was because the public takes for granted that certain large producers of candy make good candy and the selling is therefore a matter of the attractive package. Isn't the same thing true of cars? Therefore the package is a large factor. The prospect cannot see the valves, r.p.m. or vanadium steel springs, but he can see the lines and the paint and the upholstery, he can sit in the seats and can see the simplicity of control. I think it is basic to start with the things he can see and understand, and if he wants technical information he will ask for it. Every prospect takes it for granted that the better known makes of cars will run. and, knowing that, he is not interested so much in what makes them run as he is in those things that appeal to his sight.

"Every man resents a thing he cannot understand. How many of you know what the fourth dimension is, or how many of you can define the coefficient of a tangent? I could talk 15 min. on the fourth dimension and you would go out and say I was a fool. If I asked you if you understood it, many of you would say Yes, because you would not want to admit your lack of knowledge.

"Don't talk of the things a man does not understand. Think of the things we lie about. If I asked you if you know John Jones of Des Moines, or if you have read a certain book or seen a certain play, you are likely to lie and say Yes, or else dodge the question. If we lie about such small things, why won't we lie about the big things we don't understand?

"A salesman says an annular bearing is faced by a centrifugally grooved baffle plate. If you employ an electrical engineer to wire your house, do you ask him about the insulation on the wires, and about how the lamps are made? A car ought to be sold on the basis that it contains a certain potential amount of travel. A car is not alone a machine, it is style carriage, and you must sell the style element, but you should sell the style element first and reserve your fund of technical knowledge for later use.

"The abstract idea of a car is hard to sell. Everybody wants a car, and is sold on the abstract idea. Your task is to convince the prospect that he wants YOUR car. Many salesmen start wrong. If the name of the prospect is turned in by a friend, didn't the friend say the prospect was interested in buying a car? Why, then, start the sales talk on the abstract idea of a car? Salesmen who sell the largest quota sell the qualities of the car as it appeals to the prospect and then sell what the car will do.

"The last thing is to sell the prospect the technical side. To-day the greater number of prospects have some experience with cars, but they understand only the obvious technical things. If you think people know a lot about the technical side of the car, ask them a few technical questions and you will see how little they really understand. Yet, they believe they possess technical information."

SONG OF THE CONGRESS

"IT CAN BE DONE"

Somebody said that "it couldn't be done"—
But he, with a chuckle, replied:—
That "maybe it couldn't," but he would be one
Who wouldn't say so 'till he tried.
So he buckled right in, with a bit of a grin
On his face—if he worried he hit it;
He started to sing, as he tackled the thing,
That couldn't be done—and he did it!

Somebody scoffed "Oh, you'll never do that,
At least no one ever has done it;
But he took off his coat and he took off his hat,
And the first thing we knew he'd begun it.
With a lift of his chin, and a bit of a grin,
Without any doubting or "quit it,"
He started to sing, as he tackled the thing
That couldn't be done—and he did it!

There are thousands to tell you "it cannot be done,"
There are thousands to prophesy failure,
There are thousands to point out one by one
The dangers that wait to assail you.
But you just buckle in, with a bit of a grin,
Then take off your coat and go to it—
Just start in to sing as you tackle the thing
That couldn't be done, and you'll DO it!

Seek Cheaper Quarters for Repairshops

OMAHA, July 15—A search for less expensive quarters for repairshops, giving over the downtown space to salesrooms and display rooms, is a new feature in the progress of automobile business here. In this respect, the Chalmers distributer has taken the initiative, and its example is likely to be followed by other firms. Lease charges along automobile row have naturally advanced tremendously with the growth of business during the past few years, and it has become a much discussed question if the repair department business warranted the paying of such high rentals as are justly asked for space along this principal street of the city. On the other hand, locations practically just as accessible, and away from the high rent district, are available for the repairshop business, and it is more than likely that this condition will be taken advantage of by many dealers and distributers very soon. North Sixteenth Street and Sherman Avenue are being given the bulk of consideration at present, and the Chalmers people have already located there. Other firms are expected to follow soon, and the city will soon see, it is believed, a separate section for sales and repairs.

Says Trucks Keep 'Em Awake

COLUMBUS, July 17—To operate a truck through the streets of Columbus loaded above 3 tons with material that will admit of separation, is a misdemeanor and punishable by fine of from $5 to $50 and imprisonment of from 5 to 20 days.

This regulation was found in an old city ordinance, codified in 1896, which has not been repealed or declared invalid, according to City Solicitor Scarlett, who forwarded the information to Safety Director Barry as a means whereby trucks may be stopped from operating through the night in the vicinity of Bryden Road and East Broad Street.

It is said that the gravel trucks carry as high as 10 tons to a load. Scarlett says a provision will be made in the new traffic ordinance to put a stop to night traffic that prevents residents from sleeping.

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Buick Four for $665 Is Roomy Five-passenger

Runabout for $650—Buick Design Followed Throughout—Thirty-five H. P.—106-in. Wheelbase—Big Six Dropped

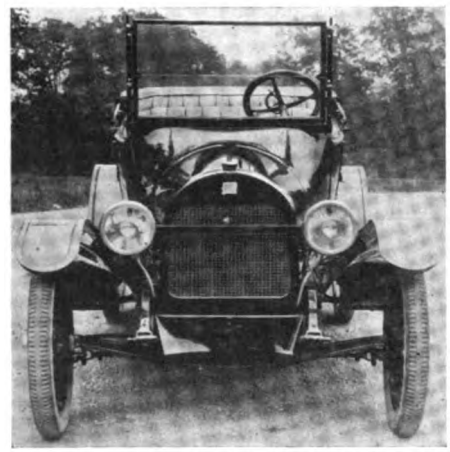
AFTER giving up entirely for a time the manufacture of four-cylinder cars, the Buick Motor Co. is again to put them out, in addition to continuing without change the production of the little six-cylinder model.

The new four, which, needless to say, is to be made in large numbers, follows characteristic Buick design throughout, with perhaps more alteration in the motor than elsewhere, although that unit is a valve-in-head type, as are other power plants of this make. It will sell at $665 as a touring car under the model designation of D-35, and as a roadster it will be priced at $650 and known as model D-34. In its general lines, especially the radiator, the new car is typically Buick. It has a wheelbase of 106 in. and there is plenty of room for five passengers.

Thirty-five brake horsepower is claimed for the motor, which has a bore of 3⅜ in. and a stroke of 4¾ in., giving a displacement of 170 cu. in. and an S. A. E. rating of 18.2 hp. These cylinder dimensions are not a great deal different than those of the little six, which has a bore of 3¼ in. and a stroke of 4½ in.

Other specifications of interest are the pump cooling; Marvel carbureter in conjunction with rear tank and Stewart vacuum feed, Delco starting, lighting and ignition; cone clutch; three-speed gearset in unit with the engine; driveshaft inclosed within a torsion tube; three-quarter floating rear axle; semi-elliptic springs both front and rear, and 31 x 4 non-skid tires all around.

Although the engine is an overhead valve design, it is probably the one part that is most at variance with previous construction, in that the cylinder head is detachable as a unit with the valves. It will be remembered that previous Buick construction has been to have the heads integral with the body of the cylinders, and to use valve cages, which, when removed, brought out each valve individually. The new design makes it possible to get at the valves when the head is taken off, and at the same time gives a free opening into the cylinders and pistons. The valve springs and rockers are not inclosed, but are noiseless, due to the lubrication provisions and the interposing of a felt pad at the ball end of the push rod, as in previous designs.



Front of new four-cylinder Buick

THE BUICK AT A GLANCE

Price—	Four	Six
Touring	$665	$1,020
Roadster	650	985
Color	Dark blue	
Make of motor	Own	
Number of cylinders	4	6
Shape	Overhead valves	
How cast	Block	
Bore	3⅜	3¼
Stroke	4¾	4½
S. A. E. horsepower	18.2	
Magneto	Delco	
Carbureter	Marvel	
Engine starter	Delco	
Lighting system	Delco	
Clutch	Cone	
Gearset	Three-speed	
Wheelbase	106	115
Tires	31 x 4*	34 x 4
Wheels	Wood	
Make of axle	Own	
Type rear axle	¾ floating	floating

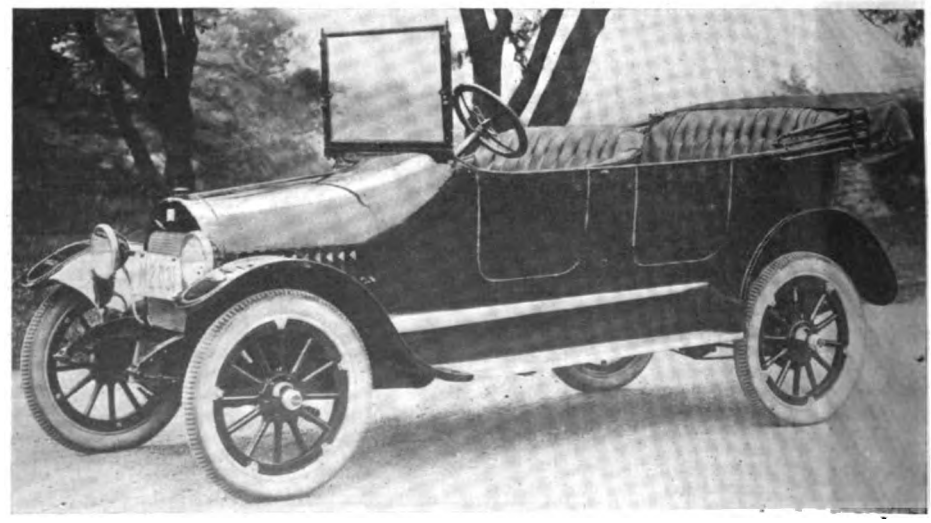
*Non-skid.

The rocker shafts supports are bolted to the head casting, and this also carries the water outlet connection.

There are three main crankshaft bearings and an equal number carrying the crankshaft, both of which parts are of sturdy section so as to reduce the vibration and make a smooth-running engine. Valves are quite large—1½ in. diameter—and the gas passages are as direct as possible, both features being power-giving factors. Conventional connecting-rods of I-beam section, and pistons carrying three rings each are fitted, the wristpins being pinned to the pistons so that the upper rod end has a bearing on the wristpin.

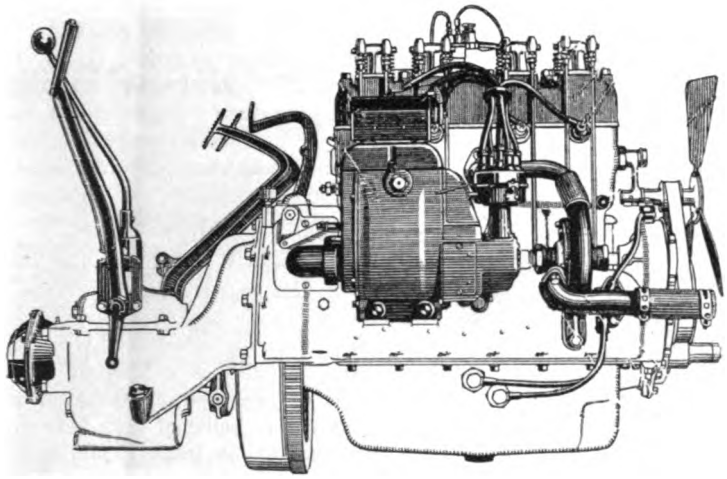
Likewise, care has been expended on the design of the lubrication arrangements. Oil is drawn from the pressed-steel under part of the motor by a cam-operated plunger pump, delivered through a supply pipe to each of the troughs under the connecting-rods and also through a special lead to the timing gears at the front. It is then splashed in the usual way to the various bearing surfaces by the dipper on the end of the rod. The troughs are curved so as to follow the rod end for a considerable distance beyond its dead-center position on either side, taking care of any difference in level between one side of the car and the other. On top of each connecting-rods upper end there is a hole drilled to catch some of the splashed lubricant and lead it to the bearing, and the tappets are spirally grooved so that they carry oil onto the entire surface of the chambers in which they work, making for quiet operation. On the left of the crankcase there is a breather, which is internally baffled so that any spray from the crankcase will not get out to collect on the outside of the engine, and there is also a float gage connecting with an indicator hand that plays over a dial mounted on the left side of the crankcase to inform the driver how much oil he has left.

Buick fits a leather-faced cone clutch to this car which is similar in design to that employed in other models. The cone



The new four is typically Buick externally as well as internally

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Right side of motor showing high and accessible mounting of electrical equipment

itself is a pressing, and there are three springs placed at equal distances apart to hold the unit in engagement. There are also small springs inserted at intervals under the leather to force it out and produce a soft action. The clutch assembly includes two ball thrust bearings, the forward one taking the thrust from the engagement springs and the rear providing for the thrust occasioned by disengagement of the cone. The shaft on which the cone slides has six splines, and each of the engagement springs is provided with an adjusting nut which makes it a simple matter to give the proper tension, especially since the clutch can be reached below the bell housing without the removal of any parts.

Chrome-nickel steel gears are used in the gearset, these having stubby teeth so as to resist any suddenly imposed shocks. The bearing equipment for this assembly consists of a roller bearing for the clutch gear, double-row ball bearing for the square shaft, and plain bearings with bronze bushings for the countershaft.

The drive is taken through a single universal joint just back of the gearset, this being of large proportions and fully enclosed. The propeller shaft is also completely housed within a torsion tube that attaches to a large ball-and-socket joint on the rear of the gearcase, and terminates at its rear end in a flanged member that bolts to the front of the differential housing. Thus the torque is taken through the shaft housing and the ball joint at the front end, while the drive is through the rear springs.

Of three-quarter floating type, the axle is a compact unit designed so that all the car weight is carried on the axle tubes, with no supporting strain on the drive shafts. These are mounted on spiral roller bearings at both wheel and differential ends, with a ball thrust bearing also fitted at either side of the differential. The gears are of the bevel type, and the ring gear has fifty-three teeth to thirteen on the pinion, giving a ratio slightly over 4 to 1.

On the new four, springs are semi-elliptic, long and flat. The dimensions are 48 in. long by 2 in. wide, and the mounting is somewhat unusual in that they are not directly below the frame rails, but bracketed so that they run outside. This was done principally because the frame tapers straight from the back to the front, and if the springs were placed under the rails they would also be at an angle, and this would have introduced an undesirable bending moment. As the frame is narrower at the front mounting than at the rear, the brackets at the front are simply brought out farther to allow the springs to parallel the wheels. The front ones are also quite long, measuring 30 in. and being of the same width as the rear.

Tapering the frame from back to front is also new to Buick design, but is becoming very popular with modern car designs. It allows a short turning radius, and at the same time gives excellent support for the tapering body along its entire length. To assist the side members there are four strong cross pieces, each anchored with the aid of gusset plates.

The popular sloping lines and smooth exterior, with hood blending into the cowl, are given the car, with sufficient rake to the steering wheel to give a good appearance. Attention has also been paid to the matter of leg room in the drive seat, and almost any type of person ought to find comfort in driving the car. Equipment includes all the fittings looked for by the car purchaser of today, among which might be mentioned the adjustable windshield, the one-man top, the electric horn, the speedometer, the extra demountable rim and tire carrier at the rear of the frame, etc.

Brought out over a year ago, the little six that is to be the new four's running mate for the coming year really requires no lengthy description here. It is known as model D-44 as a roadster, and with that body sells for $985. The touring car on the same chassis is called model D-45, and the price is $1020. Briefly, the specifications, which are practically the same as they have been since the car was introduced, are 3¼ x 4½ in. motor, developing 45 hp.; Delco ignition, starting and lighting; circulating splash lubrication; pump cooling; cone clutch and three speed gearset; 34 x 4 in. tires and wheelbase of 115 in.

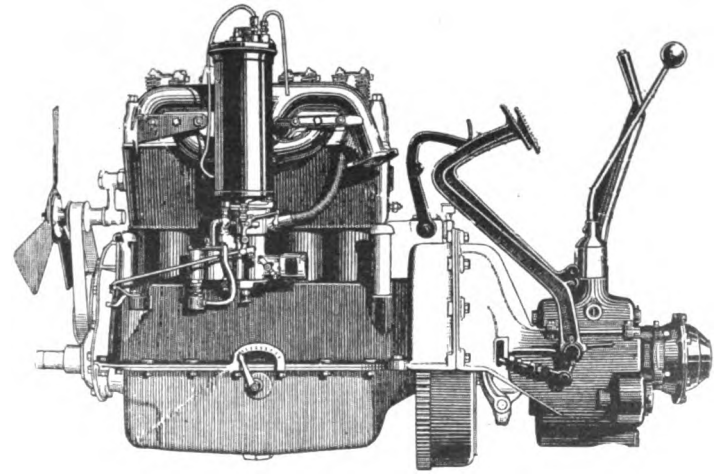
Entries Coming for Tacoma

TACOMA, July 12.—The Tacoma Speedway Association announce that the famous Montamarathon race to be held August 5th on the Tacoma Speedway will be for a distance of 300 miles, with a purse of $10,000 for the one event. The track has already been placed in good condition, a new guard rail completed for the entire course, and this year should see much faster time made on the lattice track. Entries are now coming in, and those who have signed blanks to date are as follows (July 12th):

Rawlings, West-Duluth; W. Chandler, Crawford; Dave Lewis, Crawford; A. Johnston, Crawford; Wilbur DeAlene, Dusenberg; Tom Milton, Duesenberg; Unnamed, Duesenberg; Devigne, Delage; Franchi, Delage; Moore, Peusun; Duray, Omar; Barsby, Hudson Special; Rickenbacher, Maxwell; Henderson, Maxwell.

Hare Succeeds Jackson

NEW YORK, July 18—Elmen Hare has been made manager of the Packard Motor Car Co. of New York, succeeding E. B. Jackson. Hare has been in charge of special truck work.



Left of motor showing high mounting of vacuum tank close to carbureter, oil gage in crankcase and unit construction

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New Marmon Closed Bodies Are Both Light and Low

Extremely Attractive in Appearance—Weight Reduced 25 Per Cent by Scientific Design and Use of Aluminum

The new Marmon closed cars set a new high mark of perfection. Not only are they attractive in line and luxurious in detail, but they are extremely light and low, yet with sacrifice of neither strength nor comfort. They are 25 per cent lighter than other cars of the same size and sumptuousness, it is said, and, although standard head room of 54 in. is allowed, the total height is only 81 in. In other words, with the car standing at the curb a man of ordinary height can look over it.

There are four standard types—limousine, landaulet, town car and convertible sedan. These bodies are built by Holbrook & Co., New York; New Haven Carriage Co., New Haven, Conn.; Kimball & Co., Chicago, and E. J. Thompson Co., Pittsburgh. The prices vary, the limousine costing $4,400 when built by New Haven and $5,250 by Holbrook; landaulet and town car, $5,350 by Holbrook and $4,500 by New Haven, and convertible sedan, Thompson, $3,950.

These cars weigh from 3700 to 4000 lb., according to the type and capacity, whereas other cars weigh 5000 lb. or more.

They are light, first of all, because the chassis is light, due to the extensive use of aluminum, particularly in the motor, and also because of the scientific frame construction. Second, the bodies are almost wholly aluminum. Third, underframing is eliminated. On account of the extremely rigid frame construction a very light body sill can be used, since this member is not required for strength or stiffness but merely to hold the body together while it is in course of erection. All inclosed bodies are built in one piece, except for the cowl, which is separate.

Very Low

Second only to light weight is the feature of lowness. The peculiar frame construction allows placing the floor boards several inches lower than usual. The front board is 24½ in. from the ground and the rear one 1 in. more. Naturally it is easier to get in or out of a low car, and passengers ride with greater ease. Furthermore, it is safe, as there is less tendency for the car to skid, roll or tip.

Another feature is the unit construction of frame and body. The body is practically part of the frame, and opportunity for squeaks and rattles to develop is minimized. This construction also insures perfect fitting of doors, even after long and rough usage, as the body is mounted on a firm foundation and there is no possibility of it twisting out of shape.

It is easy to change from a summer to a winter body. Since the cowl is part of the chassis and not part of the body, it is not necessary to disturb any of the wiring. Special prices are quoted for chassis with closed and open bodies at an advance of $300 over the prices given above.

Limousine Seats Seven

The limousine seats five inside and two outside, there being two seats folding forward in the tonneau section. The landaulet has the same seating arrangement. The extreme rear section of the body is of leather, and folds down; the top slides forward and the quarter windows slide down, so that the rear compartment is entirely open.

The brougham-landaulet, or town car, resembles the landaulet, but the driver's compartment is exposed. The front seat can, however, be protected by a leather extension from the roof and pantosote side curtains.

The convertible sedan is designed particularly for all-year use. All of the seats are fully inclosed and entrance is through two rear doors. The front seats are divided. The driver's seat is adjustable front or rear for leg length. A new window construction is used in which the steel-framed windows slide up and down and may be opened to any amount desired. The quarter windows may be taken out and placed in a compartment behind the upholstery of the rear seat.

The interior is trimmed in a neutral cloth which will match any of the three color option, Brewster-green, dark maroon or coach-blue deep. Roll curtains, nickel-finished hardware, carpet-covered footrail, interior light, ladies' vanity case and smoking set are regular equipment.

The body frame is ash and is covered with No. 16 gage sheet aluminum. Sheet aluminum is worked in around the windows so that moldings are not necessary. Wherever molding is used it is fitted to the body with screws. The roof is also aluminum.

In all types the back window is stationary, set in a rubber channel and absolutely stormproof. All sliding windows are made without independent frames. The front division glass is in one piece. The quarter windows are operated with broad lace window lifts and the others by cranks.

Each car is equipped with a heater, which keeps the interior comfortable even in the coldest weather. It is located in the heel board under the rear seat, and is operated by the exhaust from the engine. There is a damper so that the amount of heat may be controlled.

Wisconsin Has 100,000 Cars

MILWAUKEE, WIS., July 15—The 100,000 mark for registration of privately owned motor cars in Wisconsin was passed to-day in the office of the Secretary of State. This is a gain of more than 20,000 licenses over the total issue of 1915, and it is believed that between now and Dec. 31 at least 15,000 additional licenses will be issued, giving Wisconsin a total of 115,000, or 35,000 more than a year ago.

Studebaker St. Louis Men Meet

ST. LOUIS, July 15—The value of service in selling cars was the chief topic of the district meeting of Studebaker dealers here this week. More than 150 dealers and sales managers attended and, in addition, every member of the Weber Motor Car Co., local Studebaker dealers, were present.

Carl J. Simons, manager of the Studebaker branch here, presided. L. J. Ollier, vice-president of the Studebaker Corp. in charge of sales, was the chief speaker. He told how in Detroit, Studebaker service cars toured the city, seeking to help all Studebaker owners, and on rainy days they put up tops, leaving tags on the steering wheel to tell who did the kindness. They even helped in cases of tire trouble. As a result, he said, the Studebaker was a popular Detroit car at retail. He told the dealers that the Studebaker Corp. bore down heavily on overhead and that they could challenge all others on that point, which was an expense that brought the buyer nothing.

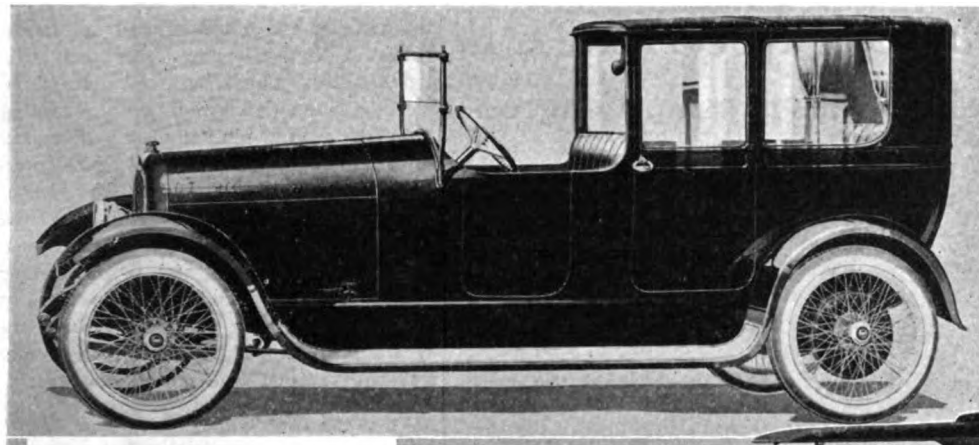
F. C. O'Meara, a former Episcopal minister, now an efficiency expert, was a speaker. All of the dealers were luncheon guests of Simons at the opening of the convention, and a morning session was held at the Studebaker branch, where the complete line was arranged for demonstration and mechanical experts were prepared for all queries.

Watching Gasoline Investigation

AUSTIN, TEX., July 18—The attorney general's department of Texas is watching with much interest the outcome of the proceedings that have been inaugurated in Oklahoma which have for their purpose the fixing of the price of gasoline at 17 cents per gallon. It is alleged by Attorney General Freeling of that state that the following concerns are in an unlawful combine in the production, distribution and sale of gasoline, and that they sell at lower prices in some

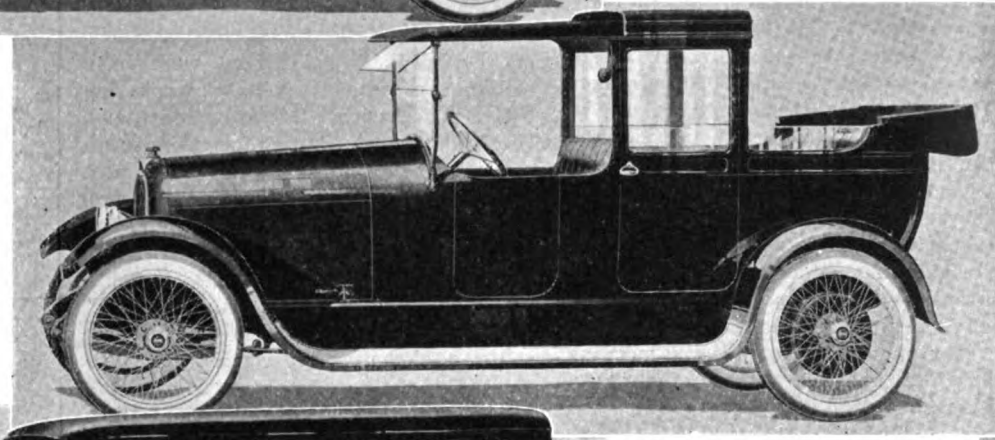
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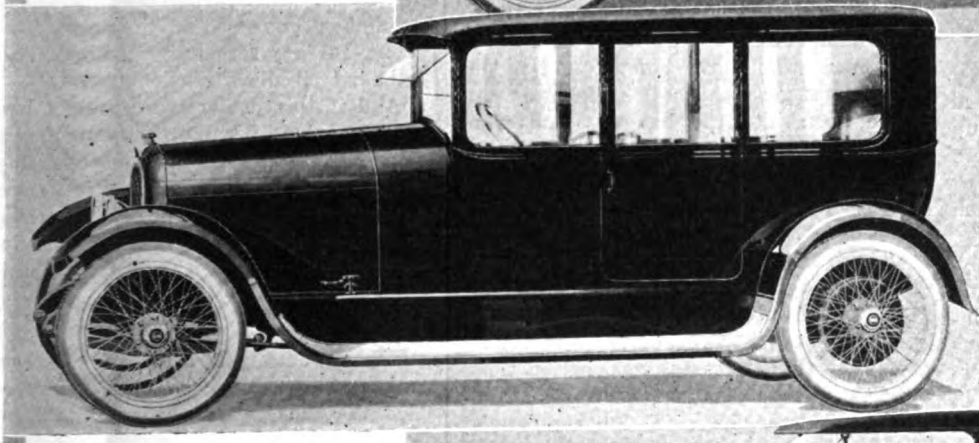
The Four New Marmon Enclosed Bodies



Upper—Brougham-landaulet, or town car, is similar to the landaulet except that there is no roof over the driver's seat

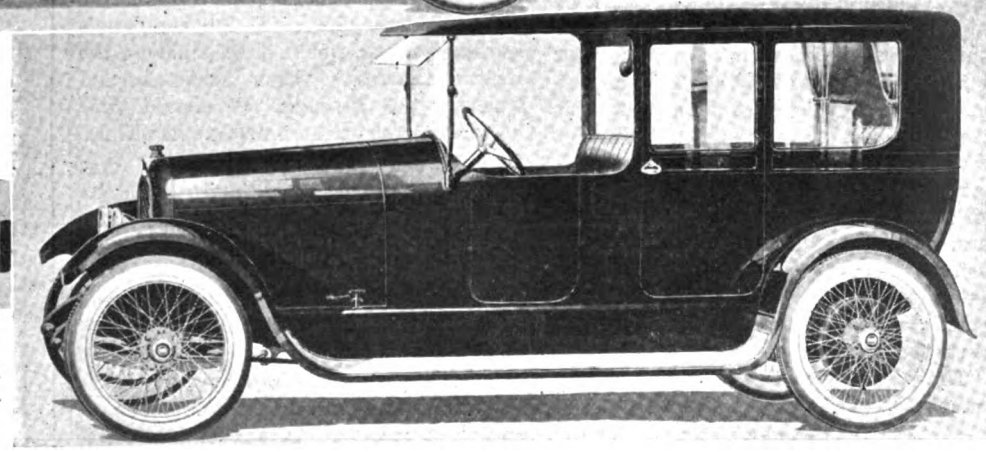
Right—Landaulet. An attractive model in which the roof slides forward, the rear folds back and the windows slide down





Left—Convertible sedan in which the glass and window posts may be dropped out of sight in a moment, giving virtually an open car

Below—The limousine is a standard design in every respect



communities than in others after making allowance for differences in grade and in actual cost of transportation:

Magnolia Petroleum Co., Kansas-Oklahoma-Texas Oil Co., Standard Oil Co. of Indiana, Oklahoma Refining Co., Miller Oil Co., The Texas Co., National Refining Co., Hugo Oil Co., Gulf Refining Co., Pierce Oil Corp., Lockhart Oil Co., Parris Oil Co., Cudahy Refining Co., Pioneer Oil Co. and McAlester Refining Co.

It is stated that Attorney General Freeling has obtained strong evidence against the defendant companies, which he will submit to the corporation commission of Oklahoma which is investigating the charges that he has filed with that tribunal.

It is claimed by the attorney general's department of Texas that practically the same conditions as to the production, distribution and sale of gasoline exist in this state as in Oklahoma. There is no uniformity of prices in the different towns or localities, and it is claimed that the fuel is selling several cents higher per gallon than is warranted by the supply and other factors that should enter into the fixing of the price. The Texas gasoline situation has been under investigation for several months, and it is reported that legal proceedings will be taken against several companies that are alleged to be in a combine to fix prices.

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Train the Sales Manager

Reilly Went to the World's Salesmanship Congress and Thinks It Was Pretty Good

By Ray W. Sherman

THE study of selling had always interested Reilly and he had read for many weeks about the World's Salesmanship Congress that was to be held in Detroit, and since a boat ride across the lake furnished a fine diversion, he made business the excuse for pleasure and was right in the front row last week when President Wilson delivered his address to an enthusiastic 3000 salesmen.

It has been said that anything can be done according to a certain method, and when it came to attending sales meetings and conventions, Reilly generally followed a conventional form. Having worked up a great deal of interest, he invariably became one of the enthusiastic conventioners. and upon his return generally refrained from any comment until he had opened and read his morning mail; then, and this was one of those occasions, he began as follows:

To Train Sales Managers

"Tommy, I think this Salesmanship Congress in Detroit last week developed a most valuable idea when it took up the subject of training sales managers instead of salesmen."

"Aren't they going to train salesmen at all?" asked Tommy.

"Yes, indeed. they are," said Reilly, "but instead of going out there and shouting their heads off about the inefficiency of salesmen—no matter how inefficient salesmen may be—they displayed quite a little common sense in the matter and quite a number of them expressed the opinion that when it came to pulling salesmanship up to a higher plane, one of the most important and essential moves was to train the men who train the salesmen, which means that the start in all this systematizing of sales work must be done with the sales managers, which so far as the retail end of the business is concerned, means training the dealers, and so far as factories are concerned, means giving instruction to the men who boss us dealers."

"That isn't a bad idea, is it?" said Tommy.

The Sensible Plan

"Whether the sales managers relish the idea or not, it is the sensible plan," continued Reilly. "I have long had an idea of that kind in the back of my head, but I never heard it reduced to a concrete form until I went to the sessions at this congress and then I certainly did hear hear it. Some of those fellows. like Hugh Chalmers and Norval Hawkins, got up and told the congress about what can be done by a sales manager who has been trained to manage. You ought to see what Hawkins did with the Ford salesmen by supervising them as a trained sales manager should.

"And Hugh Chalmers told the convention a few things about the right and the wrong way to select men. Some of the speakers said there were men selling cars who could do a whole lot better in some other line of business, and Hugh Chalmers insisted that this idea of salesmen being born and not made was all bunk. He said if salesmen were born he would like to know who kept the list, because if he had such a list all he would have to do when he wanted a salesman would be to pick a man out of the list and his work would be done. I tell you, Tommy, they certainly demonstrated that there is a great deal of progress that can be made in the selling field and that the top-notch salesmen are the men who have studied and made themselves good and not the fellows who were born into the business and who are top-notchers because they were born that way.

The Quota Plan

"And then there was a fellow from the Burroughs Adding Machine Co., who told all about how they use a quota plan and how it has made the Burroughs company the successful corporation that it is. Without the supervision of the sales manager, he said, the company's salesmen never would have achieved the results that have been achieved, and when he got through you should have heard the rest of the crowd applaud him.

"I have always believed myself that there could be a lot more cars sold by any factory if the sales department would only work out some intelligent system of dealer help instead of shooting a lot of bulletins and letters at the dealers and shouting at them to sell more cars. Any dealer is willing to sell more cars if somebody can show him how to do it. As for these sales bulletins, one speaker said that most of them would be more correctly spelled if the last five letters of the word were left off, and I think he's about right.

"There are one or two companies that have taken some real steps in this dealer assistance work and I believe they are going to find themselves amply repaid before they get through with it, and the time certainly is coming when the successful manufacturer has got to make his sales department a sales instruction department and not a sales order taking bureau. They talk about salesmen being order takers, but I believe some of the factory sales departments are more on the order-taking plan than any individual salesman I ever knew. One of the dealers down the street the other day showed me a screaming big folder he received from the factory which told all about what a hot car the company was turning out and how it expected its dealers to sell a lot of them this season and pile up a big fat lot of profits for the dealer and the factory this coming season.

Help Him Up

"If the sales manager of the factory had walked in the dealer's door and given a Free Methodist demonstration about the car, the effect would have been much the same and this dealer would sell just about as many cars on the strength of it. I have known this dealer for a long time and his early training certainly wasn't anything to help him be a top-notch salesman, but he is a capable fellow and is quick to learn, and if this factory sales manager would send him along some good dope on how to open and conduct and close a sale, there wouldn't be any need on the part of the factory for any screaming, red ink, Free Methodist circulars.

"And if this dealer were taught how to sell cars and became pretty proficient in it himself, there is quite a possibility that he could pass this instruction along to whatever salesmen he has working for him and keep increasing and increasing his own and the factory's business.

How About This?

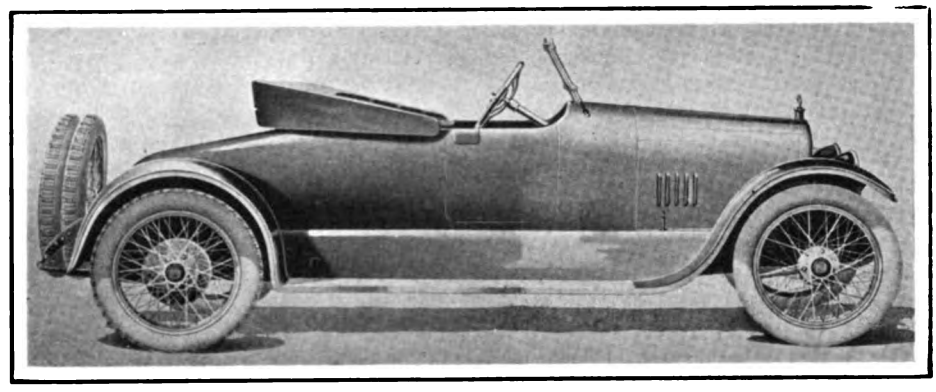
"What would you think of a school teacher who took a switch and went after the kids because they didn't get their arithmetic correctly done, while all the time the teacher neglected to tell the scholar how to do the work? That, in my opinion, is about the system on which a great deal of sales work is being done to-day. Any sales manager can yell at his salesmen or his dealers and tell them they've got to sell things, but the real sales manager is the one who shows his people how the goods are to be sold.

"I tell you, Tommy, I think this Congress is going to achieve some results. It certainly has some good people back of it, and if they shove the Congress along the way they have pushed their own businesses, it is going to mean great results. If the time ever does come when selling is a science instead of a scrambled mass of information circulating around in the air like a cloud of dust, it will mean a great deal to every industry, and as near as I can dope it out, it isn't going to be many years before the motor car industry will be in need of some regular salesmen—and sales managers."

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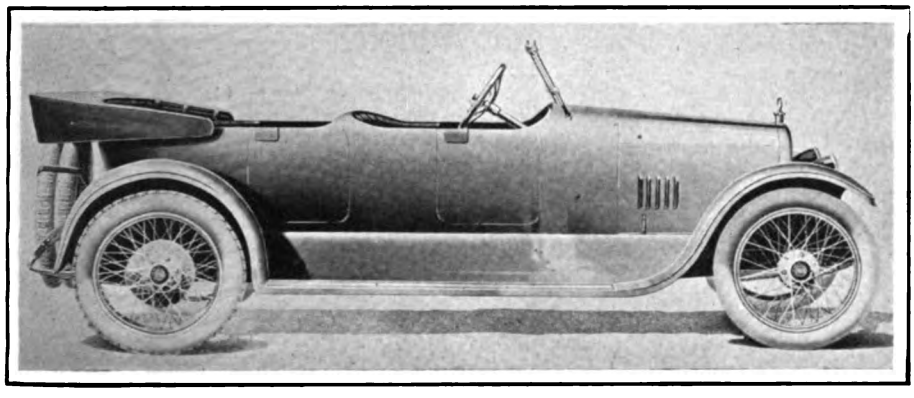
Custom Body Perfection Attained in Jordan Six

Moderate-priced Car with Distinctive Lines and Finish—Powerful and Flexible High-speed Motor—Standard Parts



Right—Jordan six roadster with wire wheels as an extra

Below — Four-passenger sport model with wire wheels as standard equipment



CUSTOM-BUILT quality and studied attention to body details are found in the Jordan, which is to sell for $1,650 with seven-passenger body. The aim of the manufacturer, the Jordan Motor Car Co., Detroit, is to produce a car which will give the owner maximum satisfaction, one which is not only perfect mechanically, but in which the body has been developed so that it is the last word in convenience, comfort and beauty. It is a handsome and really distinctive machine, and at the same time its high-grade chassis insures that it is up to the mark in both road ability and durability.

It is a standard chassis of "finished mechanical excellence," to quote the maker, fitted to suit the buyer, with a choice of distinctive and comfortable body styles. It is a car in which body lines, finish and body arrangement in their relationship to the mental and bodily comfort of the passengers are given first consideration. Yet is is a comparatively light, perfectly balanced machine, with rapid acceleration and capable of running from 2 to 60 m.p.h. on high.

Standard units are found throughout the car. Timken axles are used and bearings of this make are employed everywhere. The rear axle is a spiral bevel floating type. The radiator is a diamond core Fedders and carries a Boyce Moto-Meter. Gemmer steering gear, Willard storage battery and a motor driven tire pump are standard. The complete list of equipment includes tonneau foot rest, tool roll, tire repair kit, Sparton electric horn, instrument board with ammeter, speedometer, oil gage, switches, carbureter adjustment and one-man top.

The seven-passenger Luxury car, as already noted, lists at $1,650, with wire wheels $100 extra, the four-passenger sporting type with wire wheels as regular equipment, $1,750, and the roadster $1,650, wire wheels $100 extra.

Not a unit of the chassis is untried and the specification is quite conventional; its noteworthy feature is that each component ranks high among its kind and is the best model built by the parts specialist in question where there is any choice. Motive power is supplied by a Continental engine, 3½ x 5¼ in.. six-cylinder, this being the aluminum crankcase type, and the power plant is completed by a Brown-Lipe gearset and a Brown-Lipe multiple dry-disk clutch. As to the engine accessories, these include Bosch magneto ignition, Bijur two-unit lighting and starting, and a Stromberg carbureter, with Stewart vacuum feed from the gasoline tank at the rear end of the frame.

As can be seen from the illustrations, the hood has plenty of width and depth, the result being that the mechanical inhabitants of the bonnet are no more cramped than the human occupants of the body. Every essential is readily accessible.

Both front and rear axles are Timken products, the drive, of course, being by spiral bevel, and the frame is of deep section to give rigidity and enable the firmly-built body to keep free from looseness after long use.

The wheelbase is 127 in., tires are 35 x 4½, non-skid in rear. The weight is said to be only 3050 lb., due to the extensive use of aluminum. Vanadium steel semi-elliptic springs, 59 in. in the rear, 37 in. in front and 2½ in. wide are used.

The bodily comfort of the passengers has been studied with especial care, and a short trial of the car enables it to be stated with conviction that the ease of riding is very much above the average. It is not too much to say that very few cars indeed ride as well as does the Jordan. This desirable quality is attributable partly to the springs and partly to a special feature of the upholstery. Taking the former first, they are half elliptic front and rear, the back springs being 59 in. long and almost perfectly flat when the load is on them. They run beneath the axle and the rear end of the frame is brought well down in a sweeping curve to carry the shackles. This low hanging allows the frame to be brought fairly close to the ground, and the flatness of the springs gives lateral strength to resist rolling action, of which there is remarkably little.

New Upholstery Springs

In the seat cushions the Marshall spring is used. This has been developed for high-grade furniture and now makes its first appearance on an automobile. The usual nucleus of a cushion is a couple of wire frames separated by a number of large springs coiled to a big diameter. If one of these springs gives way under the stress of use there at once appears a hollow in the cushion, because each spring supports a large area of leather. In the Marshall construction the springs are much smaller and a great number of them are used. Each little coil is sewn up in a canvas container and scores of the springs are bunched together. A little padding then goes over the top and then the leather, so that every square inch of the cushion has in-

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dividual support. Owing to the number of springs used each one can be soft, so that the effect is equivalent to a pneumatic cushion, though with less bounce. Another thing that makes for comfort is the shape of the seats, for this has been worked out so that the height and depth of each and the angle of the back is just right. The rear seat suits the woman of average stature, the front seat the average man, and to allow for variations in the stature of the driver the pedals are adjustable over a wide range. It is specially noticeable in the front compartment that the wheel and the door are in such proportion that any man can get into the driving seat from the left side without any difficulty, even when wearing a heavy coat.

Speaking of the driver's comfort leads naturally to a comment on the placing of the gear shifting and brake levers. These are within easy reach without stooping or leaning forward, and the two are far enough apart to make the chance of a mistake extremely slight. The gear lever is carefully fitted, so that it moves easily, and the clutch needs only a light spring. Also the long, flat rear springs and the Hotchkiss drive cause very little variation in the relative positions of the brake parts, so that there is little lost motion on the service brake pedal and a fairly light pressure exercises great stopping power. The frame is well narrowed in front, so that there is a good turning lock despite the 127 in. wheelbase.

Returning to the body once more. it may be mentioned that the upholstery is all of the best hand buffed leather, a thick yielding quality with the dull gloss that contrasts best with the highly polished mahogany work on other parts. The back of the front seat contains the folding seats, which drop into compartments and are covered by leather curtains or flaps. All the rest of the seat back is light mahogany and is a regular custom style of job made of many pieces with matching grain. The center cowl effect is obtained with the minimum sacrifice of space, the front corner of the rear door being cut into the edge of the center strip.

Across the back of the front seat is stretched a rope strap with snap fastening. this being of a brown leather, to match the mahogany; there is a thick, soft tonneau carpet and a substantial foot rest. These petty details of body equipment are mentioned so particularly because each one contributes to the completeness and very real luxury of the whole. It is in the choice of such detail that the Jordan has striven to raise itself into the custom-built class. The sloping windshield. for example, is not just a windshield. Its proportions suit the car, its hinges work smoothly, the top sockets snap readily into place.

In order to maintain the standard set. the Jordan company is not planning a big output, but will use a very rigid inspection. In the main floor of the plant there is a special spot upon which each car has got to stand before it goes to the shipping bay. After every detail has had its individual inspection, after the car is reported as O. K., it has to undergo a final, painstaking checking up to insure that nothing has been overlooked, and the manufacturer is not going to grudge the cost of time spent in this way.

1917 Velie Biltwell Sixes Unchanged—Four-passenger Added

MOLINE, ILL., July 17—As far as the chassis is concerned, the Velie "Biltwell" sixes for 1917, made by the Velie Motor Vehicle Co., have undergone little alteration. Perhaps the most prominent mechanical alteration is the use of Timken axle equipment, though sundry little details have been improved, tending to enhance the value of the cars.

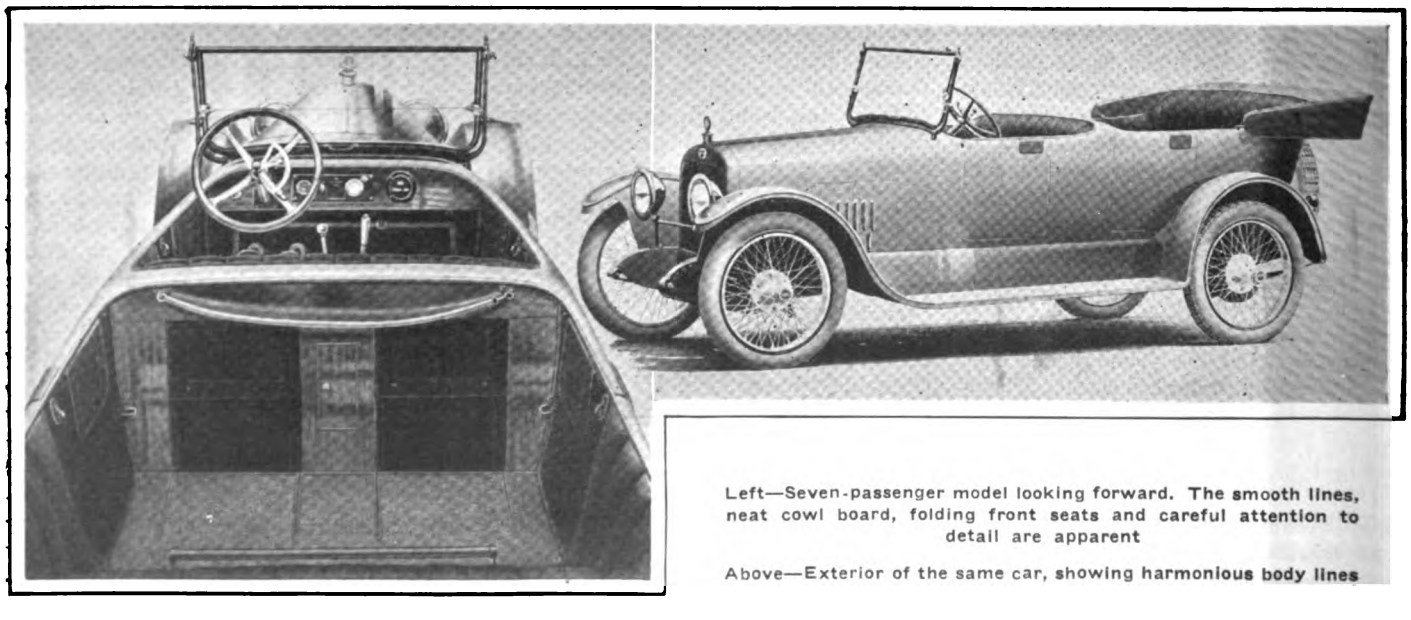
In the body line a good deal has been undertaken, and one of the most striking of the new models is the four-passenger roadster. The general appearance of this body is quite novel, with its sweeping side line running down to the rear deck. Internally there is all the accommodation of a four-passenger clover-leaf of ample proportions and plenty of baggage space in the deck. This roadster sells for $1,085, as does the five-passenger touring body, which is also quite new, being both longer and wider than that fitted to the 1916 chassis. There is a two-seated roadster at $1,065, this having a large amount of space for stowing baggage, and a four-passenger coupe for $1,750.

For special orders a range of other inclosed bodies is made, including a very neat little town job on distinctly French lines for $2,200, a touring sedan for $1,685 and a cabriolet roadster at $1,485. All the bodies fit the smaller chassis of 115-in. wheelbase. There is also a seven-passenger job on a larger chassis, this having a larger engine and a wheelbase of 124 in.

The Velie was one of the first cars to employ the taper frame with straight side rails, wide apart at the back and narrow in front, and this construction is still being used. It gives a wide base for supporting the body rigidly, and the straightness of the side rails decreases any tendency to weave.

On both chassis the engines used are of Continental make, and both are sixes, the smaller 3¼ x 4½ and the larger 3½ x 5½.

Dry-disk clutches are fitted to both cars, but the larger has a four-speed transmission, while the smaller has three speeds only. The tubular driveshaft has a universal at each end, the long three-quarter springs taking both torque and drive.



Left—Seven-passenger model looking forward. The smooth lines, neat cowl board, folding front seats and careful attention to detail are apparent

Above—Exterior of the same car, showing harmonious body lines

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Those Dealers

GRAIN sown in any suitable soil will grow and bear plentifully. Fruit trees planted on proper ground will survive and bear fruit. Yet the farmer sometimes goes to great pains to fertilize soil that is fairly good even without that fertilization.

Why does he do it?

He does it because he is not satisfied with an average crop. He has invested his money in land and he wants the land to pay back every possible dollar. He could save himself labor and the cost of the fertilizer were he content with an average crop, but the farmer who is not content invests in fertilizer and gives his labor and in the harvest time is bountifully repaid for all of his extra effort and expense of the early summer.

THE distributer of motor cars is not unlike the farmer. The distributer's field is his dealer organization and the crop is the profit on the sales that the dealers and subdealers make.

And, like the farmer, the distributer can get an average crop by placing a number of agencies and waiting for them to sell cars. In the meantime he speeds up his own local retail organization and develops as high efficiency as possible in his own town and sells all he can at retail in his own city, where he is both dealer and distributer.

There is a wonderful opportunity for the distributer in fertilizing his dealer field. If, instead of being contented with an average crop, he would fertilize the field the returns would be so great that he would be surprised at the result. He would be as surprised as some farmers have been when they found that the much pooh-poohed methods of the agricultural college would really work after all and increase crops.

SOME factories have begun the fertilization of their dealer field; and other factories are little acquainted with a territory except as they know the distributer. They have little first-hand knowledge of the enormous army of dealers that lies out and beyond the distributer. It is in this field that the biggest work is to be done, the greatest opportunity for fertilization.

One factory in speaking of a certain territory speaks of its distributer and his fine place of business, but it says—and probably knows—nothing of the army of dealers under this distributer and how business is done by the little fellows. Yet it is these little fellows who are the roots of the industry. They are the men who ultimately sell the fine and shining product—and with a little fertilization they could and would produce a much bigger crop.

FERTILIZATION of the dealer field would consist of sales and business aid to the dealers and subdealers. A Business Development Bureau in the organization of every distributer and every factory would pay for itself many times over in the long run. Supposing that it did cost, say, $3,000 a year to run it. How many cars would have to be sold before this sum would be returned?

The dealer and subdealer in the smaller cities would be wonderfully helped by such aid from the distributer. If a dealer has had an agency for, say, two years, and if before taking the agency he was a retired farmer or an undertaker how efficient is he as a merchandiser of motor cars and a business man?

And, if that dealer can sell ten or a dozen cars a year on his own ability, how many more could he not sell if he had someone to school him in modern methods? Why, there is one dealer in Wisconsin who has been selling cars for years and who never knew until last winter that it was good sales work to ask the prospect to sign the order! How many sales do you suppose that dealer has lost because when he got down to the signing point he didn't know how to finish the sale? What would it not have meant to dealer, distributor and factory if somebody six years ago had shown this dealer how to close a sale? And how could this have been better done than by the Business Development Bureau of the distributer—or the factory?

A BUREAU of this kind would include a sales and business agent of a special character; he should be able to analyze a business, tell what ails it and how it can be made better. He should be able to tell a dealer how to sell more cars with the same effort, or how to make a little more effective effort in the same amount of time.

This Better Business Agent should be able to discern the failings of a business system and point the way to better accounting standards, even if it were necessary for the factory accountant to step in and put the finishing touches on this end of the job. The agent should know how to suggest advertising and plan campaigns. He should be an all around adviser in business and sales.

DEPARTMENTS of this kind operated by distributers would cost money. It costs money to fertilize land. It costs money to prune trees. It costs money to raise stock. It costs money to do anything worth while but the worth while things pay the money back.

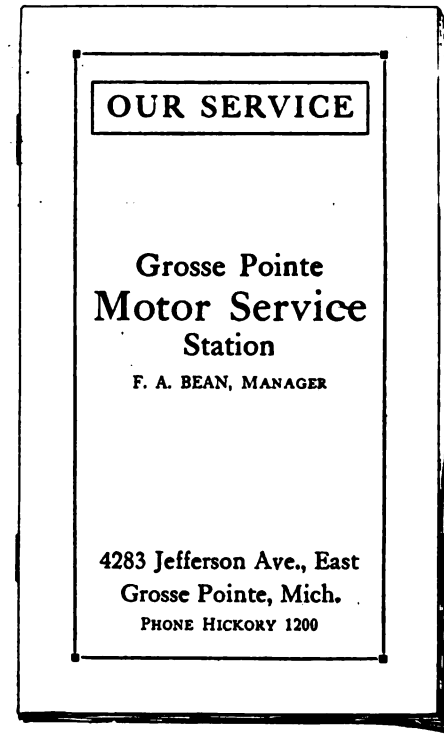
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Making the Customer Think Your Way

The story of how Fred A. Bean set out to win for his garage a warm spot in the heart of the car owner

"MOST of the abuses heaped upon the garage come from the fact that car owners are ignorant of conditions, and this ignorance, or unreasonableness, is usually the result of NOT THINKING." In these words Fred A. Bean, proprietor of the Grosse Pointe Motor Service Station, Detroit, sums up the conditions that he has found in his business, and to bring about a different frame of mind in the car owner he issued a booklet, entitled "Service."

It is an adaptation of the widely known Statler Hotel Service Booklet, and is sent out with the garage's monthly statements and is distributed to transients and in the drug store and bank with which Bean does business. The booklet consists of "A Talk with Our Employees" and "A Talk with Our Patrons," and the car owner who reads it and doesn't think better of Bean and his garage is unreasonable indeed. It is an educational propaganda that is meritorious. Bean has also issued a booklet on his price list that will be described next week. The story in the Service booklet follows:



The Service Booklet, 3½ x 5⅛ in.

A Talk With Our Employees

E. M. STATLER, president of the Hotels Statler Co., and one of the greatest present day architects of SERVICE, says:

"Life is Service.

The one who progresses is the one who gives his fellow-beings a little more—a little better—SERVICE."

As Garage operators, we have only one thing to sell, and that one thing is—SERVICE.

Without service there would be no customers, without customers there would be no garage—and that would mean no job—FOR YOU.

It is your duty to create and deliver that SERVICE—the BEST SERVICE possible. To see that every patron, regular or transient, receives it at all times.

Every time a patron goes out the door, see that he or she goes out with the desire to return for more—BEST SERVICE.

* * *

Service begins and ends with COURTESY.

Courtesy is demanded of you towards every patron at all times and under all conditions.

Remember that he has a perfect right to say that the carbureter is not adjusted, when you know it is, or that his car was not delivered on time when you know it was.

You are forbidden to argue any point with a customer.

You must adjust the matter to the Patron's satisfaction, or call upon the office to adjust it for you.

The largest Department Store in the United States has adopted the Slogan: "THE CUSTOMER IS ALWAYS RIGHT."—It is ours.

Never be familiar with a patron—neither shall you be surly or grouchy. BE COURTEOUS.

Don't lose your temper with a patron. If you do—do not stop to look for it—look for another job. It will be necessary.

Show as much attention to the patron who is spending 5 cents as the one who is spending $50. Show them just the same attention if they are not going to spend a cent.

* * *

WE know that some automobile owners make a practice of tipping in garages. We wish they would not—here. It is not necessary. Every patron is entitled to every bit of SERVICE from every member of our staff without a tip.

You are being paid in proportion to your ability to earn for us. If you are not being paid enough—it is your fault—your record is well kept.

Mr. Statler says: "Any employee who is wise and discreet enough to merit tips is wise and discreet enough to render a like service whether he is tipped or not.

"And he is wise and discreet enough to say 'Thank You' when he gets his tip."

This is the soundest logic we have heard on this evil.

The use of liquor for any reason is positively prohibited.

If you must take a drink—you MUST look elsewhere for your pay check.

Cleanliness is of vital importance. This applies to your personal appearance as well as to the building and its equipment. Our patrons are the ones who pay your salaries and they demand it.

* * *

OCCASIONALLY we come in contact with, and have to deal with, that pest—The Joy Rider. We do not cater to this class of patronage. Serve them as quickly and as courteously as the circumstances will permit. But allow no disturbance.

Remember that the garage floor should be just as safe for a lady in the middle of the night as our office is during the day.

Do not let any transient patron be misled as to our charges. We would rather he would go away without getting what he came for—than to get it and go away feeling that he was overcharged.

Always bear in mind that a garage should be governed by just as strict a code of ethics as any other business or profession.

* * *

Finally—It is your duty to see that EVERY patron gets—not simply Service, but, THE BEST SERVICE to be had in any garage, whether in Detroit or elsewhere.

S-E-R-V-I-C-E Spells Job—for YOU.

The suggestions which are given here will help you very greatly to give that BEST SERVICE.

It is not absolutely necessary that they be followed. Neither is it absolutely necessary that you be retained on our payroll.

See that every car goes out a little better washed and a little cleaner than from any other garage.

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See that every car is delivered a little more promptly than from any other garage.

See that every car is handled and driven a little more carefully and a little better than the owner can have it done in any other garage.

* * *

DO not drive over 15 miles per hour. Do not start any car on other than first speed.

Inspect every car carefully before delivering; see that lamps, tires and warning signal are in perfect condition for the owner.

Do not eat or smoke in a patron's car.

Do not let patrons crank their own cars.

Do not let them wait on themselves for compressed air.

Do not let them fill their own radiators while you look on.

Do not let them open or close the garage doors.

Do not let them open or close their own hoods or remove the tank caps when being waited on for gasoline or oil.

Do not let them park or take out their cars alone. Assist them in every way possible.

Do not let anyone "stand around" without being waited on. See what they need as soon as they come into the building and serve them as soon as possible.

Do not wait upon any patron when smoking.

* * *

Do not approach a lady or car containing ladies, either in the building or out, without raising your hat.

Should a patron desire to use the telephone see that they are given a chair, shown the book, and that the office is quiet.

Should a patron desire to wash, see that the wash bowls are absolutely clean and that they have soap and clean towels.

Should patrons desire information concerning routes, hotels, places of interest, time tables of trains or boats, traffic or custom laws, see that they get it. If we have not the information, see that it is obtained for them.

Give just as Courteous Service—the same BEST SERVICE—over the telephone that you do on the floor.

Our Bulletin Book covers every detail of your work—it will pay you to read it—study it—learn it by heart. It will save you from being criticised from the office and our patrons from criticising us.

Do not forget the little things and we will not forget you.

* * *

Remember this—"You are an investment—It's up to you whether you are a good or a poor investment. If you earn us money by holding our old customers and by bringing us new ones, you will be a good investment. If you turn out to be a bad investment you will be dropped during the dull times just the same as we shut down the generators when the cars are all charged and we do not need to have any more current manufactured.

Do not simply "fill your job."

A Talk With Our Patrons

I WANT to quote Mr. Statler again; he says:

"Every little while I see some patron of mine who won't let me give him the good service that is here for him.

"Nearly always it is because he does not realize that it takes two—the server and the served—to make good service."

We cannot serve you the way you wish to be served unless you co-operate with us to a certain extent. This co-operation is only—in being reasonable.

* * *

Did you ever have the cook or the butler leave while the guests were arriving for dinner, or the chauffeur disappear when you were in a hurry to reach the theater or to catch a train?

We sometimes have a washer or a polisher leave in the middle of the night, with a floor full of cars, when we can not get another.

It is then impossible to send your car out in just the condition we would like to or that you would like to have it.

* * *

Do not misconstrue anything we say here—We are not complaining about what you have done. We are simply stating certain conditions as they exist and perhaps concerning which you have not thought and, as an automobile owner, you are certainly interested.

If you are feeling badly and consult a physician, who, after spending 10 or 20 min. in an examination, tells you that one of your lungs is tubercular, recommends a certain diet and suggests a trip to the coast, you pay for the examination and advice. You pay practically the same fee if his examination does not take over 2 min. Your cost is the same when he tells you there is nothing wrong with you, and sometimes his judgment is in error.

* * *

WHY shouldn't you pay us when you come in with supposed trouble in your car and our men make an examination? Is it fair to come to us for the examination, get our opinion, pay nothing, and go to the factory, service station or another garage to have your work done?

If you call a physician and he can do nothing, you pay just the same. If he operates, you have the fee plus the hospital expense.

If the operation is not successful your surgeon guaranteed you nothing. He has simply tried—that is all we can do. We may find that the motor was just as badly diseased as the man upon whom the operation was a failure. Shouldn't you pay us for our efforts just the same as you do the surgeon?

You consult an attorney, he considers the merits of the case and advises you not to go to court and charges you for his advice. You bring us a car, we examine and advise you as to what should be done—What is the difference?

You retain him to defend a case, he guaranteed you nothing and loses the case. You pay just as though he had won and in addition all of the court costs. Isn't our position very similar?

What is the difference between his position and ours?

The physician or lawyer has made no greater investment to obtain his knowledge and reach a certain degree of perfection than we have.

* * *

IT is hardly fair to drive into a garage with a flat tire, borrow a jack, tire irons, etc., use the compressed air, and then not expect to pay for it, when the garage have men regularly employed for this purpose?

Would you go into a tailor shop and borrow a thread and needle to sew a button on your coat; would you go into a barber shop, borrow a razor, brush, soap, etc., and shave yourself?

* * *

Good, reliable garage help is always at a premium. We can not afford to employ idle men. We can only employ as many as normal conditions will warrant. If several patrons want repairs at the same time, some one must necessarily wait, for the labor of every man is sold for a certain period.

It is one of the laws of supply and demand. We cannot foresee all of the congested conditions and accidents that occur and have extra men waiting. You certainly have similar conditions in your own business. You can not ordinarily get 4 or 5 hr. work from your dentist without arranging in advance.

The barber would not allow you to do your own work because you were in a hurry and there happened to be several ahead of you. Why should we?

You call your car, and five cars have been called in 10 min. previous to your call; it follows that some of the men have to return to the garage before your car can be sent out.

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Officers and Directors of the Michigan Automobile Trade Association



1—*First Vice-president L. C. Rivers, Rivers & Norton Garage, Battle Creek.*
2—*Fred A. Bean, director, Grosse Pointe Motor Service Station, Detroit. (Bean is the author of the booklet that is the subject of the story on this and the two preceding pages.)*
3—*Secretary L. C. Steers, 518 Garage, Detroit.*
4—*Treasurer C. F. Strong, Coldwater Garage Co., Coldwater.*
5—*President L. F. Bertrau, Big Rapids Garage Co., Big Rapids.*
6—*Robert A. Wilson, Chicago, secretary of the National Automobile Trade Association.*
7—*F. L. Johnson, director, City Garage, Adrian.*
8—*George F. Robbin, director, Robbin's Garage, Port Huron.*
9—*C. W. England, director, Lapeer City Garage Co., Lapeer.*

We shall always endeavor to treat an emergency call as such and make the delivery at once.

Thirty minutes' notice will almost always insure prompt delivery.

If you get in trouble on the road, remember: "It never rains but it pours." —There are probably others in trouble at the same time and every available man has more than he can do. We are not keeping you waiting intentionally.

* * *

WHEN renting a house do you expect your landlord to deduct from the rent the time you are away on your vacation? Then why should you expect us to hold your space for you without charge?

Is it fair or reasonable to call us for a driver for your car at a certain time and when you find that you do not need him neglect to call us until after that man stopped his other work, washed and dressed, and expect there will be no charge?

Is it right that you arrange to send your car in for certain work at a specified time and then neglect to do so? You have engaged that man's time and we are holding him for you. When you break that appointment you are hindering some one else in securing his time.

Is it right that you should, when in trouble out on the road, telephone for a man to come to you, and when you perhaps locate the trouble yourself, drive away without letting us know, and later when a bill is presented, refuse to pay on the plea that no service was rendered?

A service was rendered you in our endeavor to get you out of trouble as quickly as possible, and though no labor was performed the man's time and the expense of running the service car must be paid for or we would stand to lose.

Is it being honest with the garage to bring a car in the last thing at night for some little minor repair or supplies, on which the profit amounts to a very few cents, leave the car over night and expect to pay no storage?

When you get a meal at a hotel, it does not entitle you to room unless you pay for it.

* * *

It is not right to say you have waited 30 min. for your car when it is only 10.

It is not right for you to say that you gave the order yourself when you left it for one of your servants, and the servant forgot.

* * *

Every well regulated institution must have rules for its government which must be inforced at all times.

Our insurance arrangements prohibit any smoking on the garage floor or in the shop.

The lowering of our insurance rates decreases overhead and helps to lower the cost of service to you.

Don't leave your car standing at the gas pump while you come in to use the telephone. The man behind you may want gas in a hurry.

Do not stop your car in the doorway. The other fellow may want to get in or out.

Do not drive in or out of the garage without having your car under absolutely perfect control, and always sound your warning signal. It is the sure way of avoiding an accident.

When you are waiting, do not get into another customer's car. We would not let him get into your car if you left it in our care.

Do not keep your motor running or race it on the floor. The gas and smoke from your car will cause a greasy film on the cars that are washed and polished and ready to go out.

Do not stop at the curb pump headed against traffic. It is a police order and the man will be obliged to refuse to serve you.

It is a state law that gasoline shall not be put into any container unless it is painted red and all openings fitted with proper caps. Please do not ask us to break it.

The man at the pump will ask you to stop your motor and put out all oil or gas lamps while he is putting in gasoline. Do not criticise him; he is only obeying the law.

* * *

We carry a very complete line of tires, tubes, supplies, accessories, etc., and shall appreciate your patronage.

If we do not have in stock just what will meet your requirements we can get it for you on very short notice at the regular list price.

YOUR suggestions for the improvement of our service are invited and will be greatly appreciated.

YOU can make our service the best in the world by co-operating with us.

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ANGLES OF THE LAW



By George F. Kaiser

NEW YORK OWNER NEEDS NO DRIVER'S LICENSE

THE right of any person other than a chauffeur to drive a motor car without being personally licensed, in New York State, is upheld in a recent decision.

It was charged that a person had unlawfully operated a motor vehicle in the city of Yonkers without having first obtained a written license.

The court pointed out that the New York highway law provides, "That no person shall operate or drive a motor vehicle as a chauffeur upon a public highway in this State after the first day of August, 1910, unless such person shall have complied in all respects with the requirements of this section"; and further, "The term 'chauffeur' shall mean any person operating or driving a motor vehicle as an employee for hire."

"Nowhere in the act," said the court, "is there a requirement for a license; or the prohibition against operating without one, as applied to persons other than chauffeurs, or who fall within the above definition."

While chauffeurs are required to be licensed, the owner of the car may lend it or rent it to some inexpert person, who may run it without a license, and only the provisions of the highway law with regard to reckless driving will apply.

The court further remarked that the rights to the use of the highway are vested in the public absolutely for all kinds of conveyances, subject only to the restriction the State may impose on such use. It was held there was no violation. —People vs. Loughrey, Court of Special Sessions, Yonkers, June, 1916.

WHO IS GUILTY?

Editor Motor World:

I will be greatly obliged if you can solve this problem: A mechanic in a garage in the State of New Jersey left the garage in which he is employed with a car belonging to the garage to do some repair work on a private car some distance away. While the car belonging to the garage, and which the mechanic had taken out with the owner's consent, was standing on the street some acquaintances asked him to let them have the car for a while, as they would only be gone a short time. He consented to this, and adjusted the carbureter and a few other little things and told them to go. The car accidentally overturned while traveling slowly, smashing the top of the car, panes, etc. Who, in your opinion, is liable for the damage done to the car in this case—the mechanic who took the car from the garage with his employer's consent, or the friends who borrowed the car? If the mechanic wanted to be mean, could he not say that the car was stolen instead of loaned, and thereby cause considerable trouble?—Arthur Marion, New York.

The case you give is indeed a peculiar one. If the accident had occurred while the mechanic was driving he would not be responsible personally, even if it were caused by his negligence, as his negligence would be attributed to his master because he was engaged in his master's business while going out to repair the stalled motor car. Of course, the mechanic had no right to loan the car, as it was placed in his possession merely for the purpose of furthering his master's business.

The parties who borrowed the car were borrowing it for their sole benefit and, as no benefit accrued to either the mechanic or his master (the owner of the car) through the loan, the parties who borrowed it were under an obligation to take a very great amount of care and would be very properly held responsible for a very minor degree of negligence. Whether or not they were negligent when "the car accidentally overturned while traveling slowly" is something I cannot ascertain from your letter. If there was no negligence on their part they will not be responsible but will be free of liability.

The mechanic, however, I believe, is liable for the damages, even if there was no negligence on the part of the parties who borrowed the car, because of his breach of the trust reposed in him—that is, to take the car out, repair the other car, and then return it.

Matters naturally will be much complicated if the mechanic sets up a claim that the car was stolen from him; but that is a question of veracity, a question of who is telling the truth. If the car had been stolen, the parties who stole it and operated it would naturally be liable for any damages caused to it by reason of their having unlawfully taken it.

MUST GIVE UP CAR

A garageman must give up a car to a party whose daughter pays for a machine with his money and takes a bill of sale made out to her husband.

An action of replevin was brought to get back a car, or its value.

It appeared that the man, who was about 80 years old, sold a piece of property and went to live with his wife at the home of their daughter. Concluding to buy an automobile, he turned over the money to his wife, who subsequently handed it to the daughter. When the automobile was bought the daughter had the bill of sale made out to her husband, and when the father went to get the car it was gone. He finally traced it to a garage, where it had been left by his grandson.

It was decided that under the circumstances the father would have the right to recover the automobile from the garageman by replevin.

EVERYTHING MUST BE IN THE CONTRACT

THE Supreme Court of Michigan has once more confirmed the rule that when a contract for the sale of motor cars expressly provides that no agreement not contained in the order will be recognized, verbal statements will not be considered.

Suit was brought on a contract for the sale of ten motor cars, the purchaser having refused to complete the contract because of breach of warranty claimed by him. The seller's order contained the following clauses:

> It is understood that no verbal or other agreement or promise not clearly specified in this order will be recognized.
>
> The cars are 1912 models and are to stand sold as they are of this date in consideration of the special price.
>
> It is further understood and agreed that this paper, writing and printing constitute the entire agreement and understanding as between the parties hereto, and it is expressly understood and agreed that it may not be varied, changed or modified by any verbal understanding or agreement, or in any way except in writing by the parties hereto attached or indorsed hereon, and no agent or salesman has any right or authority to alter this agreement in any particular, except by written authority from some officer of the ——— Company.

After the cars were delivered the purchaser complained of defects in them.

The court held, however, that as they were sold "as they are of this date," they were practically sold "as is," and, being so sold, there was no implied warranty that they were reasonably fit for the purpose for which they were bought.—(Detroit vs. Engel, 158 N. W. 123.)

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Plenty of Pep in Outing of Brooklyn Dealers

Over 300 Attended—Events Run off without Hitch or Delay—Prizes for the Winners



Charles Tate, Martin Evans Co., general manager of the outing. Tate was voted the most popular man in the Brooklyn Trade

THE members of the Brooklyn (N. Y.) trade—tire, accessory and car dealers—left the calm pursuits of business life on Wednesday, July 12, and held their sixth annual frolic at Witzel's Casino, College Point, L. I. From the time the "fleet" left the Brooklyn Motor Club at 10 a. m., until the last prize was awarded at 11 p. m., the 300-odd members were kept in circulation by the Klaxon voice of the general manager, Charlie Tate. There was "pep" from start to finish, and the events were run off like a three-ring circus.

This outing serves to bring together in play the men in the trades that are daily doing business together over the 'phone. For one day the competition of business is laid aside for the more exciting competition of sport. The procession reached the grove about 10.30 a. m., and immediately the ball teams were in action. Julius Bindrim's nine put up a plucky fight, but went down to defeat under the onslaught of the Del Martins. Though the score was 14 to 2, there was no decrease in the enthusiasm shown by the rooters on the side lines. This is the line-up:

Julius Bindrim's team: T. O'Neil, c.; F. Sanford, 2b.; S. Doty, c.f.; F. A. Gehrhardt, p.; L. R. Anderson, s.s.; Geo. Hochschwender, l.f.; J. C. Smith, 3b.; D. Doden, 1b.; J. Bindrim, r.f.

D. D. Martin's team: A. Schapp, c.; M. Marlborough, 1b.; Rippenger, 3b.; F. Miller, s.s.; Charles Tate, p.; W. Winans, 2b.; E. J. Maxfield, l.f.; Costello, c.f.; Del Martin, r.f.

The game was called off for luncheon about 1.30 and the dealers poured into the Casino dining-room. In direct opposition to the laws of nature, the games were started immediately after lunch, and continued without intermission until the dinner bell rang at 7.30. Most of these events are familiar, or else the names are self-explanatory. Here is the scorecard of the afternoon sports:

100-yd. Backward. Won by D. Soden, Soden Taxi Co.; second, F. A. Gehrhardt, Flatbush Auto Co.; third, W. Winans, Reo Motor Car Co.

100-yd. Dash. Won by F. A. Gehrhardt, Flatbush Auto Co.; second, A. W. Delaney, Ross; third, Lee Woodruff.



1—Arthur Jungkind, of Jungkind and Vogler, winner of the duck race, admiring his prize. 2—H. L. Carpenter (Pierce-Arrow), chairman of the general committee, speeding up the tilting contest. 3—E. E. Bell, Studebaker, leading Julius Bindrin in the row boat race. 4—Geo. Hockschwender, Parkside Garage, and L. R. Anderson, Standard Oil Co., vanquished all opponents in the tilting contest

Big Beaner Race (fat man's race). Won by G. H. Kennedy, Argyle Garage; second, R. Lynn; third, J. J. McGowan, Michelin Tire Co.

Monkey Race. Won by L. J. Stachelroth; second, J. C. Smith, Kelly-Springfield tires; third, Jay O'Connel, Ross.

Gymkana Race. This race was divided into two classes, one for Fords only and one for



The concentrated effort of the entire committee, and Charles Tate's

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other makes of cars. The Ford class was won by Geo. Hochschwender; second, L. Pastre, Pastre's Auto Garage; third, R. L. Hudson, Gulf Refining Co. The general car class was won by A. L. Schapps, in an Abbott-Detroit; second, L. Meerloo, Studebaker; third, W. Wolff, Rambler.

Three-legged Race. Won by D. Soden and F. A. Gehrhardt; second, Lee Woodruff and A. W. Delaney; third, J. F. Cox and W. S. Buckham.

Shoe Race. Won by A. W. Delaney, Ross; second, W. A. Madison, Flatbush Motor Car Co.; third, Lee Woodruff.

Hop, Skip and Jump. Won by A. W. Delaney, Ross; second, J. C. Smith, Kelly-Springfield; third, Harry Wallace.

Running Broad Jump. Won by A. W. Delaney, Ross; second, W. Winans, Reo Motor Car Co.; third, W. Wolff.

Slowest on High. Won by L. C. Meerloo, Studebaker; second, E. O. Bolling, Oakland; third, Arthur Jungkind of Jungkind & Vogler, accessories, in a Velie.

Slowest on High—Fords. Won by J. F. Cox, Paul M. Marko Storage Batteries; second, F. T. Lewis, Diamond tires.

Dancing Contest. Won by G. H. Kennedy, Argyle Garage and R. L. Hudson of the Gulf Refining Co.; second, Brennan and Baldwin; third, Doc Miller, Ross, and Chas. Huber.

Duck Race. Won by Arthur Jungkind, Jungkind & Vogler, accessories.

Tilting Contest. Won by George Hockschwender, Parkside Garage, and L. R. Anderson, Standard Oil Co.

Rowboat Race. Won by E. Mell, Studebaker Corp.; second, J. Bindrim.

At 8.45 the meeting was adjourned to the Brooklyn Motor Club rooms on Bedford Avenue, where the prizes for the winners were awarded. These prizes were donated by the trade, and included several cups and medals, as well as many automobile accessories. A fine traveling bag was awarded to Charles Tate of the Martin-Evans Co. for receiving the greatest number of votes in the popularity contest. A. W. Delaney, Ross dealer, received the gold medal awarded by the Brooklyn Daily Eagle for winning the largest number of points in the afternoon sports. The members of the baseball teams were also awarded bronze medals by this paper. The outing was declared officially closed with the drawing of the Bishop, McCormick and Bishop prizes.

The plans of the outing were made and carried out by a general committee of twenty-two men, headed by H. L. Carpenter, Carpenter Motor Vehicle Co. This general committee was sub-divided into five groups, handling ticket funds, dinner and arrangements, athletics and prizes, publicity, and transportation. On the field the events were in charge of the general manager, Charles Tate of the Martin-Evans Co. A prize was awarded to the member selling the largest number of tickets. The tickets sold for $4 and covered the entire program. Transportation was provided by the members and a large sight-seeing car. Some of those present were:

Henry Aker, L. R. Anderson, G. D. Atwood.

C. F. Batt, C. Bedell, John Banzer, E. E. Bell, Julius Bindrim, E. L. Bixbee, J. F. Blaisdell, E. O. Bolling, J. R. Brennen, F. B. Bradley, W. S. Buckham.

H. L. Carpenter, John Campbell, Walter Casey, D. J. Casey, C. W. Cornell, J. F. Cox. A. W. Delaney, A. M. Delisser, A. M. Dickel, O. J. Duhamel, A. H. Doty, Jr.

H. F. Earle, W. Fait, M. F. Farrel, Harry Fischer, D. J. Fitzimmons.

Fred Gabriel, G. C. Gaillird, F. A. Gehrhardt, D. Golder, H. Gilbert, W. L. Gray, H. C. Grube.

F. R. Hance, Harry Haviland, Geo. Hochschwender, L. Hock, C. W. House, Charles Huber, W. J. Houldcroft.

Thomas Ireland, Frank Jacobus, J. S. Jennings, Jr., R. H. Johnson.

G. H. Kennedy, S. W. Kessler, F. Kaine, J. Koplon, Herman Kramer, Herman Kramer, Jr., E. F. Korbell.

D. S. Lane, J. Lewis, F. T. Lewis, C. V. Linn, R. P. Lumley, H. T. Lythgoe, R. Lynn.

John McCormick, Jr., Vincent McKernin, J. J. McGowan, H. McLean.

K. Marko, H. Mayo, L. Meerloo, Paul Marko, A. J. Marlboro, Del Martin, E. J. Maxwell, W. A. Madison, Sam Miller, F. H. Miller, Doc Miller, I. F. Meyer, D. Miles, Jos. Miskend, J. B. Murphy, J. Muller.

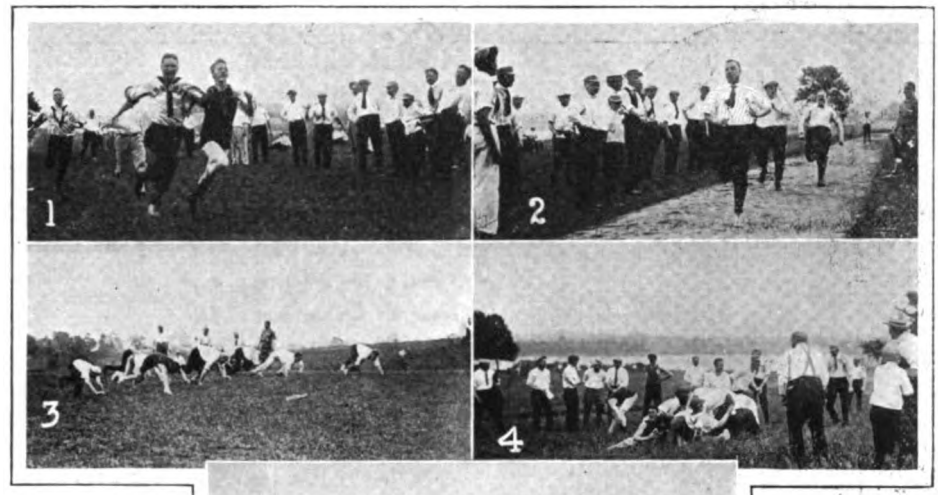
Jay O'Connell, T. B. O'Neil, Oscar Ostrom, L. Pastre, Thomas Pitt, J. Perry, M. P. Price, J. R. Porker.

Joseph Quirk, Harry Reed, Joseph Rippenger, H. J. Ross, Isadore Rotchford, C. Rotte.

Jos. Sands, W. E. Severn, F. Sanford, A. L. Schapps, J. Smith, F. Smith, H. Smith, W. O. Singer, D. F. Soden, J. G. Snyder, S. Snyder, Alex. Somers, J. Spencer, Jos. Stewart.

Charles Tate, J. T. Travis, J. Tronias, Frank Turner, William Tooker, B. Tucker.

H. Unwin, W. Van De Mark, Harry Wallace, L. T. Weiss, W. Wienan, H. H. Wilson, J. Wilke, T. H. Woods, Lee Woodruff, S. T. Williams, B. Wolff, G. C. Zeiner.



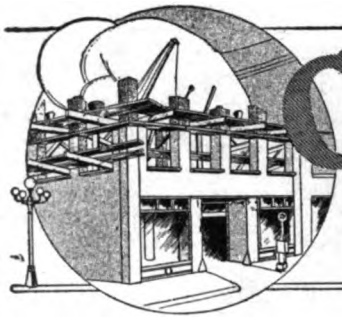
1—The hundred yard dash brought out lots of speed. F. A. Gehrhardt, Flatbush Automobile Co., won. 2—G. H. Kennedy (Argyle Garage), was an easy winner of the fat man's race. 3—L. J. Stachelroth showed the greatest dexterity in the monkey race, but was pushed to the finish by J. C. Smith (Kelley Springfield). 4—The shoe race brought the usual mix-up. A. W. Delaney, Ross, won

5—The slowest speed on high race was a genuine diversion. L. C. Meerloo (Paul M. Marko Storage Batteries) dragged in last—and won



megaphone were required to hold the dealers quiet for the group picture

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

GARAGE, SHOWROOM, STORE AND SHOP

Herewith I am sending you a print of a plan for a garage I expect to build this summer. The lot is 65 x 100 ft. and has a wide street on the east, an alley on the north and a narrow street on the west. I expect to have the main garage 45 ft. wide and the shop 18 ft., with the balance of the width taken by walls. There will, of course, be several windows that are not shown, but I have a place at the northwest corner for a small window for display purposes, and it is where it can be seen from the main part of the town. The office and display at the northeast corner can also be seen from the business part of the town. This town is built around a square and the alley is 90 ft. from the square, so I am close enough for anybody to see into the window whether they wish to or not if they go along the south side of the square.

The town has about 800 people, with 200 automobiles in the territory.

The building to be of cement block (I own a plant for making them) and the wall between the garage and the shop to be solid, except for one large door and one small one. I do not expect to have any work on the main floor, so will not put in skylights.—Reader.

Your plan provides for a rather economical use of the space at your disposal, but there are two serious objections to it. You are only utilizing a small amount of valuable frontage space for display purposes, and you have no provision for an accessory store, unless the room you have labeled the storeroom is intended for this purpose. It seems, however, that it is merely a stockroom.

The repairshop is too narrow. You will have great difficulty in moving cars in and out of this room, due to the fact that it is so narrow. Of course, small cars, such as Fords, may be maneuvered quite easily, but it would be almost impossible to place a large car in this room.

Your plot is an odd size for a satisfactory layout. If it were a little wider or a little narrower, or if it were longer, much better arrangements for the storage of cars and the placing of different departments could be made. This will be evident by examining plans for other garages which we have shown in the Garage Construction Department.

Briefly stated, the problem is to find space for showroom, accessory store, stockroom and offices, and provide a strip about 25 ft. in breadth which may be used for a shop, and yet utilize the remainder of the space which is for car storage efficiently.

Obviously, the best place for the showroom, Fig. 4, is on the corner and adjacent to it; on the front is the accessory store. The remainder of the space on the front of the building is used by the shop, and while the shop is no wider than the one in your plan, its effective width is greater because it faces on the aisle running from the entrance of the garage proper. Thus the aisle is made to do double duty and provides space enough to allow the cars to be moved in and out of the shop with ease.

This arrangement of the front of the building leaves the garage proper at the rear an unbroken rectangle which can accommodate about twenty-three cars. As we have pointed out in previous answers in this department, the fact that there are two rows of cars on one side of the aisle should not cause any inconvenience, because it is possible to arrange the coming and going of the cars so that the front row is practically empty before a car in the rear row must be moved. This means that as the owners bring their cars in each night you must ask them at what time the next day they will require their machines. The machines which are to go out before a certain hour, say 10 o'clock, must be put in the first row, and those after this time in the second row.

The showroom should be finished in some light color, preferably white, and should be furnished. You should have pictures, rugs, chairs, a table or so, palms, and possibly a flat-top desk. It may strike you offhand that these things are not essential, but the more attractive you make the setting for your cars, the better impression your cars will make on prospects, and an attrictive showroom is an enticement; it draws the prospect to it, and once he is in it he is likely to stay longer than if the surroundings were not so good.

The fact that you are located in a small town does not make any difference. Probably you will be the only one in your vicinity with a showroom, and that in itself will put you ahead of your competitors. but there is no reason why you stop with merely a bare showroom. Why not go two steps ahead of your competitors instead of one, by making your showroom just as attractive as you possibly can? You will spend several thousand dollars in building your garage and one of the main purposes of this building is to promote your sales work. Therefore, the $200 or $300 extra expense which will be required to make your showroom ideal is not to be considered.

You have given no idea as to just how valuable the frontage space is and, therefore, we have placed the shop at the front of the garage. However, if there is a demand for store locations in your vicinity, it would be well to finish the front portion of the shop as a store and rent it to someone. The shop would then be pushed to the rear to the amount occupied by the store.

BUILDING 40 x 60 FOR VILLAGE

Editor Motor World:

Would like a plan or drawing of a garage 46 x 60 ft., one story. The building is to face the east. Would like as completely equipped repairshop as advisable for a town of 200 people. What size accessory room would you recommend? We do not figure on having a showroom.—P. Iverson & Son, Watson, Minn.

In view of the size of the town it seems advisable to combine the accessory store and your office in one, Fig. 2. The store should be furnished with a plate glass show window and glass show cases. You should have a good window display, which should be changed once a week.

The shop is placed at the rear, with the machine tools at one side. The wash rack is ploced in the aisle, but it is believed that you will not have so much washing that it will be inconvenient to have it there.

A bench is placed all across the rear and all or part of this space may be used as a shop, as required.

Unless your repair business is very small, it will propably be advisable for you to have at least a lathe, drill press, emery wheel and arbor press, together with a complete equipment of hand tools. If there is a machine shop in the vicinity you might eliminate the lathe.

TWO-STORY GARAGE AND SHOWROOM 100 x 150

Editor Motor World:

I am contemplating the erection of a modern, complete garage 100 x 150. I shall install a complete equipment of machine tools and painting department, and want good salesroom and offices. The plot lends itself readily to a one-story and basement scheme.—H. C. W.

Your plot is an excellent one for the construction of a garage, especially in view of the fact that the slope of the land makes the use of an elevator unnecessary, Figs. 1 and 3.

Cars are stored along two aisles running from front to rear, this arrange-

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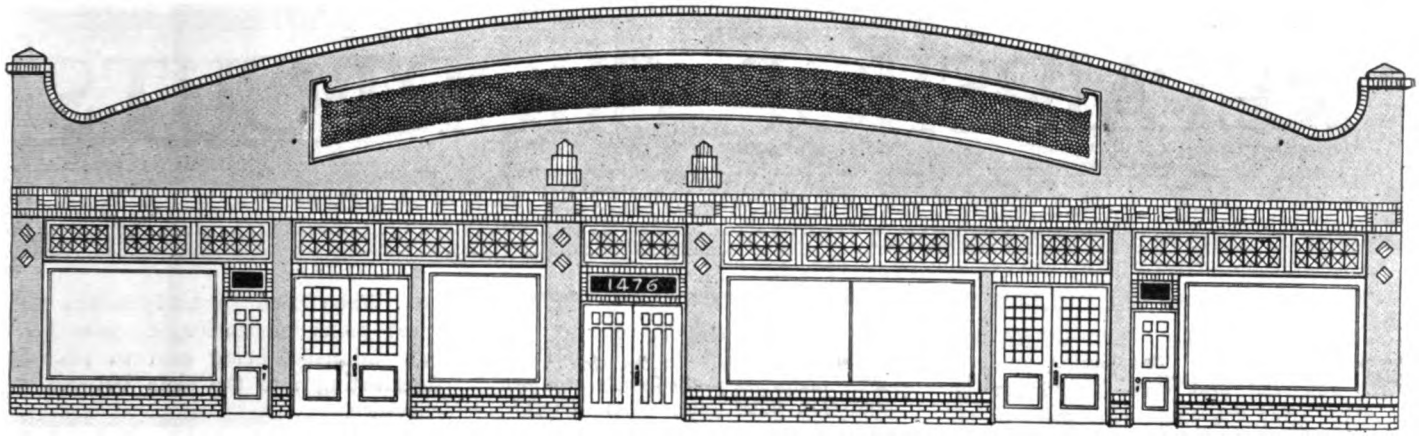


Fig. 1—At each side are stores for rent, and in the center at the left is the accessory store and at the right the showroom

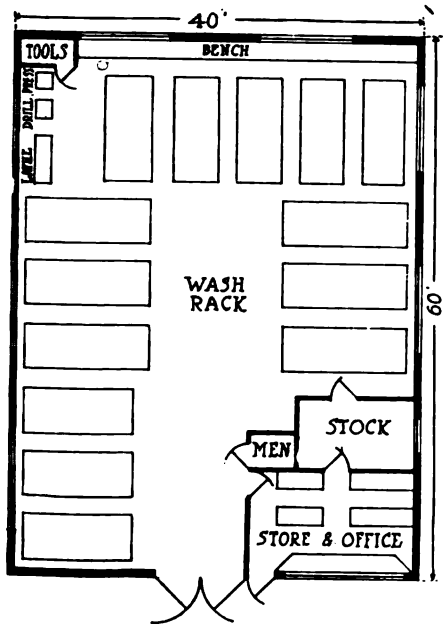


Fig. 2—Small garage with store and office combined

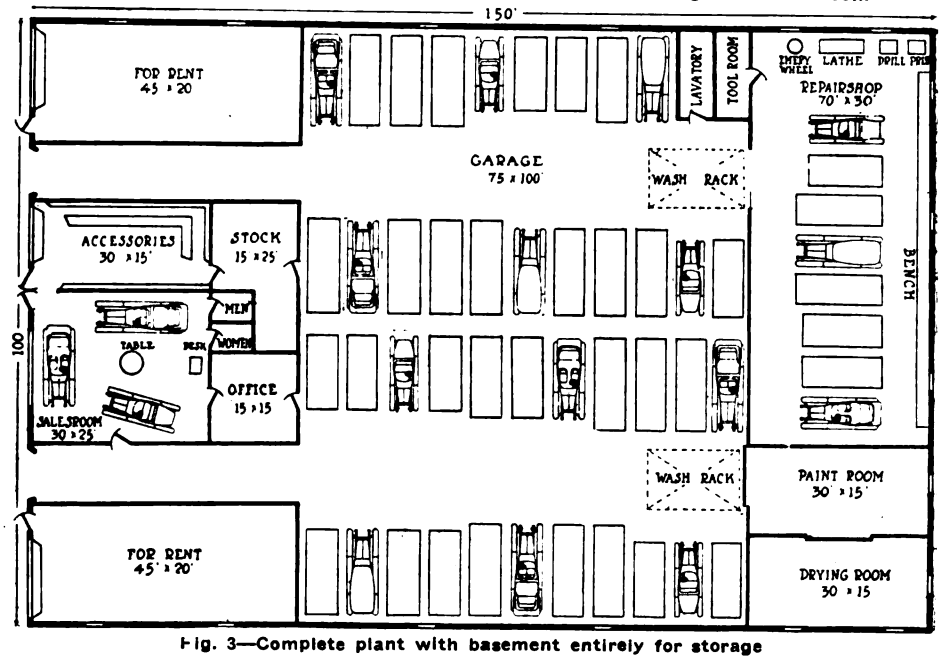


Fig. 3—Complete plant with basement entirely for storage

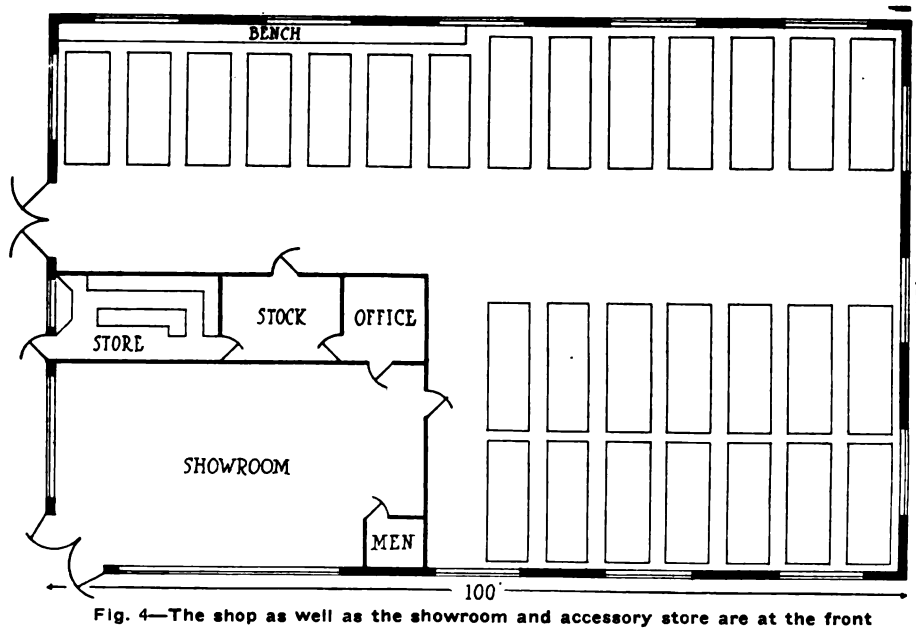


Fig. 4—The shop as well as the showroom and accessory store are at the front

ment being used on both the main floor and in the basement. This is the only satisfactory way of placing the cars, although it has the slight disadvantage that the entrances to these two aisles on the ground floor break up the frontage of the building and give some difficulty in arranging the accessory store and showroom.

Considering the size of the garage and the probable volume of your business in Watertown, it is possible that the size of the showroom and store is not large enough; but it seems advisable to combine them in the central space, which cannot be over 40 ft. wide, due to the location of the garage entrances on either side.

If the garage is situated on a main street it will probably pay you to have a store for rent in the space at either side of the two entrances, but if this is not the case this space may be used for the storage of cars.

In the latter event it would be advisable to have plate-glass windows at the fronts of these two spaces. You might use one for accessories and you might store your demonstrator in the other one so that it would be an addition to the display of cars in the showroom.

Editor Motor World:

I desire to thank you for the plans and for your courtesy in the matter. I have been studying the layout, and think you have worked it out splendidly. Your idea of concentrating the salesroom, accessory store, offices, etc., between the entrances appeals to me greatly.—H. C. W.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 761) CAMSHAFT PULLER

Camshafts may readily be drawn out by the tool shown. The timing gear is first removed and then the puller is screwed over the end. This member of the puller is free to turn on the long screw which actually does the pulling. The mechanism is mounted on a length of 3-in. pipe.—C. E. Bradish, Connell & McCone Co. (Overland), Boston.

(No. 762) CARBON SCRAPING TOOLS

With the tools illustrated almost any motor may be cleaned of carbon without removing the cylinders from the crankcase. The various shapes enable the mechanic to reach the most inaccessible parts of the combustion chamber.—John R. Mason, Fenway Garage, Boston.

(No. 763) ADJUSTABLE PULLER

The feature of this puller is the peculiar shaped hooks designed so that they may be effective on a wide range of gears. The arms are exceptionally strong and will grip firmly whether they are swung in to hold a small object or out to hold a large one.—C. E. Bradish, Connell & McCone Co. (Overland), Boston.

(No. 764) FLYWHEEL LEVER

When overhauling a motor, particularly when scraping bearings, it is necessary to frequently rotate the crankshaft. Usually it is so stiff that more leverage is necessary than that obtainable by merely grasping the rim of the flywheel. The lever shown is an excellent tool for aiding in this work.—C. E. Bradish, Connell & McCone (Overland), Boston.

(No. 765) BATTERY GRID PRESS

When storage battery plates become buckled they may be straightened by applying pressure. An arbor press, or even a vise, may be used, but where considerable work is done the small press shown will be found to be a great convenience.—C. E. Bradish, Connell & McCone (Overland), Boston.

(No. 766) PISTON RING SPREADER

Piston rings may readily be expanded so that they can slip over the pistons by the use of the tool shown. It consists merely of a steel ring with handles so that it may be expanded. At the top of each handle is a little nub which fits in the step of the ring.—Fenway Garage, Boston.

A Suggestion

YOU have tried out some of the ideas set forth in these pages and you have found them useful. Perhaps, however, you have found that you could improve upon them. Perhaps they have started you thinking and you have evolved devices of your own.

Make rough pencil sketches of your improvements on some of these things, or of your own ideas, and send them in with descriptions. We will fix them up for publication and give you credit for the ingenuity you have displayed. DO IT NOW WHILE YOU THINK OF IT.—Editor.

(No. 767) WELDING TANK FRAME

Tanks of acetylene and oxygen for welding and brazing are heavy and difficult to carry. The illustration shows a substantial frame for holding these units. It is made of flat bar stock and angle iron and is mounted on casters. There is a tool box in one corner in which not only tools, but also tips, fluxes and all the necessary paraphernalia for doing work of this character is carried.

(No. 768) MAGNECTIC PICKUP

The small diameter of this tool makes it excellent for picking up small iron and steel articles which have dropped into inaccessible places. One side of the coil is grounded on the handle and the other is attached to an insulated wire which runs up the handle and from thence to the battery. The other wire from the battery is connected to a small insulated sleeve at the base of the handle, so that by squeezing the handle the circuit is closed.—C. E. Bradish, Connell & McCone (Overland), Boston.

(No. 769) STRAIGHTENING AXLE

An axle was bent by the hub striking a polie and the owner was desirous of having the repair effected in the shortest time. This was accomplished by cutting a 2 x 4 so that it could be securely wedged between the hub and a ceiling beam. Then a jack was placed at the point where the bend occurred and the handle operated until the axle was straightened.

(No. 770) REPAIRSHOP HORSE

A serviceable and durable repairshop horse may be made from channel sections and iron pipe, welded together by means of an oxy-acetylene welding outfit. When used to hold motors with three point suspension, a cross brace may be used, being held in place by lugs fitting into the slots between the channels.

(No. 771) ADJUSTING BRAKE

The illustration shows a method of using a jack for changing the adjustment of the brakes on an Overland. It will be found particularly useful when the parts stick.—M. C. H.

(No. 772) OFFSET SCREWDRIVER

Offset screwdrivers are as convenient to use as they are simple to make. They enable screws set in accessible locations to be reached with ease and are particularly useful to hold a machine screw head while the nut is turned with a wrench in the other hand.—J. R. Mason, Fenway Garage, Boston.

(No. 773) BLOWER FOR FORGE

A small blower for a forge can be made of odds and ends about the shop. For the sides, use wood, the circle being about 8 in. in diameter. The paddle which induces the draft can be made of tin inserted into a central spindle. For bearings a couple of large nails driven through the side casings will do. The top and bottom casing can be either light wood tacked in place or can be tin, which is easier to work. From the spindle a belt runs to an old fan motor. Almost any motor will suffice, because no pressure need be raised by the improvised blower; a continuous draft is all that is needed.—Gerhart & Young, Harrisburg, Pa.

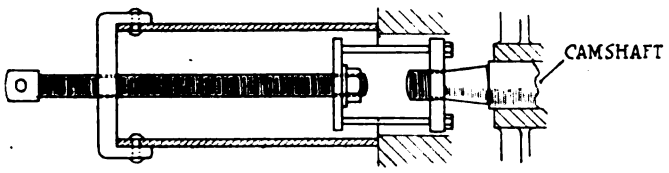
(No. 774) RACK FOR TIRES

A rack for holding stock tires in position can be made of ¼-in. round iron rod fastened in place by ordinary staples. The rods should be about 5 in. apart in order to allow room for the larger sizes of tires.—Vuille Motor Co., Huntingdon, Pa.

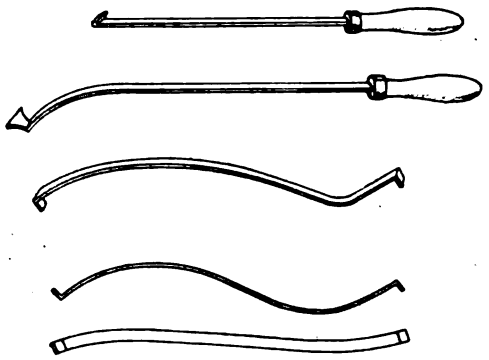
(No. 775) REMOVING BEVEL PINION

To remove a tight bevel pinion on a taper seat, remove nut and rest edge of gear on bench. Take a cold chisel and round the end so that it will fit into the bottom of the tooth space, not touching the sides of the teeth. Put the chisel in place and strike several blows with a heavy hammer, and the pinion can be removed easily without damaging it in any way.—Cornell & Barber, Canton, N. Y.

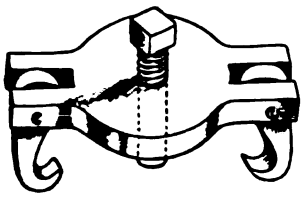
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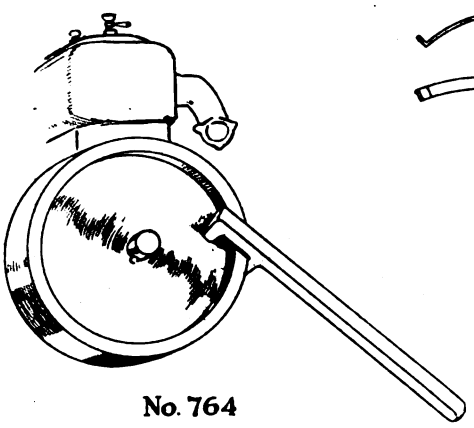
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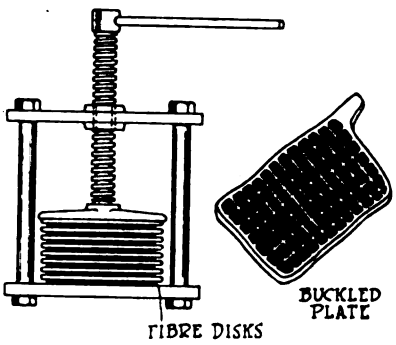
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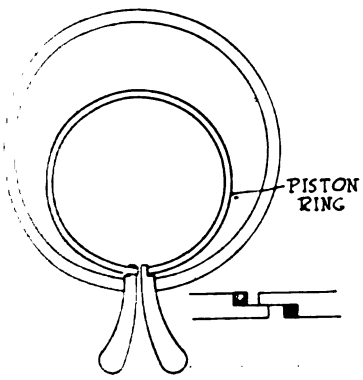
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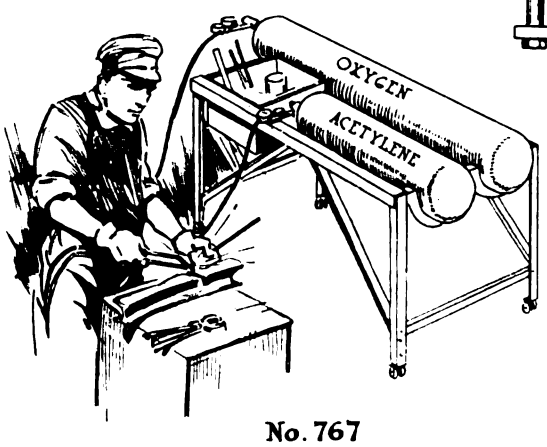
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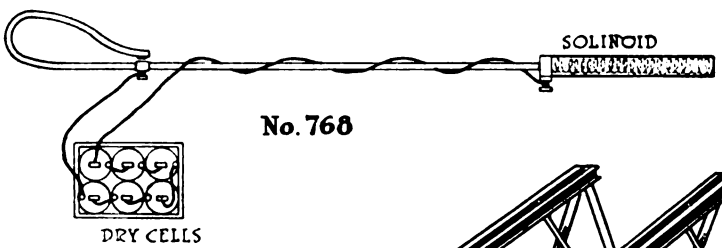
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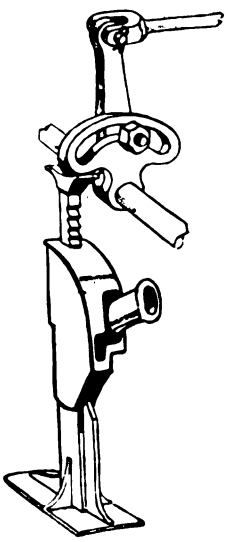
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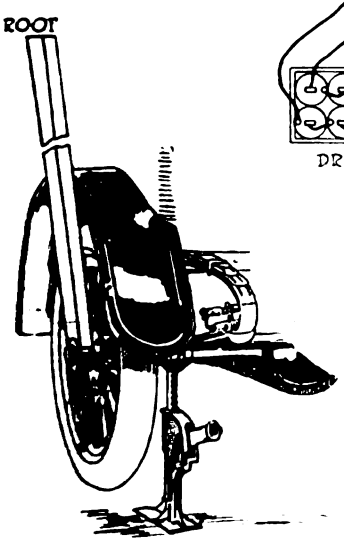
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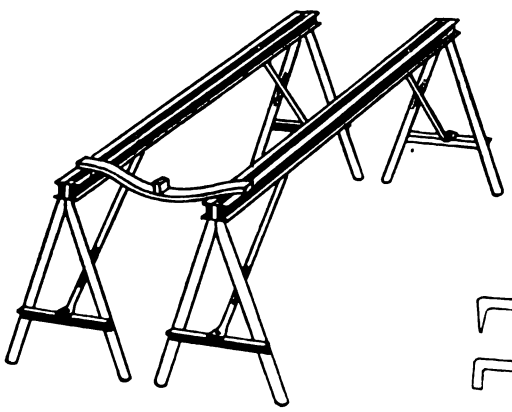
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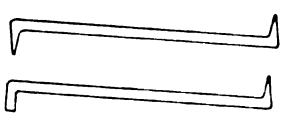
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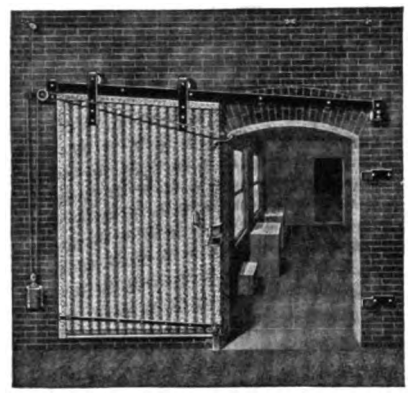
Accessories & Supplies



EVANS ALMETAL FIRE DOORS

Merchant & Evans Co., Philadelphia.

These fire doors, as installed, serve to close automatically necessary openings in division and fire walls. The construction is of the rigid, all steel indestructible type. In daily use the door is held open by a counterweight and cord, acting through a fusible link. In case of fire, the fusible link is melted, and the door slides shut under its own weight. This tends to confine the fire to one portion of the building, and the makers state that the insurance companies will allow a reduction in their rate after installation.

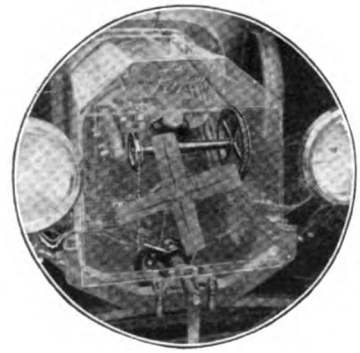


Evans' almetal fire doors for garage construction

SYMONS MECHANICAL STARTER

Symons Bros. Co., Winnetka, Ill. PRICE, $12.50 ($14 installed); dealers price, $7.50.

The Startford, enables the Ford driver to crank his engine from the seat. The fan belt pulley on the crank shaft is replaced by a combined fan belt and ratchet pulley. This ratchet pulley in no way interferes with the crank, which may be used as before. The ratchet is connected to the handle on the dash by means of chains working over pulleys running on a countershaft. This countershaft is supported by a special bracket comprising the upper hose connection and support for pulleys. A device enabling the motor to be primed from the seat is also supplied, and is attached at at point convenient to the driver's left heel.

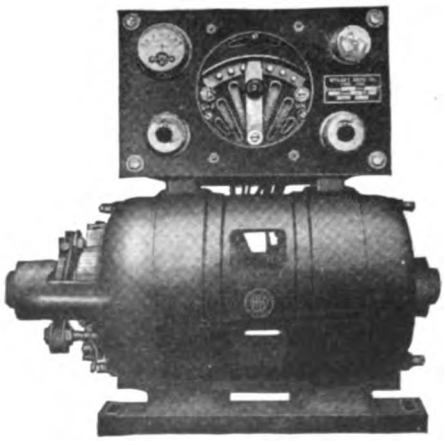


Symons mechanical starter for Fords

H. B. BATTERY CHARGING SET

Hobart Bros. Co., Troy, Ohio. PRICE, $10 cash, and balance in fourteen monthly payments of $10 each.

This installation provides a means of charging six 6-volt batteries or their equivalent at one time in a period of 10 hours. This set is furnished complete with switchboard and all accessories, ready to operate. Various types are made, depending upon the available current. It is stated that with this set anyone can charge automobile lighting and starting batteries by following simple directions supplied by the makers.



H. B. 6-volt battery charging set

RAYFORD TRUCK FOR FORDS

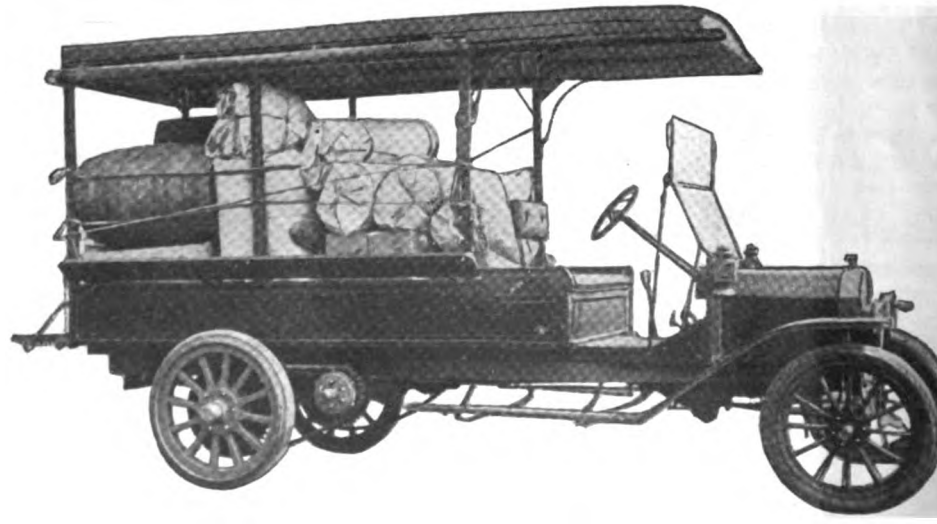
The Rayford Co., Philadelphia. PRICE, $300.

The Rayford attachment makes the Ford into a one-ton truck. It consists of a heavy pressed steel channel-section auxiliary frame securely bolted to the Ford frame. This frame gives a net frame length back of the seat of 8 ft., and permits the use of a 10-ft. body. Attached to this frame by semi-elliptic springs is an I-beam rear axle, carrying artillery type truck wheels. Chain drive is used, through sprockets attached to the Ford rear hubs. No part of the Ford car is changed except rear wheels with their larger tires replace the original wheels. The weight of the attachment is 1000 lb. bringing the weight of the truck up to 2000 lb. The standard sprocket gear ratio is 2 to 1, though other ratios may be furnished on order. The makers state that the Rayford may be attached in 2 hours, and fits the Model T Ford from 1909 to 1916.

RIM GRIPPING SUB-CASING

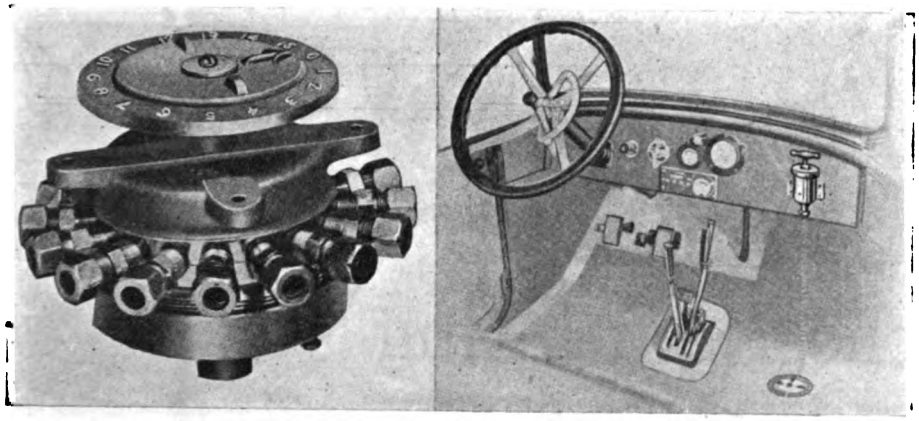
The Fisher Sub-Casing Co., 5048 Lake Park Building, Chicago. PRICE, 33 x 4, $7.80.

This sub-casing is placed inside the casing and is designed to hold rim cuts and prevent blowouts. It is supported at the bead by endless steel rims, made conical to fit against the inside of the outer tire. These steel rims are located below the place where tires ordinarily rim cut, and tend to hold the sub-casing in place, even though the outer casing is badly rim-cut.

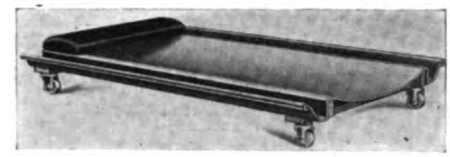


Rayford ton truck for Fords

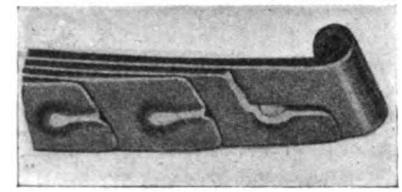
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Monitor lubricator which takes the place of grease cups



Mecco auto creeper



Stanley self-lubricating springs

MONITOR LUBRICATOR

Monitor Lubricating Co., 1218 Chestnut Street, Philadelphia, Pa.

Grease cups are eliminated throughout the car and all grease is supplied by an attachment which is mounted in the driver's compartment. The device consists of a grease gun, which is fastened permanently on the cowl and which delivers grease to a distributor sunk in the floor board. Pipes run from it to the various points on the car which require lubrication. The top of the distributor consists of a dial with numbers placed at points on its circumference, each one corresponding to some pipe running to a point requiring lubrication. If the pointer is turned to number 3, for example, and the handle on the grease gun is screwed down, grease might be delivered to the right front spring bolt. The delivery of the grease to the various points is absolutely positive, and only occurs as the driver deems it necessary. The pipes running to the springs are carried along the frame side members and those running to the axles branch off from the frame and run along the springs. The pipes are sufficiently flexible so that the relative motion of the different parts of the car will not cause breakage.

SPEEDOMETER SHAFT REPAIR

The Speedometer Repair Co., 1303 West Jackson Boulevard, Chicago.

A process for repairing flexible speedometer shafts that is said to be the only one known. No solder is used, as this destroys the flexibility of the shaft, but a crimped steel ferrule is attached in such a way that it holds the broken ends together and yet gives the shaft the same flexibility as before being broken.

R & M PISTON RING

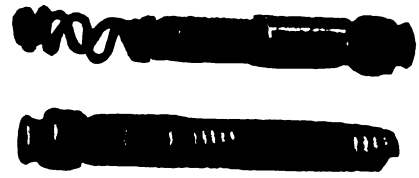
Modern Electric & Machine Co., Indianapolis. PRICE, $1 to $1.50.

The ring is made in three parts, the inner ring having a V-shaped outside surface. Fitting against each of the two faces of the V are smaller rings, which offer a flat surface to the cylinder walls.

SELF-LUBRICATING SPRINGS

Fulton Sales Co., 910 Michigan Avenue, Chicago. PRICE, Ford, $4.50 up; Hudson, $5 up; Cadillac, $9.50 up; Packard, $9.50 up; other makes in proportion.

Oil pockets are provided in the ends of every leaf, so that the springs may



Speedometer shaft repair



R & M piston ring

be lubricated with an ordinary oil can. The pockets have felt pads which retain the oil, so that it is only necessary to supply lubricant two or three times a year. The action of the spring distributes the oil throughout the surfaces.

WARNER PRAIRIE SCHOONER

Warner Mfg. Co., Beloit, Wis. PRICE, $175 with solid tires; 30 x 3 pneumatic tires, $200.

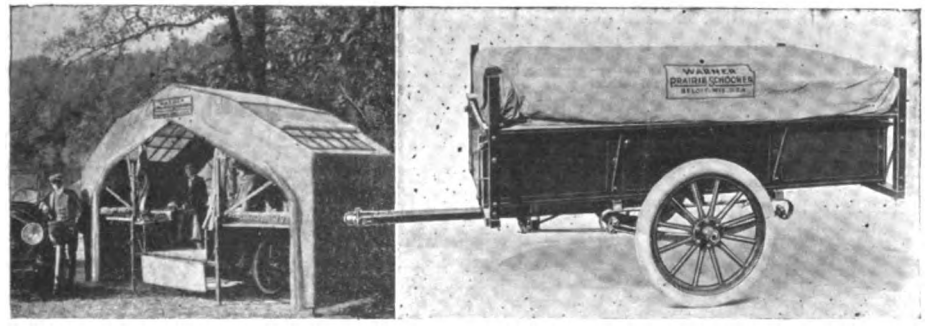
The equipment comprises a folding tent of heavy waterproof khaki duck, two folding Pullman beds, 4 x 6, with Non-Sag springs and two mattresses, compartment curtains for each bed, ice chest, folding table and folding camp stove. There is also room for steamer trunks, blankets, camping supplies, etc., when the tent and beds are folded. The trailer with equipment weighs about 750 lb. and is built to carry 1500 lb. Fitted with pneumatic tires its speed capacity is 50 m.p.h and with solid tires 15 m.p.h. The trailer is built on automobile lines and is finished to harmonize with the car. The trailer tongue is adjustable, so that the box of the trailer is always level, irrespective of the make of car to which it is attached. The tent used when opened is 7½ x 14 ft., the eight legs supporting the beds and the tent being adjustable so that the beds can be made level on uneven ground. The beds are 4 ft. above the ground, the trailer body forming the floor of the tent. Stakes and guy ropes are included. The entire outfit can be opened and arranged in 10 min. by one man; in 20 min. the equipment can be removed from the Prairie Schooner, which can then be used as a commercial trailer.

MECCO AUTO CREEPER

Moeschl-Edwards Corr Co., Inc., Covington, Ky. PRICE, $2.

A creeper 20 in. wide by 36 in. long, with a smooth steel curved body and padded head rest. There are pockets at the sides for holding tools and small parts. Weight, 15 lb.

The Salesmanship Congress :: Page 6



Warner Prairie Schooner, with tent opened and as a trailer

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Do the Next Thing

IT HAS been said, and with a great deal of truth, that life in this work-a-day world is just one thing after another. But the important thing to bear in mind, particularly insofar as it concerns the lives of really successful business men, is that all of these things must be accomplished in their logical order.

In short, the successful man does the next thing. He does not skip all over the business field tackling one job and dropping it for another and then another. He does the next thing.

Every minute of the time of the president of the United States is carefully scheduled for some particular duty. At 10:02 in the morning he may have two minutes to sign some papers. And at 10:04 he has an important meeting with some of his cabinet members. And so it goes. He is continually doing the next thing. He can't skip one thing because it is hard and leave it for later. In order for him to make any progress at all, it is absolutely necessary that he do the next thing.

So it is with our most successful business men in every field of endeavor. No one can rush right into the office of a captain of industry and have his proposition considered immediately. No, indeed! The captain of industry is too busy doing the next thing. By and by when he gets around to it, he will consider the proposition—he will consider it when it is the next thing to do.

All of which means, of course, that every business man must have a plan of action for the day, for the week, for the month. He must know in advance exactly what he is going to do in the immediate future. Only in this way can he spread his attention over the great number of things that must receive it.

Nor is the motor car business any different from any other. The dealer, the garage and the repairman, the jobber, must do the next thing. You cannot climb a ladder without stepping on all the rungs. Your progress to the top means that you must step on each rung in succession. In short you must do the next thing.

One successful dealer has his stenographer write down in a diary each day the things that he must do that day. Then he does them. And he always does the next thing, next.

You may fool yourself by leaving the hard things till last. But you've got to do them anyway. So do the next thing.

Faulty Oiling Systems

OF late have come many complaints of a serious nature from dealers, garagemen and repairmen in practically all sections of the country. The trouble which causes the complaint is the rapidity with which the modern motor accumulates carbon deposit. Just where the trouble lies is difficult to state authoritatively though undoubtedly some—if not much—of it is due to faulty oiling systems. But be the cause what it may, one result is sure, and that is that an additional burden is placed on the dealer.

Practically every shop has troubles of this sort to contend with day in and day out, and makes of cars which have this fault are the rule rather than the exception. Neither is the trouble limited to a price class, but is found in the best and cheapest as well.

The fault seems squarely up to the manufacturer, and in view of the fact that dealers are often forced to include necessary repair work they are called upon to do under the head of free service, a direct loss to the dealer results.

What usually happens is this: The pistons are tight enough when they leave the factory, but due to lubrication systems of faulty design, they wear too rapidly, with the result that soon they are no longer sufficiently oil-tight. Occasionally, also faulty workmanship or material gives the same result.

Scraping the carbon out is only a temporary remedy. Permanent relief can only be obtained by cutting an oil groove in the piston below the rings and drilling holes from it to the interior, or else drilling holes at the lower edge of the lower ring groove. Sometimes even this is not sufficient and new pistons must be fitted.

All this means extra trouble for the dealer as well as extra expense in many cases. Furthermore, the inconvenience and expense to which the owner may be put is a serious detriment and may cause loss of sales.

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Do It This Way

···QUERIES ANSWERED···

TAKING CARE OF USED CARS

Editor Motor World:

Please inform me as to the best plan for disposing of used cars of prospects who have used cars. I do not wish to handle them myself. What are your suggestions as to the matter?—Harry I. Benstal, Clay Center, Kan.

You may make a rigid rule not to buy any used cars yourself and may inform your prospects that you will take in and dispose of such cars to the best advantage possible. Then when you find a man willing to buy a prospect's used car, you may act as a go-between and work the prospective buyer up and the car owner down until they have gotten together on a price. We believe that this is as good a method as any.

You may also take in used cars and sell them for your prospects on a small commission, say 5 per cent.

You might take a car in, sell a new car and have a distinct understanding with the prospect that whatever price you get on the old car will be applied on the purchase of his new car. It is a safe practise under this method, however, to make the prospect pay the full list price for the new car and turn the money over to him when you sell the old car. It is much easier for the prospect to accept money than to give up money, and if you can get the whole price out of him in the first place it will be much easier going for you.

These methods have been followed with success by successful dealers. The one important part of the whole matter is to take a stand and stick by it. If you say you are not going to trade and then do make a trade, the news is going to spread and your defense will be beaten down. If you are not going to trade, simply do not trade, and let that be the end of it. If you do trade you will be like the dealer who wants to get the list price for his cars but who shaves the price a little for this man and that man, and winds up by getting so little that he doesn't make anything at all.

SPEEDING UP A FORD

A northern New York garageman made a Ford over into a light speedster in this manner:

The engine was removed, taken apart and thoroughly cleaned. The cylinder head was placed in a planer and 3/16 in. of stock planed from the face fitting onto the cylinders. This decreased the compression chamber and increased the compression, giving a much sharper explosion.

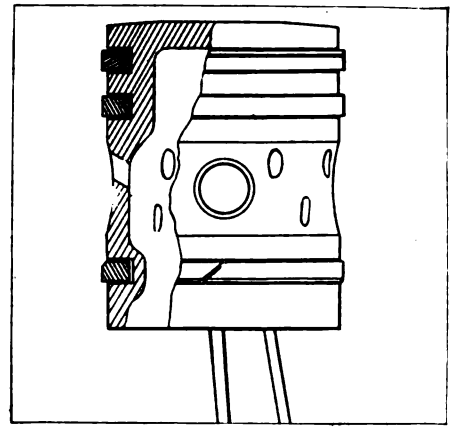


Fig. 1—Ford piston modified for racing

To insure a more perfect running balance and less vibration at high speeds, the weights of the connecting rods were then made equal. The center of gravity of each rod was also brought to the same relative position by careful filing and balancing.

Fig. 1 shows the method employed in rigging the pistons up for speed work. Alternate ½-in. and ⅝-in. holes were drilled in the pistons below the ring line, and by filing the inside of these holes the pistons were balanced. In addition to reducing the weight of the pistons, these holes serve for return flow of the excess oil and more perfect lubrication of the piston-pin bearing. Leak-Proof rings were fitted to the top groove of each piston to insure retaining the increased compression.

After a thorough overhauling the engine was reassembled. The spark timing was advanced and the cam shaft set ahead slightly, although both were later changed to suit the best running conditions.

In addition to the above changes on the engine, the steering wheel was lowered, a light body fitted to the chassis, and canvas mud guards made to replace the heavy metal guards. With this combination the car easily hit the 60-mile mark, and on several occasions did much better than that.

It was found that the oil consumption of the car rigged thus was very great.

TIMING OF MAXWELL MERCURY

Editor Motor World:

Kindly give me the following information on the 1914 Maxwell Mercury roadster:

1—Timing in degrees of the inlet and exhaust valves.

2—Gear ratio on high.

3—Explanation of the oiling system.—J. E. C.

1—The motor is timed as follows: Inlet opens 15 deg. past upper dead center and closes 40 deg. past lower dead center. Exhaust opens 40 deg. before lower center and closes 10 deg. after top center.

2—The ratio on high gear is 3.5 to 1.

3—The oiling system is a splash design, the oil being kept to a definite level by a standpipe in the center of the crankcase. The pump takes the oil from there and returns it to the tank. The same pump takes the oil from the tank through the sight feed oiler and by gravity it runs from there to the front of the crankcase and finds its level in the standpipe.

This pump does not oil the clutch compartment and it is necessary to put oil in from time to time. The disks in the friction clutch should run in a bath of oil to the depth of ¾ in.

NATIONAL TWELVE WIRING

Editor Motor World:

Will you kindly publish a wiring diagram for the 1915 National twelve?—Subscriber.

The diagram is shown in Fig. 2.

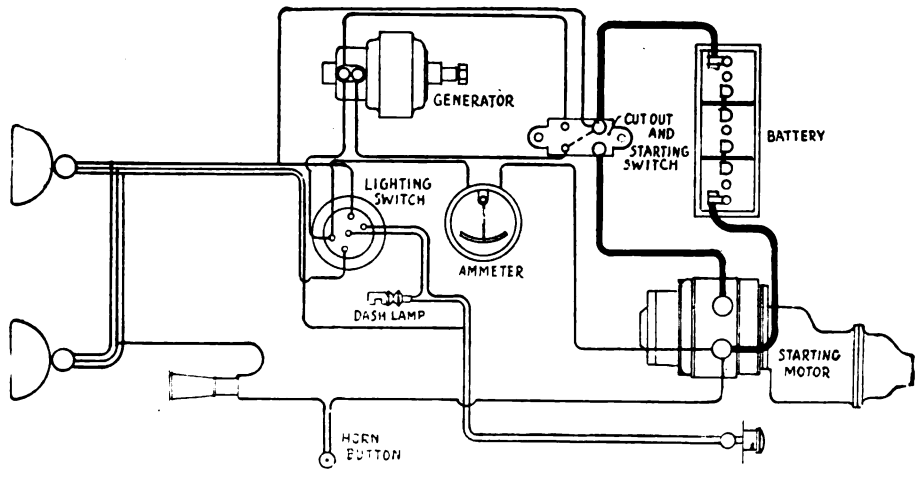


Fig. 2—Wiring diagram for 1915 National twelve

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The RETAIL NEWS

EAST

The E. R. Benson Motor Car Co., Portland, Me., Studebaker dealer, has promoted C. A. Laidlaw, its retail sales manager, to be wholesale manager for Maine.

Frank H. Kenny, Worcester, Mass., Chalmers dealer, has taken a five year lease of new salesrooms on Main St.

Anson Williams, North Adams, Mass., has opened a garage on Summer St.

Rollins & Bean, Phillips, Me., have enlarged their garage.

Harvey Broadbent, Hudson, Mass., has leased the South Street garage.

O. A. Sylvester, Gardner, Mass., has started building a garage.

The Barre Garage Corp., Barre, Vt., has been organized by E. A. Drown, Morton H. McAllister and George Kent.

Herbert & Turcotte, Franklin Falls, N. H., have moved the Central Garage business into new quarters.

Antero Schiavina, Clinton, Mass., who sold the Main Street garage to Earl R. Pickford some time ago, is going to buy it back this month.

Phillips Garage, Rochester, N. H., has been enlarged by a 50 x 50 fireproof addition.

The Newport Auto Supply Co., Newport, R. I., has been chartered by James T. O'Connor, Thomas M. Dawley and Cornelius I. Sullivan.

The Maxwell Motor Co., Detroit, Mich., has opened a factory branch in Baltimore, located at 134 West Mount Royal Avenue. L. A. Tilley has been appointed manager.

The Abbott Garage, Franklin, Mass., has completed the first of several additions to its plant.

The Packard Motor Car Co., Boston, has approved plans for what will be the largest garage in Worcester, Mass., for its branch in that city.

The Hood Tire Co., Watertown, Mass., has appointed Edward Cross New England traveling representative.

The Stoddard Motor Car Co., Springfield, Mass., until a few weeks ago dealer for the Pierce-Arrow line for years, has signed up to handle the Locomobile.

The International Motor Co., New York, has opened a branch at Springfield, Mass., for Mack trucks.

The Woodbourne Auto Station, Jamaica Plain, Mass., which opened in November, 1915, has been sold by F. W. Boynton to Dana E. Sargent, Jr., Rochester, N. Y., who will continue the garage and Pierce-Arrow service station. Boynton will continue to be the agent for the Overland and has also been appointed Massachusetts distributer for the Michigan Trailer Co.

The East End Auto Co., Harrisburg, has opened a new display and salesroom at 120 Market Street. The dimensions are 28x40 ft. E. E. Adams is in charge.

S. B. DeWitt, A. Bingemen and **L. A. Hackett**, all salesmen, have combined and are now doing business under the firm name of the Motor Car Exchange with display rooms at 1239 Main Street, Buffalo. They have also secured the agency for the Lexington.

MOUNTAIN

F. C. Cullen, Denver, Studebaker distributer, is erecting a two-story service station, 100x125 ft.

SOUTHWEST

Ayers & Greene have opened a new vulcanizing plant on West Front Street, Kingman, Ariz.

Charles Iehl has taken over the management of the Old Trails Garage, Oatman, Ariz.

The Jeffery Distributing Co. of St. Louis has been incorporated. The officers are: President, Henry Rottersman; vice-president, Eugene Meyer; secretary, Jos. Van Raalte; Emil Rottersman, manager truck department; sales manager, J. L. Groover; treasurer, Gus Schmidt. The company will remove at once from 2638 Locust Street, to 2650 Locust, gaining thereby storage room for 100 cars, besides more spacious showrooms and mezzanine floor office quarters. The vacated building will be converted into a used salesroom and a service station for Jeffery owners. The Jeffery company was organized unincorporated last February and has placed more than 100 Jeffery cars and trucks since that time. A stock of car and truck parts will be carried under the new arrangement.

The Mississippi Valley Motor Co., St. Louis, has recently been incorporated to distribute Oakland cars throughout eastern Missouri, southern Illinois, western Kentucky, western Tennessee, and for the entire states of Arkansas, Mississippi and Louisiana. This company has for its president, E. A. Hatfield, for several years assistant secretary and director of sales of the Bain Wagon Co., Kenosha, Wis.

J. H. Eble, Lyons, Kan., has finished up his garage with a beamed ceiling and a hardwood floor .

E. J. Roberts, Westmoreland, Kan., has moved across the street. E. H. Brenton is head mechanic.

A. C. Mead, Heidelburg, Kan., has traded his farm for the Athol garage in Smith Center.

Hogeboom and Thompson, Goodland, Kan., have started the work on their garage extension.

Chas. Adamson, Elk City, Kan., has rented the building formerly occupied by Loether Bros. Garage, and will operate a garage.

Cline's Garage, Esbon, Kan., has been completed and occupation has already taken place.

Steele's Garage, Sharon Springs, Kan., is having a fifty-foot addition built.

Walter & Jones, Kingman, Kan., have moved to the corner of Main and Sherman Streets.

William Lampton, McCune, Kan., has opened a garage and taken the Overland agency.

Greenleaf & Hanlon, Kingman, Kan., have moved to the building formerly occupied by Grant & Oakes, and have taken the Overland and Willys-Knight agencies.

J. C. Jennings, Tixhoma, Okla., has purchased the State Line Garage from McCulloch & Renfro.

The H. & H. Garage, Altus, Okla., owned by the Harris Bros., is now in its new building.

Carle Hagar, Louisiana, Mo., has opened a garage.

Spurlock & Lumpee, Versailles, Mo., will soon move into the new garage building being erected next door to the Statesman office by William Schaper.

Roy Shelley, Richmond, Mo., has sold his garage to Chas. Peterson and Edgar Kincaid.

Meyer & Walker, Rockville, Mo., have dissolved but will handle the automobiles they are now carrying until their contract with the companies expires.

E. H. Farnsley, formerly of the Kansas City Auburn Auto Co., has sold out to B. E. Gridly. The firm will be known as the Auburn Auto Sales Co.

The Locomobile Co., of Missouri, Kansas City, is about to make arrangements for a second story for its building at Nineteenth and McGee Streets. The building is 50x130. The branch, under M. P. Leihy, handles Missouri, Kansas, Oklahoma and Texas, and the territory is rapidly increasing in production. The addition of the Riker truck promises greatly increased demands for space. The second story will be used for storage and shops.

The Cole Sales Co. has been organized in Kansas City, with headquarters at 1606 McGee Street, to distribute the Cole in Kansas and western Missouri. The Cole now has agencies in Topeka, Wichita, St. Joseph and Chillicothe. The proprietor of the sales company is George Stevenson, who at this location has been handling the Stearns-Knight for the past year. He will continue his representation of the Stearns.

R. V. Savage, Sedalia, Mo., formerly mechanic at the Sunny Side Garage, is now operating a garage of his own at 310 South Lafayette.

Furlon's new cement garage, Phillipsburg, Kan., has been completed.

Frank Cooper, Hutchinson, Kan., has leased the M. and L. Garage, and has already taken charge.

Wm. Charles, Downs, Kan., has purchased his partner's interest in the rentage of the B. & C. Garage, which will from now on be known as the Charles Garage.

N. H. Cannon, Kiowa, Kan., has sold his vulcanizing shop and is looking around for a new location.

The J. C. Schweitzer Building, Springfield, Mo., which is being erected on Jefferson Street, will house the agencies for the Chevrolet Motor Car Co., the Rubber Tire Supply Co., and the Hilton Garage.

John I. Cooper, Baxter Springs, Kan., has let a contract for a new garage building.

L. H. Hamper, Traer, Kan., has purchased the Harry Rathbun livery business, and is adding a garage and repair department.

G. L. Fenwick, Marysville, Kan., is building an extension of 32 feet to his 100x44 garage, for additional storage and repairshop room. He will install a heating plant in a new basement, and secure an electrical expert to take charge of the repair plant, which will have special equipment for handling electrical repairs.

Bert Smith, Herington, Kan., is building an addition to his garage.

B. F. Hardin, Albany, Mo., is remodeling a building for garage purposes.

The Overland Automobile Co., Hannibal, Mo., has consolidated its sales and service departments, formerly in separate locations; F. B. Oswalt is manager of the service department, and L. G. Wilhelm is sales manager.

Anderson & Son, Hannibal, Mo., are in temporary quarters pending the completion of a new garage. They formerly occupied the rooms now used by the Overland Automobile Co.

Young & Berry of Schell City, Mo., have bought the garage formerly owned by A. J. Boatright.

Teater & Delap, Blairstown, Mo., have completed a garage and repairshop, adding a welding department.

Allen Notley, Bigelow, Mo., has taken charge of the Bigelow garage, adding a repair department, and securing the agency for the Ford.

E. J. Roberts, Westmoreland, Kan., manager of the Westmoreland Auto Co., has leased a garage building recently erected across the street from his former location, and has moved into it: having now an enlarged repair and supply department.

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The Ollinger Auto Co., Salina, Kan., has leased a two-story brick and concrete building to be erected shortly for garage purposes by Henry Eberhardt.

Will G. Price, Wichita, Kan., has already started the erection of his new garage on the southwest corner of English Street and Topeka Avenue.

The Smith Machinery Co., Webb City, Mo., is entering the motor car trade, and has secured the agency for the Pullman.

The Hammett Repair Co., Eighteenth and Grand, Kansas City, Mo., is about to enter the tire business, handling the Swinehart.

The Wakenight Plumbing & Supply Co., Searcy, Ark., is entering the automobile trade, having secured the agency for the Pullman.

The Entz Auto and Battery Co., St. Louis, Delmar and Clarenden Avenues, has thrown open its garage to gasoline machines. Heretofore only electrics were accommodated.

A. S. Zarko, St. Louis, has leased the painting department of the Great Western Garage, 2735 Olive Street. Zarko recently went to St. Louis from Detroit.

Ernest W. Abrogast, St. Louis, has been made sales manager of the Cadillac Automobile Co. of St. Louis. Abrogast has been local and district distributer of the Colt cars here but retired when the Cole-St. Louis Auto Co. was formed.

Geller, Ward & Hasner, St. Louis, has opened an uptown store at 3328-32 Olive Street, where the car lines will be handled exclusively. Complete lines will be handled at the Fourth Street store.

Simmons Auto & Repair Co., St. Louis, has opened a used car department at 1802 North Grand Avenue. Henry Oxtendorf is manager.

Bittel-Leftwich Tire Service Co., St. Louis, has opened three new stations at 3000 North Grand, 3211 South Grand and in Webster, St. Louis County. Two machines will be operated from each station without lessening the regular fleet at the main station, Grand and Lindell.

F. A. Plummer, Coats, Kan., is building a garage adjoining his blacksmith shop.

Roy and Elmer Chamberlain, Smith Center, Kan., have purchased the garage of William Bell, and will handle the Maxwell and Overland.

John Barnes, Potter, Kan., has bought the E. N. Melcher Garage.

J. J. Calvert, Liberal, Kan., is remodeling the old opera house into a garage and salesroom.

F. H. Inderwelsen, Larned, Kan., has bought the Frizell Garage.

Dan Beaton, Dexter, Kan., has leased the Callison Livery Stable and will convert it into a garage.

Albert Reinhart and **W. J. Huscher**, Bern, Kan., have formed a partnership for the sale of the Maxwell and Studebaker.

Omaha, July 12.—A direct factory branch for the Willys-Overland Co., under the firm name of Willys-Overland, Inc., has been opened here with J. R. Jamieson, president of the Overland-Omaha Co. in charge. The old show rooms at 2047-2049 Farnam Street, in the heart of Auto Row, will be maintained, and in addition the company occupies the old quarters of the Ford Motor Sales Co. at Twentieth and Harney Streets, the latter moving to the new branch factory at Sixteenth and Cuming Streets, recently completed. At the new direct factory branch a considerable addition to the present corps of mechanics will be installed to conduct the service shop and storehouse for a complete stock of parts. Besides this, a lot of new machinery will be placed in the building. Henry Werdehoff, who has directed the mechanical department of the local house for two years past, will have charge of the service department in the new location.

The Chalmers Motor Co., Great Bend, Kan., has formally opened the Santa Fe Trail Garage, which has just been completed.

Charles Rutledge, Inman, Kan., has leased the repair department of the George P. Kliewer Garage.

MIDDLE WEST

Justin P. Fleming, Jackson, Mich., Detroit Electric and Maxwell dealer, has disposed of his active interest in the Maxwell agency in this territory, although he will still look after the interests of former Maxwell buyers here.

The Simon Sales Co., Saginaw, Mich., which has the agency for the Overland in the southern half of Michigan with the exception of Detroit, will open a branch service station and selling agency in Lansing, Mich.

The New Auto Repair Shop, Jackson, Mich., has been opened in the rear of the Chevrolet Garage by H. T. Flick.

The Nashville Auto Co., Nashville, Mich., Overland and Saxon dealer, has purchased the equipment of the Winans Garage and Winans will retire from business.

William H. Freer, Jackson, Mich., has purchased an interest in the Orpheum Garage at 120 West Pearl Street, and together with Ralph Dennis will conduct a repair, livery and service station.

John B. Rowell & Son, Ithaca, Mich., will soon occupy their new garage, which is 150x44 ft. wide, and located on Pine River Street, north.

Ray E. Becker of the Becker Auto Co., Grand Rapids, Mich., Ford dealer, has purchased the controlling interest in the Peck Auto Sales Co., local Studebaker dealer. Both agencies will be operated entirely independent and in separate places of business under his personal supervision. The name of the Peck Auto Sales Co. will be changed to Becker Motor Car Co. and the new organization will occupy the present Studebaker garage on Lagrave Avenue. The Ford agency will be handled in the garage and service station at Sheldon and Island Streets under the name of Becker Auto Co. The territory to be covered by these agencies extends throughout western Michigan.

A. F. Ostrander, Mason, Mich., has opened a new garage.

The Willys-Overland Co. has opened a distributing branch in Denver, with Calvin C. Eid as manager. He was formerly assistant general manager of the J. W. Leavitt Co., San Francisco. The Overland company will spend about $25,000 for the erection of a new service station in connection with the branch. The Denver branch territory will consist of Colorado and parts of Utah, Nebraska and Wyoming.

E. J. Johnson, Denver, has signed a five years' contract to distribute Chalmers cars in Wyoming, New Mexico, Colorado and Nebraska. It is said that the Chalmers company will erect a new salesroom and service station in Denver, where Johnson's headquarters will be located.

The Master Sales Corp., 1241 Michigan Avenue, Chicago, has been organized for the sale of Master carbureters. Albert Halvorsen and Henry Scarborough, Jr., are the active members in this corporation.

The Michigan Oakland Co., Bay City, Mich., now located on Fifth Street, has leased the entire building which is being erected at the corner of Sixth and Adams Streets, with the exception of three offices. The structure which has a frontage of 50 ft. on Adams Street and 100 ft. on Sixth Street, will cost in the neighborhood of $12,000. It is expected that it will be ready for occupancy early in the Fall.

Aldrich & Moreau, Galesburg, Mich., have opened a salesroom, service station and garage on the corner of Main and Battle Creek Streets in the old Bennett House, which has been completely remodeled.

Louis Boomhower, Battle Creek, Mich., owner of an automobile agency and accessory store on South Jefferson Avenue, is to open a string of automobile accessory stores throughout Michigan. The first of the chain of stores is to be opened in Flint, Mich., on Main Street in the automobile district.

C. C. Signer, who was assistant manager of the Ford agency in Milwaukee, Wis., is to succeed Ray E. Becker as manager of the Grand Rapids Ford agency.

The Stewart-Warner Corp. has opened a service station in Grand Rapids, on North Ottuma Avenue.

L. J. Mannville, Grand Rapids, Mich., has been appointed distributer for the Enger car. He will erect a garage and service station in the heart of the automobile section.

The Barkwell-Buick Co., Grand Rapids, Mich., has taken new quarters at 66 Shelden Avenue.

The American Auto Supply Co., Grand Rapids, Mich., has removed to its new place of business at 16 Fulton Street, West. E. W. Stimson is manager.

H. H. Karston & Bros., Zeeland, Mich., distributer of Paige cars, have purchased a three-story building, giving twice as much space as the old quarters.

Laverne Goldsmith, Charlotte, Mich., will take over the garage formerly occupied by Frank Thompson.

The Simons Sales Co., Saginaw, Mich., wholesale and retail distributer for the Overland, has opened a branch and service station in Lansing, at 1110 South Washington Avenue. A. L. Devault is in charge as manager, and A. F. Bean is in charge of the service department. The Simons Sales Co., which has the distributing rights for thirty counties in eastern Michigan, has sold $1,500,000 worth of Overland cars during its fiscal year ending July 1, and has contracted for $2,000,000 worth for 1917. The concern has a sales force of twenty-five men in Saginaw and has seventy-eight agencies throughout its territory.

South Bend, Ind., July 12.—A ten-story industrial building primarily for the use of motor car agencies for offices, store and display rooms, will be constructed in this city by local interests headed by Horace M. Kauffman and Julius Jonas. The building complete will cost in the neighborhood of $400,000. Six floors will be devoted to the automobile trade and reservations have already been made for nearly all of the available space. The first two floors to be devoted to the automobile interests, will be divided so that on the first floor a large lobby decorated and equipped for the reception and convenience of buyers and agents will be secured. Fronting on two streets will be the first floor display rooms. On the second floor which will be constructed so as to be within view of the street will be another all glass front display room. Room will be provided in the building for the storing of stock cars.

Frank L. Kiep, Joliet, Ill., has purchased the lot corner of Chicago and Jackson Streets, 129x138, and will shortly erect a two story, fireproof garage.

Harrison Coddington, Abingdon, Ill., has let the contract for a new garage at 503 Main Street to be of brick construction and two stories in height. There will be a display room for cars and also for carrying supplies. The repair department will be in the rear.

Dwight Sullivan has been appointed manager of the Chalmers agency at Springfield, Ill., and will be distributer for the central Illinois territory.

The Wolfer-Cadillac Co., Davenport, Iowa, has been incorporated with capital stock of $50,000. This company succeeds the Iowa Auto and Tire Co., as distributer for the Cadillac in eastern Iowa.

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E. R. Goodrow & Sons, Woodstock, Ill., will shortly open a garage on Throop Street, occupying a barn formerly used for livery purposes but which has been rebuilt and remodelled into a modern garage. There will be storage capacity for 86 cars. The firm will operate a sales agency, do a general repair business and also carry a complete line of accessories and supplies.

The G. A. Kraemer Co., Elkhart Lake, Wis., which completed a new fireproof garage and repairshop three months ago, is already so cramped for room that it is necessary to build an addition to the machine shop. The addition will be 60x40 ft.

O. A. Young, Strongs Avenue, Stevens Point, Wis., Overland dealer, is adding 24x70 ft. to his repairshop.

Albert Overman, Balsam Lake, Wis., has taken occupancy of his new garage and repairshop, of fireproof construction, 50x60 ft.

Wegner & Pirwitz, Fourth and Maple Streets, Marshfield, Wis., held the formal opening of their new garage and service station on July 1. The firm will do a general garage and repair business and deal in accessories, oil, etc.

The Schubring Motor Car Co., Wausau, Wis., incorporated with $25,000 capital, succeeds to the business conducted under the same style by Fred Schubring at First and Scott Streets. Mr. Schubring is president; L. H. Hall, vice-president and treasurer, and E. D. Widmer, secretary.

The Oakland Garage, 640-642 Oakland Avenue, Milwaukee, was opened to the public July 15 by Louis Nehrbass, who is completing work on a fireproof building, 60x114 ft. in size and two stories high.

Cunningham Bros., Burlington, Wis., have purchased the garage building of the Agner Automobile Co., Burlington, and will take possession January 1, 1917. The Anger Company is awarding contracts this week for a new garage, planned by Architects Leiser & Holst, Milwaukee. It will be 59x165 ft., fireproof, and will cost $15,000. The present Agner garage is 32x66 ft., two stories and basement.

The Standard Oil Co. of Indiana has opened the first of a string of filling stations to be established in upper Michigan, at Menominee, where a structure following the artistic design used in Milwaukee and other large cities has been erected at Kirby and Grand Avenues. Fred Liebherr, agent at Menominee for several years, is in charge of the station.

The Hudson Service Co., Fond du Lac, Wis., is rushing work on its new fireproof garage at East Division and Portland Streets and expects to be able to take occupancy by August 1. L. A. Voell is proprietor.

The H. L. Yaryan Co., Toledo, has incorporated for $10,000, will act as distributer for Westcott cars in northwestern Ohio. The incorporators are H. L. Yaryan, H. T. Yaryan, H. C. Adams, Blanche O'Brien and Nina F. Leavitt.

The Salem Motor Co., Salem O., incorporated for $40,000 by Frank W. Glass, Nellie C. Glass, Alva G. Kelley, Ferman N. Gaunt and Kirby Walker, wil ideal in automobiles and operate a garage.

The Railway Auto Co., Lebanon, O., has incorporated for $5,000 to operate a garage and repairshop by J. A. Kilpatrick, D. M. Worley, Charles Kohr, J. Warren Wood and Robert E. Kline.

The Automobile Hospital Co., Cleveland, has increased its authorized capital from $10,000 to $25,000.

PACIFIC COAST

Standard Motor Car Co., Tacoma, Wash., has been reorganized with Wm. L. Kirby, manager; W. R. Shoemaker, secretary and D. F. Baxter, sales manager. The new company will distribute the Allen car in Tacoma and Pierce County.

Guarantee Auto Repair Co., Tacoma, Wash., are now in new quarters at 1306-8 Tacoma Avenue. A. W. Pease is manager.

McArdle & Powers, Tacoma, Wash., are now operating the A Street Garage Repairshop.

Charles A. Ellison, Tacoma, Wash., is now sole proprietor of the Tacoma Tire Store, distributers of Knight tires and accessories.

Foster C. Gibson, Seattle, Wash., is the newly appointed manager for the Edison Storage Battery Co., and has opened quarters at 65 Columbia Street.

Roy Satterwaite, Seattle, Wash., is the newly appointed manager for Pacific Kissel Kar Company, which recently established headquarters in the Queen City.

Foster C. Gibson, formerly manager of the Edison line for the State of Oregon, has opened headquarters for the Edison Storage Battery Co. at 65 Columbia Street, Seattle, Wash., from which point he will have charge of the Edison lines for Washington, Oregon and Idaho. The new firm will be called the Edison Storage Battery Supply Co.

Tony Janette, Los Angeles, has opened a garage and repairshop at 775 North Broadway with two business associates. The firm is doing business under the name of Tony Janette & Co. The new garage makes a specialty of general overhauling.

J. E. Brown, Saugus, Cal., proprietor of the Saugus Garage, has completed extensive improvements which have made his garage one of the most attractive places on the inland route between Los Angeles and San Francisco. The building was widened, a concrete pit and cement floor were put in and the board front was replaced with a brick face. The place has been painted white with black and red lettering, which makes an attractive combination.

NORTHWEST

M. J. Mueller, Lisbon, N. D., has opened a vulcanizing shop in the Olson & Jones garage.

Steen Soum and **R. M. Wineman**, Dodson, Mont., have bought the J. H. Moore business and Ford agency.

McMahon & Boland, Brookston, Minn., are enlarging their machine shop to add a garage.

S. I. DeFrance, Reed Point, Mont., is building a garage, 45x50 ft.

The Imperial Automobile Supply Co., Minneapolis, is a new branch house opened at 1400 Hennepin Avenue. The company has taken the large space vacated by the R. C. Smith Auto Co.

George W. Peoples, Jr., Detroit, Minn., has leased the garage building and will open a garage and repairshop.

C. F. Miller, Annandale, Minn., has opened a garage.

J. T. Roufs, Victoria, Minn., has rented the Nordberg garage, and is operating it.

C. E. Knox and **J. F. Nichols**, Oakes, N. D., are building a garage.

Striegle & Osing, Arnegard, N. D., have organized the Arnegard Motor Co.

A. J. Johnson, Lead, S. D., will build a garage.

Andrew Johnson, Starbuck, Minn., has reopened the garage and repairshop.

Oscar Reeves, Glendive, Mont., is to be manager of the Lahr Sales Co. under new ownership.

Frank Thompson, Ekalaka, Mont., has bought the interest of his partner, William Walker, in the Central Garage.

Oscar Sorenson and **Charles Mallard**, Hingham, Mont., have let the contract for a larger garage, 40x70 ft.

William Culbert, Malta, Mont., has opened the North Side Garage.

Don Fulton, Red Cloud, Minn., has bought out George E. Hall in the Hall Garage, and with Earl Hall will operate it.

Nerdahl & Co., Hazel Run, Minn., are building a tile garage.

J. B. Thompson, Henning, Minn., is erecting a large garage.

The Olson Garage, Watkins, Minn., is being enlarged 25x60 ft.

Wallace Perry, Aberdeen, S. D., has moved his salesroom and garage to a new building at Third Avenue Southeast and Lincoln Street.

The Masters Garage, Hibbing, Minn., has been built at 227 Lake Street.

George Lenon, Jr., Columbia Falls, Mont., will open a garage in the remodeled Lord Building.

Harry E. Maher, Devil's Lake, N. D., will lease a garage being built by Dixon & Roberts, Third Street and Farrington Avenue.

F. A. Ward, Montpelier, N. D., is erecting a garage.

St. Paul.—A direct factory branch of the Ford Motor Co. has been established here for distribution in parts of Wisconsin and southern Minnesota. W. H. Schmelzel, Fargo, N. D., will be manager. He succeeds A. H. Sargent, who is transferred to Grand Rapids, Mich. Heretofore the office has been operated from the Ford branch in Minneapolis. W. P. Winders, assistant manager at Fargo, will be manager there. Superintendent F. C. Seiss at Fargo goes to Sioux City as assistant manager.

The Maxwell Motor Co., St. Paul, has opened new headquarters at 134 West Seventh Street. J. W. Martin is manager.

The Horton Motor Co., Fargo, N. D., has been made agent for Republic trucks.

Doyle-Overland Co., Fargo, N. D., is a new firm in charge of the Overland-Fargo district. W. J. Doyle will remove there from Carrington, N. D. Offices will be opened in the former Anderson repairshop on Roberts Street. Showrooms will open elsewhere.

Glide Automobile Co., Inc., Fargo, N. D., has been formed by several leading business men, with Will Isham, manager for the Avery Co., the leader. The company will operate a Glide factory branch for western Minnesota, North Dakota and eastern Montana.

The Turin Garage Co., Turin, Ia., has been incorporated by D. A. Wolfe, F. A. Reese and others at $10,000 capital stock.

The J. M. Wilson Garage, Sheldon, Ia., has been sold to Col. I. L. Ellis of Ida Grove.

Overmyer & Stammer, Casey, Ia., have dissolved, Stammer buying his partner's interest. He will conduct the business under the new name of the Stammer Motor Co.

F. C. Armitage, Kenesaw, Neb., has leased the Fischer Garage building and will open a repairshop at once.

John Uerling, Indianola, Neb., has bought the garage and accessory business of C. W. Thomann.

Frank Plummer, Chadron, Neb., will build a repairshop at once.

T. E. Blodgett, Williams, Ia., has sold his garage and business to V. J. Stark, who moved from Webster City, Ia., and took possession July 1.

W. R. Belcher, Sac City, Ia., will build a garage.

The Waubonsie Garage, Clarinda, Ia., capitalized at $10,000, has been incorporated by William Wehmiller and F. L. Buch.

William N. Foster, Dalton, Neb., has purchased the Dalton Garage and taken possession.

W. V. Gregory, Evanston, Wyo., has sold an interest in the Transcontinental Garage to Victor Jackson of Randolph, Wyo.

Wythers & Ball Auto Co., York, Neb., have bought the Broaman Garage on Grand Avenue.

William Lautenschlager, Western, Neb., has bought the C. Holcomb garage.

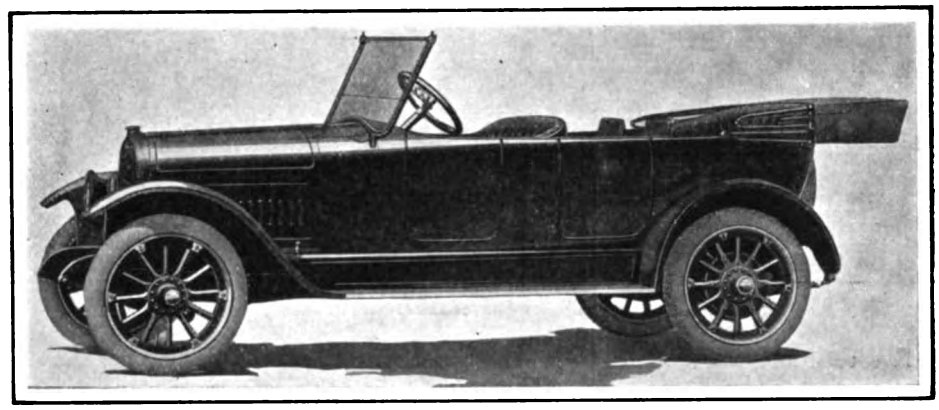
The Norman-Gash Auto Co., Elmwood, Neb., has bought the Louisville Garage at Louisville, Neb.

The Finicle Garage, Neligh, Neb., has been sold to Lefler Bros., Norfolk, Neb.

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Two Marion-Handley Sixes Powerful for Weight

Prices $1,185 and $1,385 High-speed Motors Improved Lines



Seven-passenger 6-60 with tilted windshield and smooth exterior

TWO sixes will make up the line of the Mutual Motors Co., Jackson, Mich., for 1917. These cars are sold under the name of the Marion-Handley, taking the name from J. I. Handley, president of the company. The sixes are in two sizes, the 6-40 and the 6-60, and the two cars possess great similarity of design. Prices are $1,185 for the 6-40 and $1,385 for the 6-60, in either roadster or touring bodies.

In picking out the features of the Marion-Handley line, probably the outstanding point is the lightness in ratio to power. The smaller car has about 1 hp. for 60 lb. weight and the larger car about 58 lb. per horsepower. Throughout, both cars follow closely the up-to-date practice of high-speed motors with light semi-flexible frame construction.

The 6-40 has a high-speed unit power plant, with the 3⅛ x 5-in. L-head cylinders cast in a block; it develops, according to dynamometer tests by the factory, 45 hp. at 2000 r.p.m. The upper half of the crankcase is cast with the cylinders and the lower of the crankcase is of pressed steel and bears no part in the structural strength of the motor, being merely used as a housing and an oil retainer. Its capacity is approximately 1½ gal. This part of the crankcase is detachable in the customary manner to permit of the adjustment of the connecting-rod and main bearings.

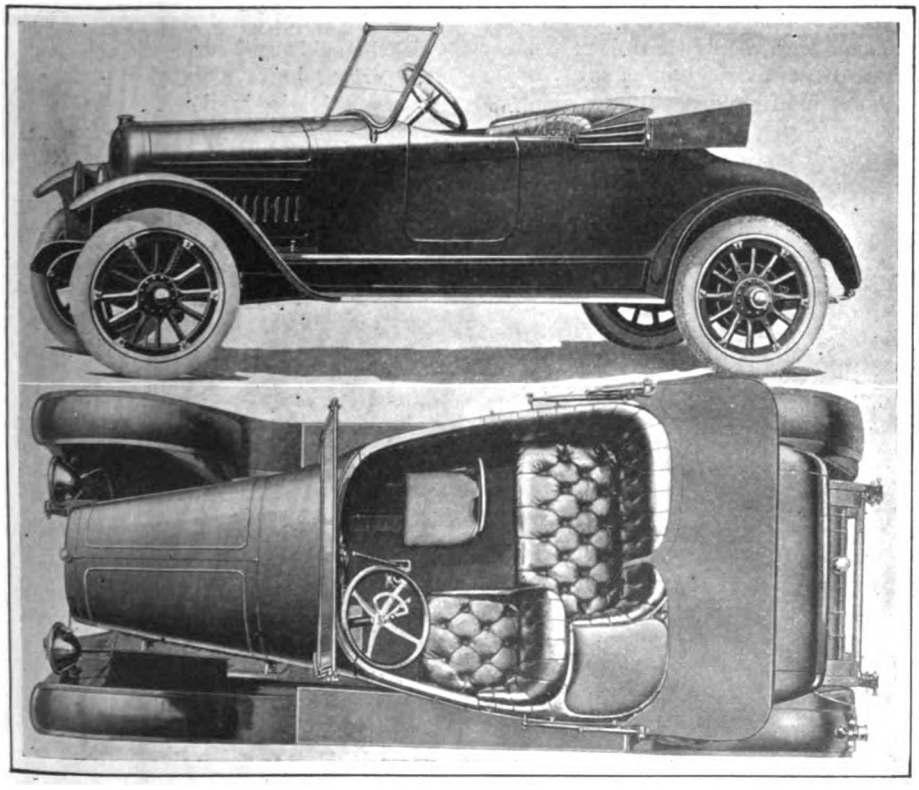
MARION-HANDLEY SIXES

Price—	6-40	6-60
Touring	$1,185	$1,385
Roadster	1,185	1,385
Number of cylinders	6	6
Shape	L-head	
How cast	Block	
Bore	3⅛	3½
Stroke	5	4¼
S. A. E. horsepower	23.3	
Ignition	Westinghouse	
Engine starter	Westinghouse	
Lighting system	Westinghouse	
Clutch	Dry-disk	
Gearset	Three-speed	
Tires	32 x 4	33 x 4½
Wheelbase	120	125
Wheels	Wood	

Three Leak-Proof piston rings are used on the cast-iron pistons. These are 3⅛ in. in length. I-beam connecting-rods are used and both the upper and lower rod bearings are 2 in. in diameter by 1⅞ in. in length. The crankshaft is also 2 in. in diameter and is supported upon three main bearings, the front being 2¾ in long, the center 2¾ in. and the rear 3⅛ in. These bearings are lubricated by a direct feed from the oil pump, thus maintaining a supply of lubricant to the crankshaft under pressure.

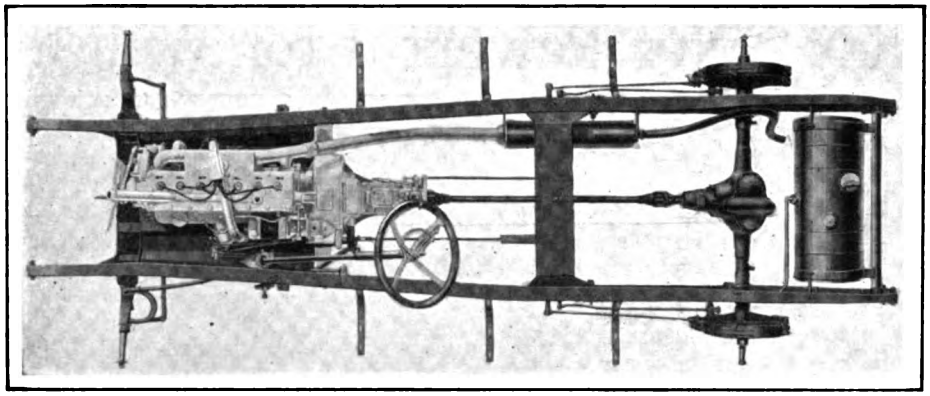
The remaining bearings are taken care of by splash, and the timing gears are lubricated by overflow from the front main bearings. The crankcase gear of the timing set runs continually in a well of oil. This permits the lubricant to be carried by the gear teeth over the surfaces of the entire timing set, thereby maintaining an oil film between the teeth of the gears at all times. The pump used is a plunger operated by an eccentric on the camshaft and is self-priming, because it is located in the oil reservoir in such a position that the last remnants of oil are sure to drain to the pump. A relief valve is provided to regulate the maximum pressure on the oil system.

One of the points which has been given a great amount of attention in the motor design is the matter of quietness in the valve driving system. The cam gear is Fabroil. This is a compressed cloth, produced by the General Electric Co., and is non-resonant. This gear has a face width of 1 3/16 in., with 10 pitch helically-cut teeth. The camshaft is carried on die-cast nickel babbitt bearings. There are three bearings for the camshaft, two being die-cast and the third an S. K. F. ball thrust, used at the rear end of the camshaft to take the thrust loads as well as the radial.



The four-passenger roadster has a novelty in a folding seat

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Neatness is a feature of the chassis. Hotchkiss drive is used

A special alloy steel which the manufacturers claim to have many of the characteristics of cast-iron is used for the valves. They are 1 3/16 in. in diameter and have a lift of 5/16 in. One of the main points in which the alloy steel resembles cast-iron in the valve is that they can be ground to a perfect seat. At the same time, owing to the composition of the metal, the molecular structure is much closer and the valves have a long life without the same possibility of pitting.

Cooling is by a centrifugal water pump which is driven off the timing gears and located on the valve side in the same line as the electric generator. There is a two-blade aeroplane type pressed-steel fan running on ball bearings and fitted with a rocker arm adjustment for belt tightness. The radiator is a hexagonal honeycomb type, having a capacity of 4 gal. and mounted by two bolts on the front cross-member. There is also another unique feature in the shape of a detachable case, which is of considerable assistance in making repairs.

Electrically the entire equipment is Westinghouse. There is a Westinghouse generator which weighs about 16 lb., including the automatic voltage regulating means. The battery, as well as the entire system, operates at 6 volts and the capacity is 80 ampere-hours. An ammeter is located on the instrument board.

Ignition is also taken care of by the Westinghouse unit, the distributor being mounted on the generator, and the same unit contains the breaker box, spark coil and condenser. These units are easy to reach for inspection. The breaker box is inclosed within a collar, which can be slipped out of the way when it is necessary to inspect or adjust the points, and the distributor cap is removable together with the spark plug leads.

Switches on Cowl

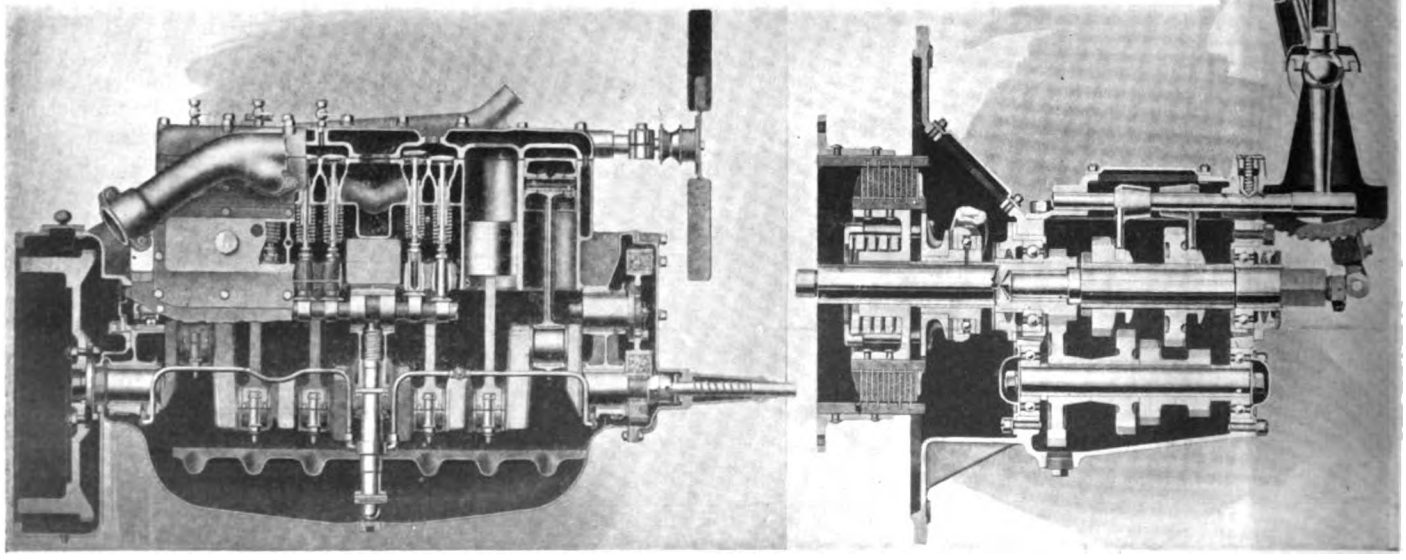
Control of the ignition and lighting system is by means of a set of switches on the instrument board. The tail light is mounted in the center of the tire carrier and all these lamps together with the remainder of the electric equipment are wired on the single-wire grounded return system. In this the chassis, frame and metal body form one circuit. The starting motor is entirely inclosed and is engaged with the flywheel gear by means of the Bendix screw pinion shift.

A dry multiple disk clutch is employed, having eleven disks lined with multibestos. They are 8 in. in diameter and made of saw steel with an annular bearing for clutch release, this bearing being lubricated by the oil from the gearset, which enters the clutch by means of grooves cut in the clutch shaft. An adjustment is provided on the clutch release pedal to take up any wear or lost motion that may develop in the clutch release bearing.

A conventional three-speed gearbox is employed. The gears have a face width of ¾ in., and the diameter of the countershaft is 1 5/16 in., with a 1½-in. main shaft. The splines are cut to a depth of ⅛ in. The bearing mounting is made up of four annular ball bearings arranged for end play adjustment, and the reverse idler gear is mounted on a plain bronze bearing. The gear reductions in the gear box itself are 2½, 1 7/10 and 1 to 1, with reverse of 3.4 to 1. Final reduction is 4 5/12 to 1 at the rear axle.

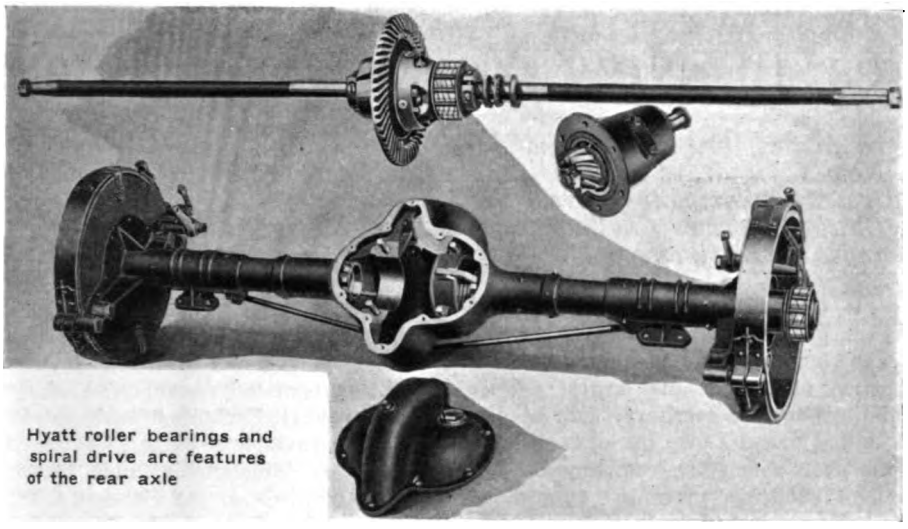
Both the drive and torque are taken by the springs. A reduction of weight is further secured by the use of a tubular propeller shaft 1½ in. in diameter with 5/32-in. walls. The shaft is equipped with two double ball and socket universal joints and has a fore and aft travel of 2 in. The universal cup, ball and trunnion pins are hardened and ground and packed in grease.

Floating construction is used in the axle. This is equipped with a Brown-Lipe spiral bevel gear and is provided with a set of Hyatt high-duty roller bearings with adjustable ball bearings for side thrust. The pinion shaft is carried on two 100 per cent thrust type annular ball bearings, which are adjustable, allowing take-up for wear or play on the pinion shaft. The drive pinion can also be adjusted in regard to the mesh with the spiral bevel ring gear. Chrome nickel steel is used for the drive shafts and they are 1¼ in. in diameter. The entire differential may be removed by taking off



Left—Section through motor, showing details of construction. Right—Clutch and gearbox. The shafts are mounted an ball bearings

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Hyatt roller bearings and spiral drive are features of the rear axle

the inspection plate over the differential.

Two sets of brakes are used with the drums on rear wheels. The service brakes are contracting and emergency expanding, both being provided with two adjustments, one on the brake rod ends and the other attached to the brake bands. The drums are 14 in. in diameter and have a face width of 2 in.

Both front and rear wheels are heavy second growth hickory, with twelve 1½-in. spokes. The front wheels are carried on Gurney annular ball bearings of the 100 per cent thrust type. A full equipment of Firestone demountable rims is furnished, adapted to 32 x 4-in. straight side tires. Non-skids are used on the rear wheels. The wheelbase of this model is 120 in.

Of similar design is the 6-60. This is equipped with a 300-cu. in. motor, having its 3½ x 5¼-in. cylinders cast in a block. This is also a conventional L-head design, and according to the manufacturers develops 50 hp. at approximately 1900 r.p.m. The crankcase in this motor is cast separately, of aluminum, and is equipped with a pressed-steel oil pan. All the bearings are supported in the crankcase and are accessible by removing the can. The inclosed valves are 1 11/16 in. diameter with 3/16 in. lift. They are operated by a single camshaft and both inlet and exhaust valves are interchangeable and have nickel steel heads electrically welded with carbon steel stems. The ends of all the valve stems are hardened to insure against wear from tappet action.

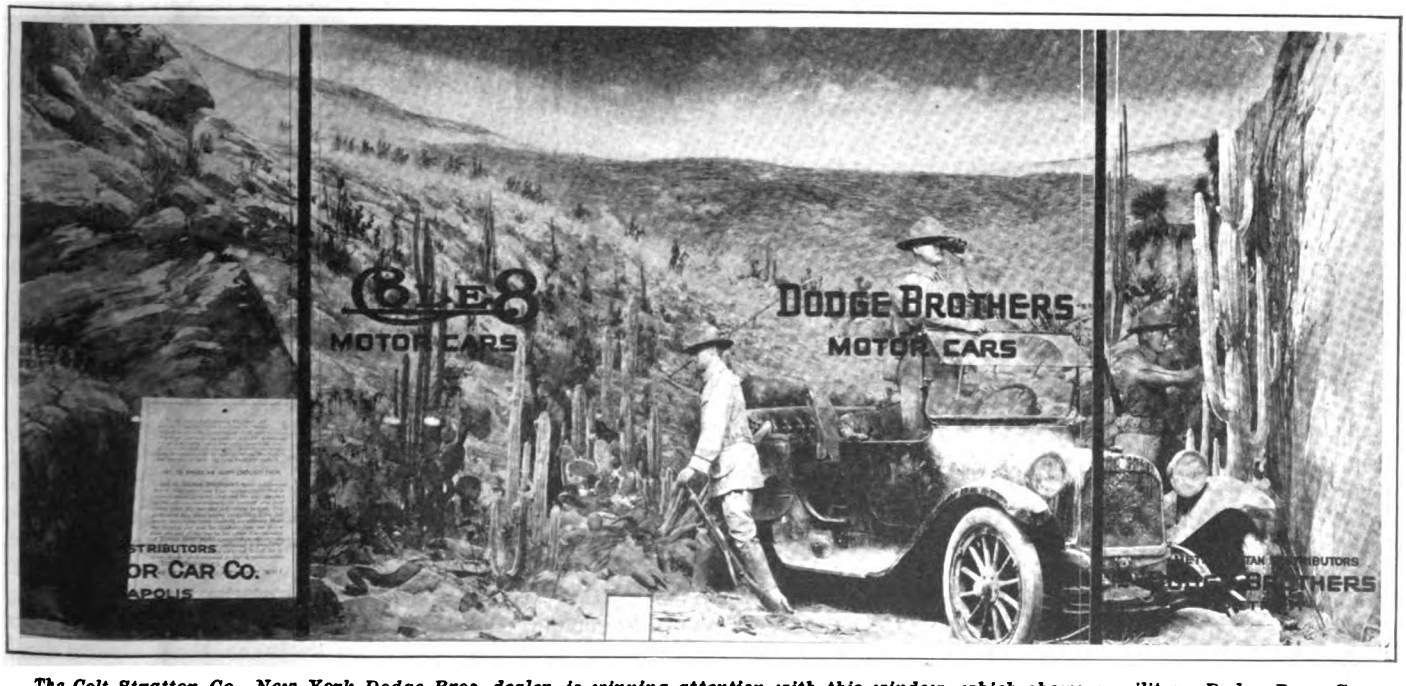
Pistons and cylinders are both reverberatory furnace iron, with a piston length of 3¾ in., fitted with three diagonally split concentric rings 3/16 in. in width. The piston pins are of annealed special steel tubing, hardened and ground, with the pin held stationary in the piston bosses. The bearing surface is given by a bronze bushing pressed into the upper end of the connecting-rod.

An integrally forged low carbon steel camshaft is used, carried on three bearings of white bronze. The dimensions of these cam bearings are 2 17/64 x 1½, 2¼ x 1⅛ and 2 7/32 x 1¾, respectively, from front to rear. The crankshaft is also carried on two bearings and is of special crankshaft steel, heat-treated. The main bearing dimensions from front to rear are 2 3/16 x 2 23/32, 2 7/32 x 2⅜, and the rear or flywheel bearing is 2¾ x 3. All the bearings are reamed to a fit on expansion arbors and then finished with a slow-running spiral cut power burnisher which is stated to give a bearing surface of over 98 per cent.

Lubrication is by force feed and splash, actuated by a horizontal pump driven by an eccentric from the camshaft. This forces oil through copper tubes direct to the timing gears and the main crank and camshaft bearings. The remaining bearings are taken care of by splash.

Throughout the remainder of the chassis the design of the 6-60 is quite similar to that of the 6-40, with the parts necessarily stronger and larger to take care of the higher power and greater weight. The Hotchkiss drive is used, but the reductions are different, the final gear ratio being 4 1/3 to 1, and the wheelbase is also greater, being 125 in., while the tires are 33 x 4½.

Shows the Dodge Brothers Car in Wartime Setting in Window



The Colt-Stratton Co., New York Dodge Bros. dealer, is winning attention with this window, which shows a military Dodge Bros. Car in the cactus and mesquite of Mexico. The foreground cactus is upright pieces attached to the floor and merges into a canvas drap of semi-circular form as a background. At the same time a moving picture film of a Dodge Bros. in Death Valley is shown at a nearby theater and prospects are invited

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Important Changes in New York Dealer Field

1—*Overland opens factory branch in New York.*
2—*C. T. Silver, New York, drops Overland, takes Chalmers.*
3—*New Mitchell retailing company in New York.*
4—*James Levy, Chicago, former Chalmers dealer, takes Marion.*
5—*Numerous changes in Baltimore field.*

NEW YORK, July 17—Broadway, the motor row of the metropolis, has had more and bigger changes this week than has ever been known here or perhaps in any other city. Overland, Chalmers and Mitchell agencies have figured in the deals. C. T. Silver, who has had the Overland agency for the Metropolitan district for several years, has given it up and has signed a $6,250,000 contract to take one-tenth of the entire Chalmers output, this contract being the last official work of Paul Smith, the Chalmers general manager.

Because of this unexpected action taken last Thursday, Overland literally found itself without a home on Friday morning and now has opened a temporary branch at Broadway and Fifty-ninth Street, in the Circle Building, where Overland and Willys-Knight cars are on sale. Overland has found a manager in E. B. Jackson, former president of the Packard Motor Car Co. of this city.

Mitchell Changes

The third step in this three-way dealer change is that the retail Mitchell agency for the Metropolitan district has changed to the Mitchell Motors Co. of New York, a company recently organized expressly to take over the sale of Mitchell cars in New York City, Brooklyn, Long Island, Staten Island, Westchester County, Fairfield County, including Bridgeport, and three counties in New Jersey—Bergen, Passaic and Hudson. George Stowe, who has been manager of the New York Chalmers branch, has been made sales manager of this new organization, and the Carl H. Page Co., which has up to this time retailed the Mitchell, will now handle the Mitchell wholesale business for sections controlled by the new Mitchell Motors Co. of New York.

This expansion has been due largely to the recent expansion of the Mitchell factory, coupled with the fact that the company is preparing to build 25,000 cars during the coming season. Upward of 2000 Mitchell cars have been sold in the Metropolitan district during the past year and it is planned to double or treble this during the approaching year.

E. B. Jackson, formerly president of the Packard Motor Car Co., this city, has recently become associated with the Willys-Overland Co. at Toledo, in an executive capacity. He will make use of his experience and knowledge of metropolitan needs by devoting a large part of his time to the development of an organization in this territory.

The company has had in progress the erection of one of the largest service buildings in this territory, with a view to taking over its own business. Conditions over which the company had no control suddenly presented themselves on Friday and steps were immediately taken to establish a branch by locating temporary showrooms at 1826 and 1828 Broadway and establishing a service station at 150th Street and Gerard Avenue, the Bronx, in a building of 60,000 ft. It is the intention of the company to open sales and service stations in Brooklyn and Newark.

Overland's New Building

The new building which is in process of completion is located on West Fifty-seventh and Fifty-eighth Streets, between Tenth and Eleventh Avenues. This building is partially completed at the present time and when finished will have a floor space of 300,000 sq. ft. and will represent an investment of about $1,000,000.

The territory which Silver will have is approximately the same as that which he has had during the last 6 years, taking in New York City, Long Island, Staten Island, most of New Jersey and a part of Connecticut, with a branch in Bridgeport. He will also take care of the Atlantic seaboard on Chalmers parts.

C. T. Silver, Inc., as the new company will from now on be known, will handle 10 per cent of the Chalmers output, dating from Aug. 1, for the coming year. Business in Chalmers, Overland and Willys-Knight cars is now going on in Silver's salesrooms. The last two will be on the floors until sold, after which the Chalmers will be handled alone.

Silver's 7-Year Career

Silver began his automobile career about 7 years ago, being first associated with the H. J. Koehler S. G. Co. in the sale of Buick cars in Manhattan. Then he went to the Buick branch in Brooklyn. Later he established an Overland agency in that city, after which one was established in New York City at Broadway and West Forty-ninth Street. In 1914 he acquired possession of the Peerless Building, where he greatly enlarged his business with the Overland, Willys-Knight and Peerless.

Steps have been taken by the Packard company in this city and Philadelphia to appoint new men to fill in as heads of these respective branches: E. S. Hare, recently appointed manager of sales of the New York Packard branch and formerly vice-president of the Commercial Truck Co., Philadelphia, now becomes general manager of the Packard Branch in New York City. L. J. Eastman becomes general manager of the Philadelphia Packard Branch.

Levy Takes the Marion

CHICAGO, July 17.—Following the transfer of the Chalmers agency in this city to Harry Newman, Inc., James Levy, the former Chalmers dealer, has taken the distribution of the Marion-Handley. He has formed the James Levy Motors Co. and will do business at Twenty-third Street and Michigan Avenue.

Changes in Baltimore Field

BALTIMORE, July 15—A shake-up in the motor field in this city has taken place during the month and many changes have occurred in the handling of agencies, the establishing of factory branches and the forming of new corporations.

The Maxwell Motor Co., Detroit, opened a factory branch at 134-36 Mt. Royal Avenue. L. A. Tilley, for a number of years special representative of the Maxwell, is in charge here. The Wilson Motor Co. formerly handled the Maxwell line.

The Mar-Del Mobile Co., Charles Street and Mt. Royal Avenue, is now handling the Saxon, with Lyman Bryan in charge. This line was formerly handled by Neely & Ensor.

The Eastwick Motor Co., West North Avenue, A. Maurice Eastwick, president, which firm for 9 years handled the Ford, is now handling the Dodge Bros. The Dodge line was formerly represented here by the Mar-Del-Mobile Co.

The Ford Motor Co. will open a factory branch in the Colonial Garage, 10-20 East North Avenue, with E. T. Backus, formerly manager of the Ford branch in Dallas, Tex., in charge. The Ford branch begins operation Aug. 1. The Colonial Garage is one of the largest in the city and will be further enlarged. A lease has been taken on the property for 2 years.

The Chevrolet Motor Co. of New York, Inc., has established a factory branch

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here, with James J. Flynn, formerly special representative of the Willys-Overland Co., in charge, at the temporary location, Maryland and North Avenues. A lease for a long term of years for property on Richmond Street, formerly the Richmond stables, which will be remodeled into a three-story sales and service station, will be the permanent home of the Chevrolet factory branch.

The Morton & Loose Corp. has been formed and is now located at Eager and Morton Streets and is handling the Haynes, as well as carrying a line of accessories. Clyde Loose is president of the new corporation. Morton and Loose formerly handled the Hupp line here.

The Stuart Automobile Co., 27 West Mt. Royal Avenue, is now handling the Hupmobile.

The Reo Maryland Co., St. Paul Street at Mt. Royal Avenue, E. H. Habersham and P. A. Miller, proprietors, is handling Reo pleasure and commercial cars. This line was formerly handled here by the Stuart company.

The Laporte & Heinekamp Co., Cathedral and Chase Streets, a new company, is handling the Mitchell, which was formerly handled by the Wilson Motor Co.

The Poehlman Automobile Co., Chase and Cathedral Streets, A. Trust Poehlman, president, which company formerly represented the Chevrolet line, has gone into the wholesale accessory business.

The Campbell & Niedringhaus Co. has just located at 144 West Mt. Royal Avenue and is distributing Lee tires.

Gramm Does $4,000,000 Business

LIMA, OHIO, July 15—The Geiger-Jones Co., which controls the stock of the Gramm Motor Truck Co., is offering for sale a limited amount of the new issue of preferred 7 per cent cumulative stock at 101. The stock was authorized at a meeting June 17 by more than 80 per cent of the stockholders of record.

In the statement issued with the call for stock subscriptions, the company is shown to have had profits of $579,000 in 1915 after deductions for depreciation and other charges. In other words, the profits were sufficient to pay the preferred dividends and 66.4 per cent of the common stock outstanding at the end of the year. The business of the company in 1915 amounted to more than $4,000,000.

212,000 Cars in Ohio

COLUMBUS, July 15—W. H. Walker, Ohio registrar of automobiles, in a report covering the year to July 12, reports owners to the number of 212,000 have registered cars. Electric owners to the number of 4700 registered cars and dealers and manufacturers to the number of 2800, making a total of 219,000, which is about 50 per cent more than the number of motor vehicles registered in Ohio up to the same time in 1915.

C. W. Nash Buys the Thomas B. Jeffery Co.

Former General Motors Man Will Continue Business—Said to Have Paid $10,000,000

KENOSHA, WIS., July 14—The Thos. B. Jeffery Co. has been purchased by C. W. Nash, who will sever his connection as president of the General Motors Co. on Aug. 1, at which time he will locate in Kenosha.

The new arrangement is not a merger in any sense of the word, states the Jeffery company, and no financial manipulation enters into the deal. Jeffery policies will be continued and enlarged upon.

The capital stock of the Jeffery company was $3,000,000, but it is said the price paid is $10,000,000.

The Jeffery family, it is understood, will retire from the business, although, it is stated, Charles T. Jeffery, Harold W. Jeffery and Thomas N. Kearney will continue for a time on the board of directors. The deal was participated in by Lee, Higginson & Co., Boston bankers, who helped finance General Motors several years ago.

Paul Smith, Chalmers Manager, Dies in Fall

NEW YORK, July 15—Paul Smith, vice-president and general sales manager of the Chalmers Motor Co., Detroit, died to-day as a result of his falling or jumping from the window of his room on the tenth floor of the Hotel Biltmore.

Smith has just completed a $6,000,000 deal with C. T. Silver for the transfer of the local agency of the Chalmers company. He was suffering from an attack of ptomaine poisoning, which is said to have had nervous complications.

The position of vice-president of the Chalmers company has been held by Smith for the last 2 years. He was 33 years old and born in Maine. He was educated at the University of Illinois to be a physician. Ten years ago he was a physician in Columbus, Ohio, but for only a short time, as he found that life too dull. From there he went to Detroit, working as a day laborer in an automobile plant. Shortly after this he became Columbus dealer for the Goodyear Tire & Rubber Co.

While he was sales manager for the Goodyear company in New York City, Walter Flanders became interested in him and made him sales manager of the E. M. F. Co. This was in 1909. In 1911 he assumed the same position in the E. M. F.-Studebaker Co. In 1912 he organized the Flanders Motor Car Co., and the following year joined the Lozier forces. It was in 1915 that he became associated with the Chalmers organization.

Smith was a member of the Detroit Athletic Club, Fellowship, Harmonic, Racquet, Anchor, Curling and other clubs of his home city. He also had served as a first lieutenant in the First Cavalry of the Illinois National Guard. Besides the widow, he is survived by a little daughter.

Objects to Time-payment Plan —Dealers not Bankers

July 14, 1916.

Editor Motor World:

The time-payment system can be looked at from one aspect only. This is: Is the dealer in the automobile business or the banking business? Banks were organized originally for the purpose of lending money, and in order to safeguard their depositors they are required to have a certain capital.

Should a dealer be allowed to jeopardize his own interests by becoming the indorser of his customers' notes.

Is it worth while to lend a man $500 in order to make a thousand-dollar sale? The sooner the automobile dealers of this country recognize the fact that credit is a pure loan, garnished with fancy verbiage, the sooner the public will come to recognize them as useful citizens; not willing to saddle those with debts who are not able to bear them.

If time payments are a necessary evil, let the dealer act as the representative of the factory, and let the factory take the risk; they can better afford it, and in default, their machinery for collections is better organized.

Yours very truly,

C. L. CLARK.

Glenbrook, Conn.

Bendix-Bijur Suit Decided— Eclipse Machine Co. Licensed

BUFFALO, July 14—The Eclipse Machine Co., Elmira, N. Y., has a license to manufacture the Bendix starting gear under the Bijur patent, No. 1,095,696, according to a decision handed down to-day by Judge Hazel in the United States District Court. The suit was brought by the Bijur Motor Lighting Co., Hoboken, N. J., and charged that the Eclipse company, and Vincent Bendix, Chicago, infringed the patent. The defense was that Eclipse and Bendix hold a license contract and this contract was declared valid.

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First Farm Tractor Demonstration On

Using 1000-acre Farm near Dallas, Texas, and the Farmers and Prospective Dealers Throng This Southwestern Metropolis

DALLAS, July 18—Texas will buy 5000 farm tractors in 1916. Last year Texas farmers bought upward of 1700 tractors, and in the past three seasons tractor manufacturers and dealers have disposed of more than 3300 machines in Texas.

With the formal opening of the first of the 1916 national tractor demonstrations here to-day this city is crowded with farmers who are ready to purchase machines and with motor car dealers and garagemen who are ready and willing to complete arrangements to do business with the farmers. One big distributer of motor cars already has signed up to distribute tractors. This is the Frawley Motor Co., distributer of Reo and Briscoe cars. The Frawley company has contracted to distribute throughout the entire State of Texas, and possibly also Oklahoma, the Denning tractor produced by the Denning Tractor Co., Cedar Rapids, Iowa.

It is reported on good authority that at least four other big motor car distributers, and possibly five, will make similar connections with other tractor concerns this week. The Dallas demonstration is held on the Caruth farm, of 1000 acres, near the city. There are now, by actual count, ninety-five tractors on the ground and more to come. In addition there is a large display of tractor accessories.

The demonstration will be formally opened to-day, and every day until Friday there will be public demonstrations of power plowing, disking, harrowing, cultivating and the use of tractors for other farm work, such as ensilage cutting, wood cutting, pumping, etc. Saturday the entire demonstration will be moved in special trains to Hutchinson, Kan., and from there to the other centers included in the circuit.

Fuel Prices for Tractors

DALLAS, TEX., July 18—Gasoline is wholesaling here for 18 cents and retailing for 19 to 20 cents, the price having been dropped 1 cent this month. Distillate, of which little is used, sells for about the same figure, but kerosene, used largely for farm tractors, wholesales for 7 to 9 cents, the retail price varying from 10 to 20 cents, depending upon locality. Solar oil, also used largely for tractors, wholesales at 7 to 9 cents less than carload lots and from 2¼ to 4 cents in carloads. Fuel oil used in industrial plants is as low as 2 cents a gallon to dealer.

This Is the First

of a series of stories on the tractor demonstrations being written by a Motor World staff representative who is covering these important trade events. Each week during the demonstrations, which continue for 8 weeks, an analytical article will bring the important facts of these tests to Motor World readers.

NEXT WEEK

Why Texas Needs the Farm Tractor

WATCH FOR IT

By Stanley P. McMinn

DALLAS, July 14—Dallas, Texas, and the Southwest are ready for the first National Tractor Demonstration the Lone Star State has ever had. Indications are that the event will surpass even the expectations of the local committee and the national committee. The demonstration will begin on July 18 and will continue until July 21, inclusive.

Dallas has made plans for the entertainment of at least 100,000 visitors. These will come from all parts of the State. More than 150 tractors will be in operation. There will be all kinds of demonstrations. Especial interest is being taken in the Good Roads Demonstration. Automobile dealers from the Southwest are interested in the demonstration and have shown this interest by expressing a desire to attend. The entries for the event already are greater than the local committee had expected.

A. E. Hildebrand, Bloomington, Ill., manager for the National Tractor Demonstration, who will have charge of the eight demonstrations in various parts of the United States, arrived in Dallas Sunday night and has assumed charge. Monday he met the local committee, which is composed of Lamonte Daniels, chairman; Thos. N. Stephens, secretary; C. A. Sattley, C. A. McCline, W. I. Bogardus and W. T. Davis. Members of this general committee are also chairmen of the following committees: Finance, publicity, concessions, exhibits and entertainments, respectively.

The demonstration will be held on the Caruth 1000-acre farm, an ideal spot for such a demonstration. The scene is accessible by interurban, two railroads and a jitney bus line. Proper railroad switches have been built and barns have been erected in which the machinery will be kept. Stands are also being erected for the crowds which will witness the demonstration.

It is expected this show will prove a revelation to Texas farmers, and for this reason no expense is being spared by the national committee, by the local committees and by the exhibitors to make it in every way a success that will redound in good to the farmer and to the development of Texas agricultural resources in a manner that nothing else can do.

The list of exhibitors has surpassed the expectations of all concerned. The manufacturers who have agreed to exhibit, according to Secretary Stephens, are:

TRACTOR EXHIBITORS

Those Marked with An Asterisk (*) Will Participate in the Demonstrations

*Advance-Rumely Thresher Co..LaPorte, Ind.
Albaugh Fover Co.....Chicago
Allen Tractor Co.....Chicago
*Allis-Chalmers Mfg. Co.....Milwaukee
American Tractor Co.....Des Moines
Andrews Tractor Co.....Minneapolis
Aultman Taylor Co.....Mansfield, Ohio
*Avery Co.....Peoria
*Avery & Sons, B. F.....Louisville, Ky.
Bates Tractor Co.....Lansing
*Best (C. L.) Gas Tractor Engine Co., Oakland, Cal.
Boring Tractor Co.....Chicago
Brillon Iron Works.....Brillon, Wis.
Buckeye Mfg. Co.....Anderson, Ind.
Bull Tractor Co.....Minneapolis
Bullock Tractor Co.....Chicago
*Case (J. I.) T. M. Co.....Racine
*Case Plow Works.....Racine
Chase Motor Truck Co.....Syracuse
Cleveland Horseless Farm Mch. Co..Cleveland
*C. O. D. Tractor Co.....Minneapolis
Common Sense Gas Tractor Co...Minneapolis
Commonwealth Tractor Co.....Kansas City
Corn Belt Tractor Co.....Minneapolis
Cutaway Harrow Co.....Higgamon, Conn.
*Dauch Mfg. Co.....Sandusky
Dayton Dick Co.....Quincy, Ill.
Deere & Co.....Moline, Ill.
*Deming Tractor Co.....Cedar Rapids, Ia.
Diamond Iron Works.....Minneapolis
Dill (G. I.) Tractor Mfg. Co.Harrisburg, Ark.
Eagle Mfg. Co.....Appleton, Wis.
*Electric Wheel Co.....Quincy, Ill.
Elliott (G. W.) & Co.....Desmot, S. D.
*Emerson Brantingham Co.....Rockford, Ill.
Fairmont Gas Engine Railway Motor Car Co.....Fairmont, Minn.
Famous Mfg. Co.....East Chicago
Farm Horse Traction Works..Hartford, S. D.
Ford Tractor Co.....Minneapolis
*Ford Tractor Sales Co.....Dallas
Four Drive Tractor Co.....Big Rapids, Mich.
Four Wheel Drive Auto Co..Clintonville, Wis.
Gile Tractor & Engine Co.....Rockford, Ill.
Grand Detour Plow Co.....Dixon, Ill.
Gray Tractor Mfg. Co.....Minneapolis
Hackney Mfg. Co.....St. Paul
Happy Farmer Co.....Minneapolis
Harrow (A. T.) Tractor Co.....Detroit
*Hart-Parr Co.....Charles City, Iowa
Hoke Tractor Co.....So. Bend, Ind.
*Holt Mfg. Co.....Peoria, Ill.
Huber Mfg. Co.....Marion, Ohio
Hume Mfg. Co.....Hume, Ill.
Imperial Machinery Co.....Minneapolis
International Gas Engine Co....Cudahy, Wis.
International Harvester Co.....Chicago
*Interstate Engine & Tractor Co., Waterloo, Iowa
Jamesville Machinery Co....Jamesville, Wis.
*Joliet Oil Tractor Co.....Joliet, Ill.

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Kansas City Hay Press Co..Kansas City, Mo.
Kerney Colwell Co.....Norfolk, Neb.
*Kinnard Haines Co.....Minneapolis
Killen Strait Mfg. Co.....Appleton, Wis.
Kinkead Tractor Co.....Minneapolis
LaCrosse Plow Co.....LaCrosse, Wis.
Lawson (John) Mfg. Co..New Holstein, Wis.
Lawter Tractor Co.....St. Mary's Ohio
Lion Tractor Co.....Minneapolis
Mayer Bros. .....Kankato, Minn.
Maytag Co.....Newton, Iowa
*McIntyre Mfg. Co.....Columbus
Minneapolis Steel Machine Co....Minneapolis
Minneapolis Threshing Machine Co., Minneapolis
*Moline Plow Co.....Moline, Ill.
Morton Truck & Tractor Co..Harrisburg, Pa.
National Pulley & Mfg. Co.....Chicago
Nichols & Shepard Co....Battle Creek, Mich.
*Nilson Farm Machinery Co.....Minneapolis
Newell Sanders Plow Co..Chattanooga, Tenn.
New Age Tractor Co.....Minneapolis
Olin Gas Engine Co.....Buffalo
Oliver Chilled Plow Co.....South Bend,Ind.
Parker Plow Co.....Richmond, Va.
*Parrett Tractor Co.....Chicago
*Peoria Tractor Co.....Peoria, Ill.
P. & O. Plow Co.....Canton, Ill.
*Rock Island Plow Co.....Rock Island, Ill.
Rumley (Leo) Tractor Co.....La Porte, Ind.
Russell & Co.....Massillon, Ohio
Samson Iron Works.....Stockton, Cal.
Sandusky Tractor Co.....Dallas
*Sattely Bill Tractor Co.....Dallas
*Simplex Tractor Co.....Minneapolis
Southern Minneapolis Farm Power Co.Dallas
*Standard-Detroit Tractor Co.....Detroit
Steel King.....Detroit
St. Paul Mfg. Co.....St. Paul
Strite Tractor Co.....Minneapolis
Sullivan Tractor Co.....Oakland, Cal.
Sweeney Tractor Co.....Kansas City
Texas Happy Farmer Tractor Co.....Dallas
*Texas Harvester Co.....Dallas
Texas Moline Plow Co.....Dallas
*Tom Thumb Tractor Co.....Minneapolis
Turner Mfg. Co.....Port Washington. Wis.
*Twin City Tractor Co.....Dallas
Union Tool Co.....Torrance, Cal.
Ward Tractor Co.....Lincoln, Neb.
*Waite Tractor Sales Co.....Elgin, Ill.
Wallis Tractor Co.....Racine, Wis.
*Waterloo Gas Engines Co....Waterloo, Iowa
Weber Engine Co.....Kansas City
*Wilmar Tractor & Mfg. Co..Willmar, Minn.
Wolverine Car & Mfg. Co.....Detroit
Yoder Tractor Co.....Dallas
Yuba Construction Co.....Marysville, Cal.

ENGINE PLOWS

Case Plow Works.....Racine, Wis.
Deere (John) Plow Co.....Moline, Ill.
Emerson-Brantingham Plow Co.Rockford, Ill.
Grand DeTour Plow Co.....Dixon, Ill.
LaCrosse Plow Co.....LaCrosse, Wis.
Moline Plow Co.....Moline
Newell Sanders Plow Co..Chattanooga, Tenn.
Oliver Chilled Plow Works...South Bend, Ill.
Parlin & Orendorff Plow Co.....Canton, Ill.
Rock Island Plow Co.....Rock Island

ACCESSORY EXHIBITORS

Accurate Engineering Co.....Chicago
Adams Grader Co.....Indianapolis
Atwater Kent Mfg. Works.....Philadelphia
Austin Machinery Co.....Chicago
Bennett Carbureter Co.....Minneapolis
Beaver Motor Co.....Milwaukee
Burd High Compression Ring Co.Rockford, Ill.
Continental Motor Mfg. Co.....Detroit
Champion Spark Plug Co.....Toledo
Champion (A.C.) Spark Plug Co.Albion, Mich.
Diamond Chain Co.....Indianapolis
Detroit Lubricating Co.....Detroit
Eisemann Magneto Co.....Brooklyn,, N. Y.
K. W. Ignition Co.....Cleveland
Evertight Ring Co.....St. Louis
Good Roads Machinery Co..Fort Wayne, Ind.
Harsbum Carbureter Co.....Indianapolis
Herz & Co.....New York
Hyatt Roller Bearing Co.....Detroit
Hurd Motor Co.....Saginaw, Mich.
Kingston Co.....Kokomo, Ind.
Kerosine Burning Carbureter Co.....Detroit
McQuay-Norris Mfg. Co.....St. Louis
Manhattan Electrical Supply Co....New York
New Departure Ball Bearing Co.Bristol, Conn.
Platt & Washburn Refining Co.....New York
Piston Ring Co.....Muskogee, Mich.
Perfex Radiator Co.....Racine
Reflex Igniter Co.....Cleveland
Rajah Auto Supply Co.....Bloomfield, N. J.
Russell Grader Co.....Minneapolis
Sumpter Electrical Co.....Chicago
Swiss Magneto Co.....Chicago
Timken Roller Bearing Co.....Detroit
V-Ray Spark Plug Co....Marshalltown, Iowa
Waukesha Motor Co.....Waukesha, Wis.
Wabster Electric Co.....Racine
Wisconsin Motor Co.....Milwaukee
Western Motor Co.....Milwaukee

In the Hardware Store



Customer: Have you Weed chains?

Clerk: We have not; but we have a splendid variety of chain stump pullers.

Resta Wins at Omaha, Mulford Takes Second

Under Blazing Sun Speed Champions Entertain Nebraskans on Rough Wood-surface Speedway

OMAHA, July 15.—(*Special Staff Correspondence.*)—Under a hot sun, Dario Resta in his Peugeot, drove to victory in Omaha's second annual motor derby today, nosing out Mulford, who had been looked upon as a likely winner until almost the end of the scorching battle. His time for the 150 miles was 1 hr. 30 min., 3 sec., an average speed of 99.2 m.p.h., a record for 150 miles on a 1¼ mile track.

One life was snuffed out, that of Don Columbo, mechanic for Franchi in the Peusun, when they went through the so-called safety wall in front of the grand stand.

It was a day of thrills and sweltering heat. Some difficulty was experienced at the beginning in getting the cars bunched for the starting flag. Fred Wagner started the cars off two abreast, the peculiar construction of the Omaha speedway not permitting the usual number to stand in one line for the first lap.

Resta jumped into the lead on the first lap but was crowded close by Mulford and Rickenbacher, Mulford leading Dario before ten laps were made.

The Omaha track has not stood up as one would expect. The 2 x 4's have split and there are many ruts, some as much as 2 in. deep. It is possible, racing men believe, that if these ruts had not been there Franchi would not have lost control of his car. Further, if the so-called safety wall had been anything but two 2-in. planks, say like the Chicago track safety wall, the Peusun would not have gone over.

At 50 miles Mulford led, Resta was second; Rickenbacher, third; Milton, fourth, and DePalma, fifth. The toll on tires was terrific. Mulford was forced to stop many times toward the end of the race, when seconds counted. Many of his changes were made in 20 to 25 seconds.

Resta led at the end of the first hour, his speed being 101.37 m.p.h. He and Milton were the only ones who made no tire changes.

In the eightieth lap Jack Gable drove the Burman Special, the same car in which Burman was killed at Corona last April and which is being campaigned for Burman's widow, through the fence and into the infield. The car turned over three times, but Gable and his mechanic, Harry McGraff, were thrown out on the first impact and escaped with a few bruises.

Before the race Mulford refused to let the Hudson Super Six go in. This left Vail without a mount but Ralph finally was won over and Vail took the car. His ignition wires caught fire once, he changed mechanics once when his first mechanic was overcome by the heat, and then Vail ate up all the tires he had and had to withdraw.

Rickenbacher went out at 101 miles with valve trouble. He was in third place at that time. DePalma was forced to withdraw soon after Rick. came in, Ralph's trouble being a broken valve cap.

Only seven of the seventeen cars that started were running at the finish. They were Resta, Milton, Mulford, Kline, Muller, Henderson and Stringer.

In the 50-mile free-for-all that followed 30 minutes after the finish of the big race, seven cars started, DePalma heading them all and winning at a speed of 103.45 m.p.h., his time being 29 min., 2.47 sec. Rickenbacher was second, Henderson third, Lewis fourth, Stringer fifth, Milton sixth and Rawlings Duluth Special went out in the twenty-third lap with a broken crankcase and Mulford in a Hudson withdrew at the end of twenty-four laps with a burned out bearing.

About 15,000 people witnessed the races. The infield was thick with cars and the prejudice which resulted from the meager field of last year, when the date given Omaha was one day following Sioux City, where several cars were put out of the running to the disappointment of Omaha, was not in evidence today.

The time for the 50-mile event at intervals of 20 miles follows.

Pos.	Car.	Driver.	20 Mi.	40 Mi.	50 Mi.	M.P.H.
1	Mercedes	DePalma	11:54.45	23:13.30	29:02.47	103.45
2	Maxwell	Rickenbacher	11:56.78	23:47.70	30:01.65	99.89
3	Maxwell	Henderson	12:11.22	24:12.45	30:07.16	99.61
4	Crawford	Lewis	12:18.10	24:12.94	31:37.10	94.89
5	Mercer	Stringer	13:08.30	26:12.30	32:51.40	91.38
6	Duesenberg	Milton	12:39.30	25:00.30	32:59.61	90.90
7	Hudson	Mulford	12:29.00	Out—Burned bearing.		
8	Duluth Special	Rawlings	13:10.43	Out—Broken crankcase.		

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Association News

Michigan Convention in October

DETROIT, July 17—The Michigan Automobile Trade Association will hold its next annual convention in Flint, Oct. 12.

Genesee County Organizes

FLINT, MICH., July 15—The Genesee County Automobile Trade Association was organized here last night and has affiliated with the Michigan Automobile Trade Association. The officers and directors are: President. Sam Wey, Park Garage; vice-president. M. Davison, Lunt & Davison; secretary, Otto P. Graff, Ford Sales Co.; treasurer, A. B. Hurd, Hurd Auto Sales Co.; directors, C. H. Bliss, Childs-Bliss Auto Co.; Ralph Knight, Clio, Mich.; H. Woodin, Woodin & Lang; H. Wetherald, Wetherald & Zimmerman.

An invitation was extended to the State association to hold its convention in Flint, Oct. 12, which invitation was accepted. The next meeting of the Genesee association will be held July 26 at Cumings' place of business at 8 p. m.

Plan Show at Ohio Fair

COLUMBUS, July 18—Steps are being taken by the Columbus Automobile Show Co. to enclose one of the large buildings at the Ohio State Fair Grounds when the annual fall show will be held in conjunction with the Ohio State Fair, Sept. 2 to 9. The plan is to include only automobiles, both pleasure cars and trucks, in the building, and make it distinctively an automobile show.

Another Row in Boston

BOSTON, July 15—The Boston motor organizations now have another fight on their hands. Mayor Curley has stated that as there is a deficiency in the running of the ferries that he proposes to increase the fare for motor vehicles from 10 cents to 25 cents. So right away the Boston Automobile Dealers Association, the Boston Commercial Vehicle Dealers Association, the Bay State and the Metropolitan Automobile Associations have written him letters requesting a conference on the subject.

Three years ago ex-Mayor Fitzgerald proposed the same thing, and Louis K. Rourke, superintendent of public works, had a scale worked out to make the increases. The motor organizations requested a conference and they convinced the mayor that it would be unjust to the East Boston business houses and the residents there who owned motor cars, for there is no bridge to that section, while Charlestown, South Boston and Cambridge all have bridges. Therefore East Boston would be handicapped by an added tax on business vehicles owned there. So he dropped it.

Change Meeting Night

TOLEDO, July 17—The Toledo Automobile Dealers' Association, a new organization, has changed its meetings from every Monday night to the first Monday of every month with a noonday meeting every Monday. The officers are: President, E. A. Wilkinson; first vice-president, C. P. Landman; second vice-president, M. R. Himes; treasurer, C. L. Sturtevant; secretary, V. G. Kibby. Secretary Kibby recently reproduced the association editorial on page 21 of Motor World of June 14 and used it effectively in promoting organization work.

Champion Plugs on King Demonstration

NEW YORK, July 12—Much of the credit for the performance of the King eight-cylinder car which was run on the Sheepshead Bay Speedway without a motor stop for 10,850 miles was due to its ignition. Throughout the run a set of standard Champion Spark Plug Co.'s plugs was used.

Any Old Nails or Screws?

OMAHA, July 12—Five cents per lb. for nails and screws picked up in the streets of North Loup, Neb., was offered by the automobile club of that city. The resultant campaign, carried on largely by schoolboys, netted 285 lb. of rusty metal, which was displayed in a store window. The reward still stands, and the streets are safe for motor car traffic.

Koehler Names Foreign Dealers

NEWARK, N. J., July 17—The H. J. Koehler S. G. Co. has just completed negotiations with the following foreign countries to handle Koehler one-ton trucks in the countries named: Dirk Van Der Mark, Keizersgracht 635, Amsterdam, Lolland; W. H. Wheeler, Calcutta, India; The Motor Shop, Madras, India; F. Galban, Havana, Cuba.

18,000 Cars in St. Louis

JEFFERSON CITY, MO., July 17—The first 5 months of the State's fiscal year with reference to automobile licenses—starting Feb. 1—showed more automobiles licensed in the State than during the entire year 1915. St. Louis has 18,098 now, against 16,421 last year; Kansas City 10,847, against $9309. Outside these two big cities, Jasper County, which contains Joplin, has the largest number of automobiles, increasing from 2668 in 1915 to 3892 on June 30, 1916.

Co-operative Garage in New York

NEW YORK, July 17—A co-operative garage is to be operated at 32-34 West Sixty-sixth Street on a plot 50 x 100. It will be called the Owners West Sixty-sixth Street Garage and it is planned that patrons shall be stockholders, as is the case of a number of co-operative apartment houses in that neighborhood. It will be managed by the Wylie-Carey, Thayer Co.

Ford Promotions in St. Louis

ST. LOUIS, July 10—At the meeting of the Ford Efficiency Club at the roof garden on the Ford assembly plant, Manager W. C. Anderson announced promotions effective at once. The meeting was a leave taking to T. E. Huber, assistant manager here, promoted to manager of the New Orleans plant. Huber was presented with a silver table service. Harry V. White will succeed Huber; W. R. Johnson, a road salesman, succeeds White as manager of the wholesale department; M. J. Callahan, service manager, succeeds Johnson; H. L. Bagley, city salesman, is promoted to manager of the East St. Louis plant, to be opened Aug. 1 in an expressly erected building 100 x 90, three stories high. Last year Bagley ranked third among all Ford salesmen for total sales.

To Plow at Night

ST. LOUIS, July 17—Frank E. Goodwin, president of the St. Louis Tractor Farming Association, announces that arrangements have been completed for night plowing exhibitions at Kinloch Park, near this city, where the tractor exhibit of tractors and accessories will be held July 31 to Aug. 4. At last count Mr. Goodwin said that thirty-one tractor companies and thirty-one accessory companies had completed details for exhibiting their wares. There are no prizes in any departments. It is estimated that 50,000 farmers will visit the exhibition.

Gold Chassis Meets Ezra Meeker

ST. LOUIS, July 15—The Weber Motor Car Co. entertained many visitors here July 11 to see the Studebaker gold chassis, which was on exhibition that day. It was to have been on view 2 days, but was delayed by a railroad wreck. A crowd of 1000 persons was waiting for the exhibit when it reached the Weber show rooms Monday night, being 12 hours late. B. V. Bassett of the Studebaker engineering department, accompanied the chassis.

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Ezra Meeker, the 86-year-old good roads worker, was in St. Louis 2 days last week in his Pathfinder twin six with a prairie schooner body, spreading his propaganda for a better Oregon trail. His car attracted much attention on the city streets, although he did not use his Warner trailer in the city. He made his headquarters here with the Ebbeler Motor Co., distributer of both the Pathfinder and the Warner trailer.

Frye Wins Saxon Cup

ST. LOUIS, July 15—The Frye Motor Car Co., Saxon dealer, has been informed that the Saxon six touring car entered by that company in the Saxon company's 300-mile non-motor-stop contest had won the cup, which will be forwarded to the local company as soon as the lettering can be completed. The local car made an average of 34.68 miles to the gallon of gasoline.

Sharing Profits with Employees

OMAHA, July 12.—A profit-sharing plan on automobile sales is the project of H. Pelton, White distributer for Omaha territory, arrangements for which have just been completed. The plan has four phases. The first of these phases deals with the sale of White pleasure cars and trucks. The second has to do with the sale of Franklin cars. The third covers general garage business, and the fourth deals with repair-shop business. Each of these divisions of the company will be handled independently of the other three. At the end of the year, beginning with July 1, all profit above a certain stated per cent will be divided among the salesmen on a basis of earnings. Salesmen and shopmen will have the double incentive of doing the maximum amount of business with a minimum of overhead expense.

Charge Short Gasoline Measure

NEW YORK, July 17—The Bureau of Weights and Measures, following an investigation, claims to have discovered that gasoline companies and truck drivers are working in collusion. It is maintained that the driver signs a receipt for more gasoline than he receives and is rebated.

Plan Run to Yellowstone

ST. PAUL, July 15—Plans for the Yellowstone automobile tour which leaves Twin Cities July 20 have been completed, with an entry list that includes participants from as far east as Pennsylvania. According to members of the committee in charge, more automobiles will be in line when the excursion pulls out for Gardiner, Mont., than ever left on a Northwestern tour before. A number of dealers have entered.

Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

Ben R. Evans and **Russell W. Long** have joined the sales force of the McQuay-Norris Mfg. Co., St. Louis, as field men, traveling out of the St. Louis plant.

M. D. Montgomery, who has been acting manager of the Denver Goodyear branch during the illness of the late S. E. Gillard, has been made manager of that district.

F. C. Moyer, who has been in charge of the Goodyear Des Moines branch, has been made manager of the Minneapolis branch in the place of G. H. Barmore, who has been appointed manager in Milwaukee.

F. W. Telford, former supervisor of the Goodyear motor truck tire sales in Chicago, has been made manager of the Des Moines branch.

T. J. Fitzgerald will fill the managership of the El Paso Goodyear branch left vacant by the death of G. F. Dennis.

G. H. Smith has been appointed sales manager of the Mercer Automobile Co., Trenton, N. J. He formerly was connected with the White and Peerless.

S. H. Humphrey, formerly vice-president of the Chalmers Motor Co., has been made vice-president and manufacturing manager of the Briscoe Motor Corp., Jackson, Mich.

C. J. Ledwitch, who has had extensive experience with foreign trade has joined the export department of the Maxwell Motor Co.

P. J. Eubanks has resigned as sales and advertising manager of the Barley Mfg. Co., Streator, Ill., effective August 1.

Wallace C. Hood, former general sales manager of the Chalmers, Everitt, and Empire companies, has organized the Wallace C. Hood Service Bureau with offices in the Dime Savings Bank Bldg., Detroit. It will act as manufacturers' representative.

Allen Loomis, for the past 10 years with the Packard Motor Car Co., Detroit, has resigned as research engineer to devote his attention to private engineering.

Factory News of the Week

Mitchell Motors Co. Formed

NEW YORK, July 11—The Mitchell Motors Co., Inc., has been formed and will acquire and operate the business of the Mitchell-Lewis Motor Co., Racine, Wis. The new company has a capital of 125,000 shares, no par value, and the issue has been syndicated by Ladenburg, Thalmann & Co. and A. G. Becker & Co. of Chicago. The offering price of the stock is $67 a share. The Mitchell-Lewis Motor Co. was founded in 1903 and the output has grown from eighty-two cars in 1904 to 6186 in 1915. For the present fiscal year to end Oct. 13 the output will be upward of 10,000 cars. On this output and results obtained thus far earnings for the present fiscal year are estimated at $1,400,000, or over $11 per share. During the 10 months ended Oct. 31, 1915, net profits of the company were $815,756, or $6.50 per share. An audit by Price, Waterhouse & Co. shows total net tangible assets of $4,500,000, equivalent to $36 per share. Net current assets are over $2,000,000, of which $926,672 is cash. Mitchell cars are being produced at present at the rate of 15,000 per annum, and the present plants have an annual capacity of 18,000 cars.

Neville Absorbs More-Room

DETROIT, July 12—The Neville Steering Wheel & Mfg. Co. has absorbed the Neville More-Room Steering Wheel Co. F. A. Vollbrecht, formerly general manager of the King Motor Car Co., is president of the new corporation, John V. Harding is vice-president and A. W. Webber secretary and treasurer. Harding is known in the trade through his 6½ years' work as special factory representative of the Motz Tire & Rubber Co., and later the Goodyear Tire & Rubber Co., in Detroit and the country at large. Webber was formerly of the General Motors Co. The new company has obtained fireproof quarters at 74 Congress Street West, Detroit, where it is now devoting its energies exclusively to manufacturing a full line of Neville More-Room steering wheels. William Langton has been appointed factory superintendent, and the factory is now producing its wheel in quantities to take care of both manufacturers and the jobbing trade.

Leak-Proof Plant Expanded

ST. LOUIS, July 12—The McQuay-Norris Mfg. Co. has just completed an addition to its factory which increases the plant by one-third and gives 100 ft. of frontage on Locust Street in the heart of the automobile district.

Drexel Succeeds Farmack

CHICAGO, July 17.—The Drexel Motor Car Corp. has succeeded the Farmack Motor Car Corp., and is issuing stock at $10 per share. It is capitalized at $2,000,000.

Gillette Buys Out Wilmo

CHICAGO, July 17.—The Wilmo Co., manufacturer of accessories, has sold its property, patent rights and good will to the Gillette Motors Co., Mishawaka, Ind. King C. Gillette is president.

To Build Armored Cars

DETROIT, July 17.—The Armored Motor Car Co. has been formed to manufacture armored motor car bodies. The principals are at present in Washington, D. C., and plan to stage, soon, a test for the inspection of the government. The company plans to use King chassis.

To Concentrate on Accessories

COLUMBUS, July 15.—The Peters & Heron Dash Co., one of the oldest concerns in the country engaged in the manufacture of dashes and other vehicle parts, has sold its dash business to the McKinnon Dash Co., of Buffalo and Troy, O., for the purpose of devoting its entire attention to the manufacture of dimmers, robes, top covers and other accessories. The concern has been making these accessories for several months and the entire plant will now be used for that purpose.

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Chalmers People to Play

DETROIT, July 17.—Over 5,000 Chalmers employees and their families will be guests of the Chalmers Motor Co. at the annual Chalmers outing to be held at Bois Blanc Island in the lower Detroit river Monday, July 24.

Chief among the events of the day will be the award by Hugh Chalmers of a $1090 Chalmers Six-30 touring car, to the employee who has turned in the most valuable suggestion to the company during the past six months. An additional $500 in gold will be divided among other employees according to the merit of their suggestions.

Milburn Raises Prices

TOLEDO, OHIO, July 17.—The Milburn Wagon Co. has advanced the selling price of its products. The Model 22 Brougham, formerly selling at $1585, has been advanced to $1685, taking effect July 15. The advance was necessary because of the higher price of all materials which goes into the manufacture of the vehicle.

Site Secured for Hester Tire

LIMA, OHIO, July 15.—Three acres of land, lying between the C. H. & D. tracks and Jefferson Avenue, have been obtained by the Chamber of Commerce as a site for the factory building to be erected by the Hester Tire & Rubber Co. Plans for the main factory building, 60 x 150 ft., and power house, 60 ft. square, are nearing completion.

The Hester Tire & Rubber Co. is a $100,000 concern, incorporated under the laws of Delaware and at present doing a general rubber jobbing business. One hundred men and girls will be employed at the start, and the force will be increased later, it is said.

A Correction

PORTLAND, ORE., July 17.—A retail news story in Motor World, June 28, stated that the American Tire Co., Portland, Ore., distributed Knight tires. The American Tire & Rubber Co. distributes U. S. tires instead of Knight. The owners are D. L. McPhee, J. K. Cassidy and C. M. Herald.

Buick Men Go to Factory

DALLAS, July 15.—The following Buick representatives in Texas, headed by J. W. Atwood, manager of the Dallas branch, left Dallas Saturday for Flint, Mich., where they will visit the Buick Factory; Tom A. Lester and E. A. Detzel of the Dallas force; E. M. Hunter of Abilene; D. M. Corfall and B. K. Appleman, Beaumont; R. W. Ramming, Wichita Falls; C. B. Oliver, Caldwell; Geo. E. Paxton and J. W. Crouch, Snyder; J. W. Stokes, Midland; J. L. Higginbotham, Tahoka; A. G. Ilsing, Fort Worth; Frank Heard, Brady; R. M. Kinard, Stamford; J. M. Butler, Corsicana and W. T. Johnson, Hubbard City. The party made the trip in a special car.

Overland Stock on 12 Per Cent Basis

TOLEDO, July 13.—The directors of the Willys-Overland Co. yesterday declared a regular quarterly dividend of 3 per cent in cash, placing the regular dividend on a 12 per cent per annum basis. The directors also declared an extra stock dividend of 10 per cent.

The cash dividend is payable Aug. 1 to holders of record July 24. One-half of the 10 per cent stock dividend is payable Oct. 2 to holders of record Sept. 15. The remainder is payable April 2 to holders of record March 15.

After the meeting President John N. Willys stated that orders received last week for immediate shipment amounted to over 10,000 cars. Business was never better than the present. During the six months ended June 30, 1916, the number of cars sold and delivered was 94,477, being two and one-half times the shipments in the corresponding period of 1915.

The company has built 37,841 cars between Jan. 1 and June 30. The biggest shipments for a single day were made on March 27, when 1111 cars left the factory.

Coming Events

General Events

September	Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.
Oct. 2-3-4-5	St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.
Oct. 12	Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Races, Contests and Tours

July 20	Uniontown, Pa.; hill climb, Uniontown Motoring Assn.*
July 22	Oriskany Falls, N. Y.; hill climb, Automobile Club of Utica.*
July 22	Kansas City; dirt speedway race, Kansas City Speedway Co.
July 29	Newark, N. J.; track race, Olympic Park Auto Racing Assn.
Aug. 5	Tacoma; speedway races, Tacoma Speedway Assn.*
Aug. 11-12	Pikes Peak, Col.; hill climb, Pikes Peak Auto Highway Co.*
Aug. 12	Portland, Ore., track race, Hiller-Riegel Co.
Aug. 17	Boise, Idaho; track race, North West Auto Assn.
Aug. 26	Kalamazoo, Mich.; 100-mile track race.
Sept. 1-2	New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*
Sept. 4	Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.
Sept. 4	Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.
Sept. 4	Newark, N. J.; track race, Olympic Park Racing Assn.
Sept. 4	Des Moines, Ia.; speedway. Price Speedway Co.
Sept. 4	Indianapolis Speedway race.
Sept. 4-5	Spokane, Wash., track racemeet, Inland Auto Assn.
Sept. 9	Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway
Sept. 16	Providence, R. I., speedway racemeet, Narragansett Park Speedway.
Sept. 18	North Yakima, Wash.; track race, Washington State Fair.
Sept. 29	Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.
Sept. 30	New York, N. Y., speedway racemeet. Sheepshead Bay Speedway Corp.
Oct. 7	Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.
Oct. 7	Philadelphia Speedway race.
Oct. 14	Chicago; speedway races, Speedway Park Assn.
Oct. 19	Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.
Oct. 21	Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.
Nov. 16-18	Santa Monica; Vanderbilt Cup and Grand Prix races.
Nov. 30	Los Angeles, Cal.; speedway races, Ascot Speedway Assn.
Dec. 25	Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

July 17-21	Dallas, Tex.
July 24-28	Hutchinson, Kan.
July 31-Aug. 4	St. Louis, Mo.
Aug. 7-11	Fremont, Neb.
Aug. 14-18	Cedar Rapids, Iowa.
Aug. 21-25	Bloomington, Ill.
Aug. 28-Sept. 1	Indianapolis.
Sept. 4-8	Madison, Wis.

Shows

Aug.2-9	Hollywood and West End, N. J.; show, Atlantic Exhibition Co.
Aug. 23-Sept. 1	Des Moines, Iowa, show, State Fair.
Sept. 2-9	Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.
Sept. 11-16	Milwaukee, Wis, second annual Fall show, Milwaukee Automobile Dealers, Inc.
Jan. 6-13	New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.
Jan. 27-Feb. 3	Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Motor Car Securities Quotations

	July 15, 1915 Bid	Asked	July 15, 1916 Bid	Asked
Ajax Rubber Co., new	..	..	64	66
J. I. Case T. M. Co., pfd	70	79	78	79
*Chalmers Motor Co., com	91	93	170	178
Chalmers Motor Co., pfd	95½	98½	98	100
Chandler Motor Car Co	..	..	106	108
Chevrolet Motor Co	..	..	196	200
Fisk Rubber Co., com	..	..	..	160
Fisk Rubber Co., 1st pfd	..	..	112	120
Fisk Rubber Co., 2d pfd	..	..	120	..
Firestone Tire & Rubber Co., com	506	512	880	..
Firestone Tire & Rubber Co., pfd	109	111	112	114
*General Motors Co., com	188	189	465	495
*General Motors Co., pfd	104	105½	109½	113
*B. F. Goodrich Co., com	50	52	75¾	74
*B. F. Goodrich Co., pfd	104	105½	113½	113⅝
Goodyear Tire & Rubber, com	270	273	225	230
Goodyear Tire & Rubber, pfd	105½	107	105	107
Grant Motor Car Co	..	..	10	11
Hupp Motor Car Co., com	..	..	6½	7
Hupp Motor Car Co., pfd	..	..	80	110
International Motor Co., com	17	19	7	8
International Motor Co., pfd	43	45	18	23
*Kelly-Spgfld Tire & Rubber, com	155	157	69	71
*Kelly-Spgfld Tire & Rubber, 1st pfd	85	87	95⅝	97
*Lee Rubber & Tire Corp	..	..	43	44
*Maxwell Motor Co., com	36	38	74½	74⅝
*Maxwell Motor Co., 1st pfd	83	85	83½	84½
*Maxwell Motor Co., 2d pfd	32	34	55	55½
Miller Rubber Co., com	190	192	225	230
Miller Rubber Co., pfd	1p3	105	106	107
Packard Motor Car Co., com	110	115	..	180
Miller Rubber Co., pfd	103	105	106	107
Paige-Detroit Motor Car Co	..	..	45	50
Peerless Truck & Motor Corp	..	..	22	24
Perlman Rim Corp	..	..	..	..
Portage Rubber Co., com	35	38	117	120
Portage Rubber Co., pfd	92	96	118	119
Regal Motor Car Co., pfd	..	..	18	22
Reo Motor Truck Co	15	16	36	38
Reo Motor Car Co	29½	31	42	43
Saxon Motor Car Co	..	..	77	79
Standard Motor Co	..	..	5	7
Stewart Warner Speed Corp., com	66	67½	99	99½
Stewart Warner Speed Corp., pfd	104	106	..	..
*Studebaker Corp., com	81	83	126	126½
*Studebaker Corp., pfd	99	101	107	110
Swinehart Tire & Rubber Co	77	78	86	88
United Motor Corp	..	..	65¾	67¼
*U. S. Rubber Co., com	45	47	52	53½
*U. S. Rubber Co., pfd	103	105	107¾	110
White Motor Co., new	103	106	53¾	53¼
*Willys-Overland Co., com	137	139	64	65
*Willys-Overland Co., pfd	102	103	105	107

*At close July 15, 1916. Listed N. Y. Stock Exchange.

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Are You Building for Permanent Success—as the Michelin Dealer is?

The Michelin Dealer finds his business growing steadily larger and more profitable, because he makes customers easily and **holds** them

He hears none of the complaints that the dealer gets who is willing to sell cheap tires that do not give the mileage.

He has none of the difficulty making sales that the dealer must overcome who sells high-grade tires at high prices.

He offers a tire of unsurpassed quality at a price that is almost as low as that of the cheapest makes. Sales come easy—and once he makes a new customer he holds him. That's why the Michelin dealer's business is **permanently** successful.

UNIVERSAL TREAD CASINGS AND RED TUBES			
Inch Sizes	Q. D. Straight Side	Q. D. Clincher	Red Inner Tubes
32x3½	$18.30	.....	$3.55
32x4	24.90	$24.90	4.65
33	25.65	25.65	4.25
34	25.95	25.95	5.00
36	27.95	27.95	5.30
34x4½	33.00	33.00	6.55
35	34.75	34.75	5.90
36	35.70	35.70	6.90
37	.....	36.60	6.30
35x5	40.50	40.50	6.55
37	41.90	41.90	8.35
Also made in soft bead clincher size 31x4, price $22.25			



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Biltwel Line

Velie

Bigger—Better—More Powerful Velie
More Business for Dealers

THINK of the demand there will be for the Bigger—Better—More Powerful Velie—with the following added advantages!

Timken Axles both Front and Rear

Are but an evidence of the quality and superior specifications found throughout the new car. Recognized as the standard of excellence. *Money cannot buy better.*

Four more inches of body length give more room, more comfort, more luxury—with a new note of distinctive charm in the lines of the 1917 design.

Many subtleties of engineering refinement *give more power*, silence, suppleness—securing every ounce of energy out of every dro- of fuel.

At $1085. The price for the coming season remains in the "$1000 class"—the slight advance being far short of the actual increase in cost of materials that go into the car.

The Greater Velie Now Ready

Velie Biltwel Six has made an astounding record in the last year. It created a demand that tripled our output—tested the capacity of "A Mile of Velie Factory"—made a name for style, finish and performance that you now hear wherever automobiles are discussed—won its way into the most exclusive motoring circles. How, then, could we make a Greater Velie?

We simply added to it. And now with everything in and on, the Greater Velie is ready for still greater victories.

Write for advance circulars with full description of the Greater Velie and our plans for the coming year.

1917 Velie Biltwel Features

Six-cylinder Velie-Continental Motor
Timken Axles front and rear
Removable Cylinder Head for Inspection
Helical Gears in Motor—no chains
Enclosed Multiple Dry Disc Clutch
Hotchkiss Drive—no noisy torque arm
Spiral Gears in Floating Rear Axle
Remy Automatic Ignition—Push Button Starter
Double Bulb Headlights—Dashlight
All Wires Enclosed in Metal Conduits
Rear Gasoline Tank—Vacuum Feed
Simple Rocking Gear Shift Lever
Luxurious Body, 4 inches longer
Unusually Wide Doors—easy to enter
High-Grade Leather Upholstery
Cushions Deep Tufted—Real Curled Hair
Long, Flexible Underslung Springs
Expanding Tire Holder—no Straps
Mirror Body Finish—20 Operations Deep
Light of Weight—Economical of Fuel
Everything in and on—ready for the road

EQUIPMENT—One-man top and envelope; quick, adjustable side curtains; ventilating rain-vision windshield; Stewart speedometer driven from propeller shaft; electric dashlight; portable light; coat rail; foot rail; electric horn under hood; 5 demountable rims; full tool equipment.

Velie Motor Vehicle Co., 115 Velie Place, Moline, Ill.

$1085

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for 1917

Backed By One of the Largest Motor Car Advertising Campaigns

1917 Velie Biltwel Line

Model 28, five-passenger Touring, $1085; four-passenger Companionable Roadster (original and exceptionally smart type), $1085; two-passenger Roadster, $1065. Enclosed bodies exclusively designed; Cabriolet, $1485; Touring Sedan, $1685; four-passenger Sociable Coupe, $1750; Town Car, $2200. Wire wheels on any model $70 extra.

Model 27, seven-passenger Six, completes the line: 124-inch wheelbase, 45 h.p., 35x4½ tires, 4-speed transmission. The utmost in luxury and refinement. Price, $1550. Ask for Catalog.

8—Body Styles—8

A body for every want and every purpose. Read list. The line is complete.

THE Velie National Advertising Campaign will use dominating space in the Saturday Evening Post, Collier's Weekly, Literary Digest, and other publications of their standing.

It will use big space in the leading newspapers. From time to time the factory will place large advertisements in the dailies. In addition to this expense, *borne entirely by the factory*, the Velie offers the most liberal advertising cooperation with dealers at every point. Write for details.

The pick of the farm press has been scheduled for the Velie campaign right through the coming twelve months.

In the Major Class

With the plans made—money appropriated—space contracted for—the Velie campaign for 1916-17 takes its place with the select few of the major class. It is fully justified.

No other car in the light six class made such a high percentage of gain in the last year as the Velie.

And it will make still greater gains this year. Back of the surpassing Velie Values is the Velie Prestige—half a century of manufacturing experience—the reputation of one of the most substantial organizations in America. "The Name Insures the Quality"—Responsibility, Service, Satisfaction.

A Glance Ahead

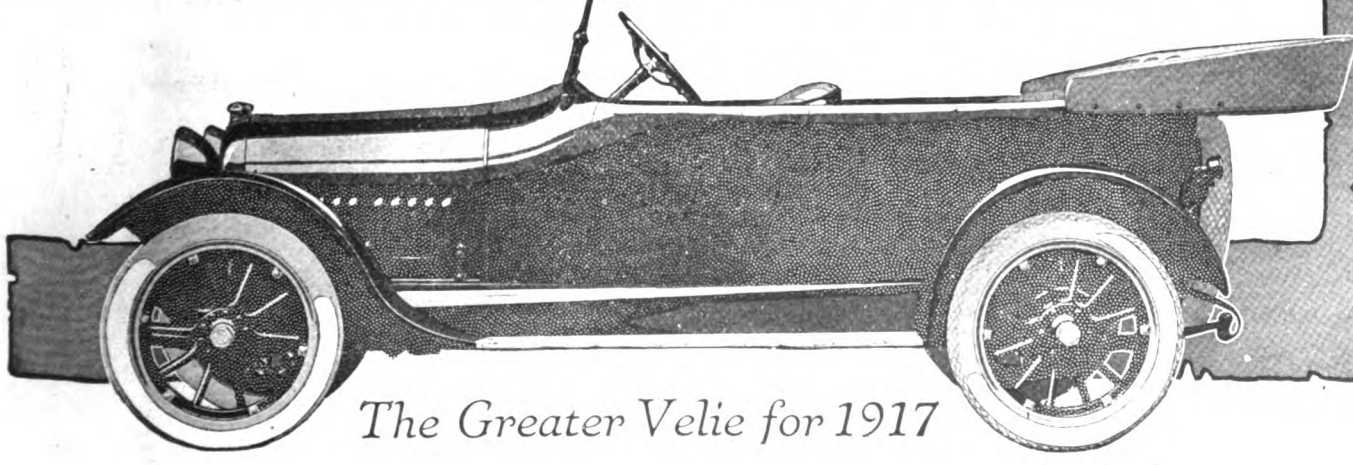
Our output for the coming year will be at least doubled. This means for Distributors and Dealers in every locality a rare opportunity.

It means a line for every demand—city, town and country—backed by efficiency and experience—by record of many years in making good. A line on the rising tide of an enormous demand. Nation-wide distribution in the hands of the most representative men is the goal which the Velie will achieve this year.

If your territory is open for the Greater Velie Biltwel Line, write or wire at once for our liberal proposition. With our big, national advertising campaign starting at once, immediate action is necessary.

Better still, come to the factory. Write or wire for an appointment.

Velie Motor Vehicle Co., 115 Velie Place, Moline, Ill.



The Greater Velie for 1917

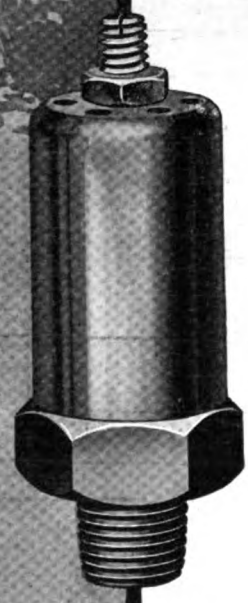
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RESPONSE! QUICK and POSITIVE!



A Brisk, Sprightly Motor in Addition to Fuel Savings of 15 to 35 per cent.

Just because motorists are so enthusiastic about the savings in gasoline that they are making with our new valve, some dealers are forgetting the other advantages it gives. So we call your particular attention to the fact that you can guarantee to customers a motor that is more brisk and sprightly, that responds more keenly and vigorously, when they have installed a



BRUGAN ECONOMY VALVE $4.00

This little "miracle man," besides saving 15 to 35 per cent fuel and giving greater power, will so tone up the motor that it is a new pleasure to drive. Perhaps that sounds too good to be true, but there is only one way to find out—so try it and see.

Of course we don't want you to forget the main argument on gasoline economy—more miles per gallon of gasoline. Remember the adjustable feature, too. It permits most efficient operation for each car.

If you are not cashing in on "Brugan advertising and Brugan results," let us send you our interesting proposition.

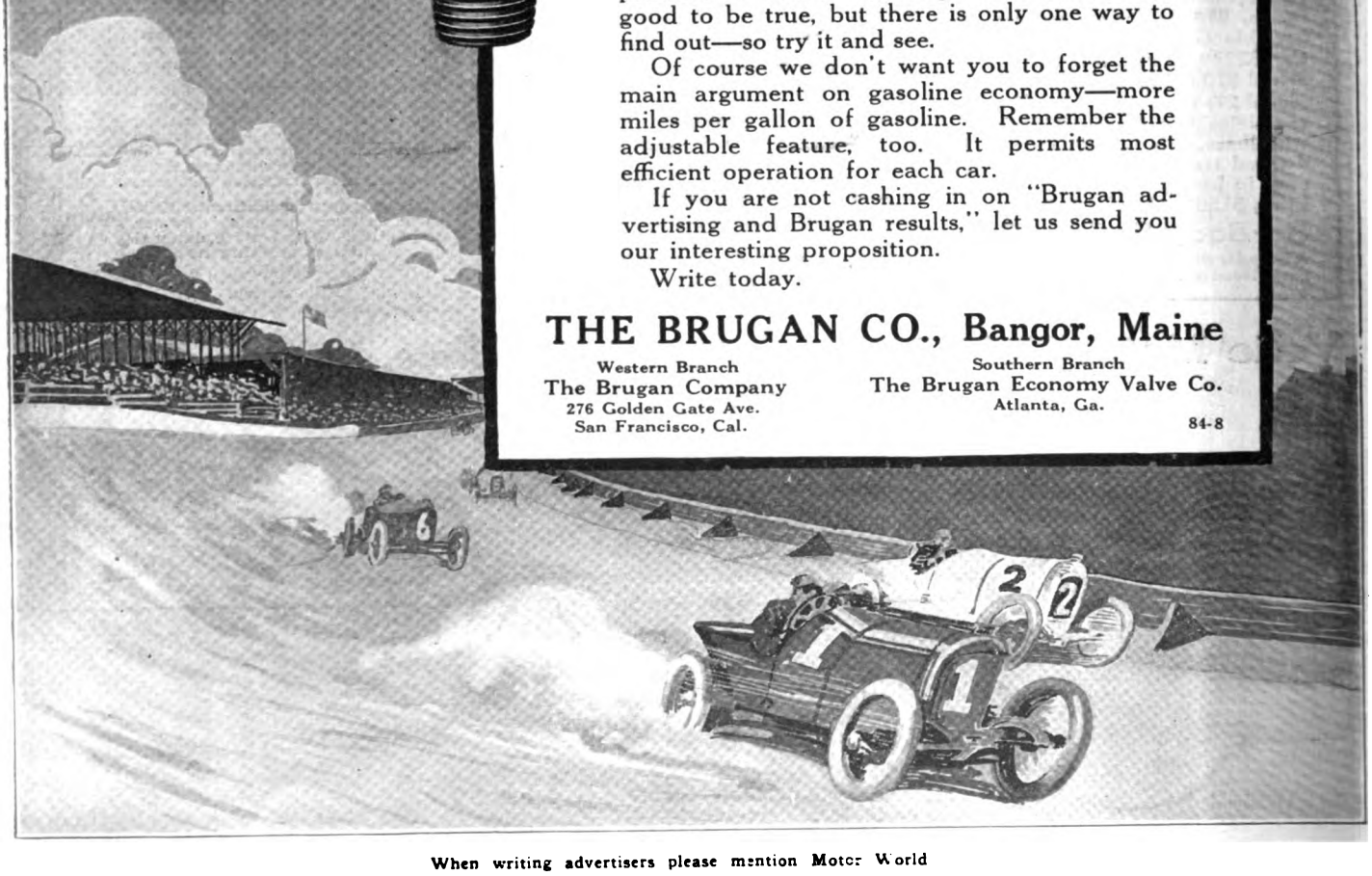
Write today.

THE BRUGAN CO., Bangor, Maine

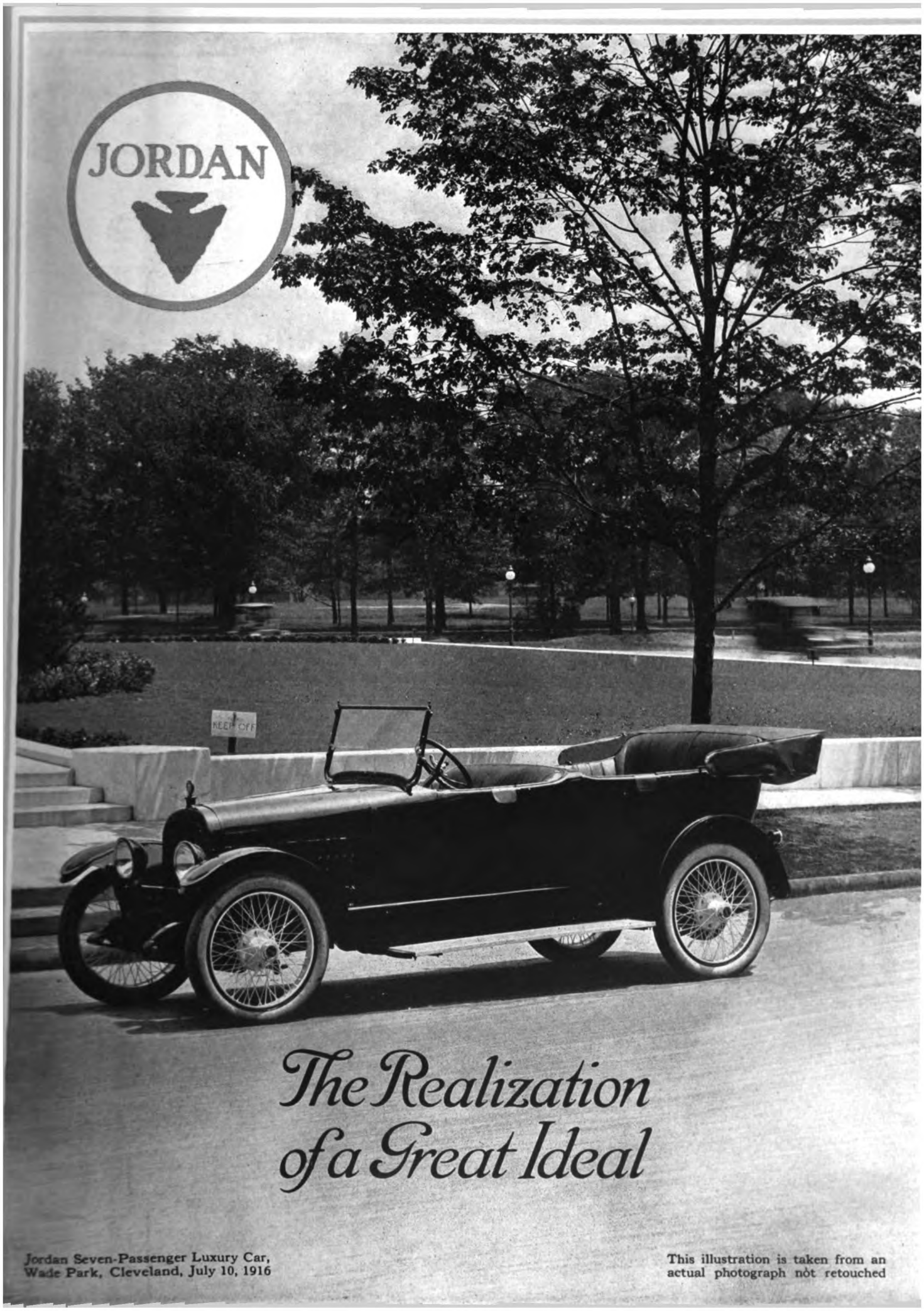
Western Branch
The Brugan Company
276 Golden Gate Ave.
San Francisco, Cal.

Southern Branch
The Brugan Economy Valve Co.
Atlanta, Ga.

84-8



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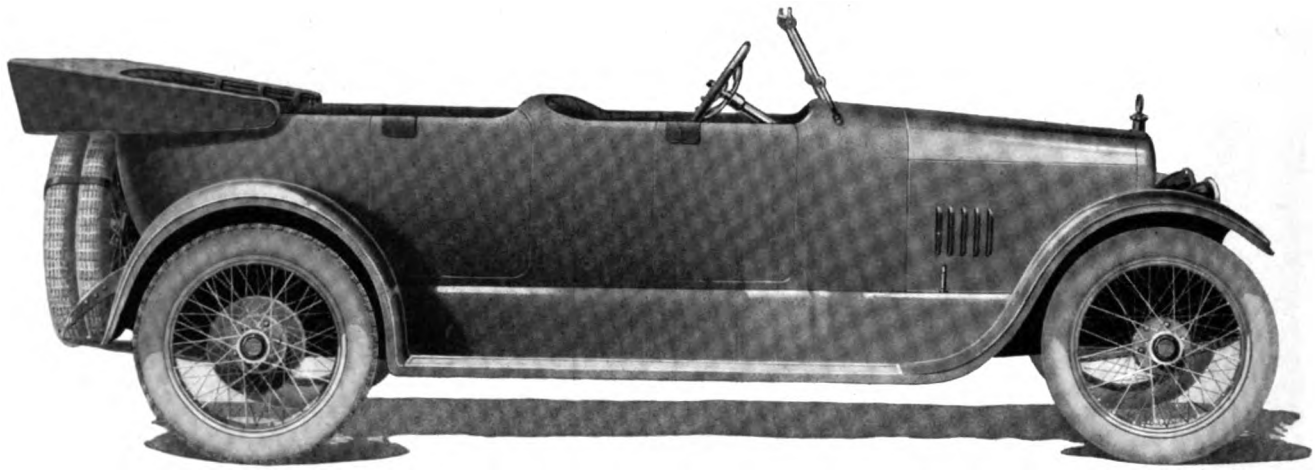


The Realization of a Great Ideal

Jordan Seven-Passenger Luxury Car,
Wade Park, Cleveland, July 10, 1916

This illustration is taken from an actual photograph not retouched

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The Realization of a Great Ideal

THE new Jordan Luxury Car is the realization of a great ideal. It is the result of ten years of constant study of what particular people expect to find in a motor car.

Those in whom good taste is inherent value a motor car for its distinctive appearance, quality in detail, finish, body comfort, and performance. This is the Jordan ideal.

A standard chassis of finished mechanical excellence, fitted to suit the buyer, with a choice of distinctive and comfortable custom style bodies. In this advanced style class this new luxury car has assumed a positive leadership.

It is the first American car in which body lines, finish, and body arrangement in their relationship to the mental and bodily comfort of the passengers is given first consideration.

It is a car in which there is not a cramp or squeeze for driver or passengers.

It is a light, perfectly balanced automobile with wonderful acceleration, with unusual flexibility of applied power.

It travels with silent power and ease on high gear from two to sixty miles per hour. It will demonstrate on any hill with any stock car made.

It is economical, with over-sized tires and perfect carburetion.

The wheel base is one hundred and twenty-seven inches, yet the car weighs only three thousand and fifty pounds. Aluminum is used extensively.

The chassis includes all of the finest universally approved mechanical units. It is designed and built with extreme accuracy to be produced in limited numbers under the most rigid inspection system.

It is produced in a modern factory, organized and operated to realize the great ideal laid down by the founder of the company.

It is a car which commands the respect of the manufacturer, the dealer, the salesman, and the owner.

Only one hundred well established dealers will be authorized to sell the Jordan.

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A CHOICE OF CUSTOM STYLE BODIES

People who know, realize that in the motor car of the future, the determining factor is to be the body. Given a perfect chassis, a choice of custom style bodies is both practical and fashionable.

The Jordan touring bodies are straight as an arrow from motometer tip to top cover, fashionably long and low.

The racy roadster and four passenger sport models are low and rakish, with seats cleverly arranged for complete comfort.

The enclosed types include Sedan, Limousine, and Coupe, and are fitted with bodies of the Springfield permanent top style—exclusively 1917 vogue. These exclusive style bodies have been fashioned and built for the Jordan by the best body builders in America.

To inspire the owner's pride and save depreciation, twenty painting operations, a detailed finish in hand-buffed pleated leather and custom style mahogany cabinet work are provided, encouraging the owner to keep his car year after year.

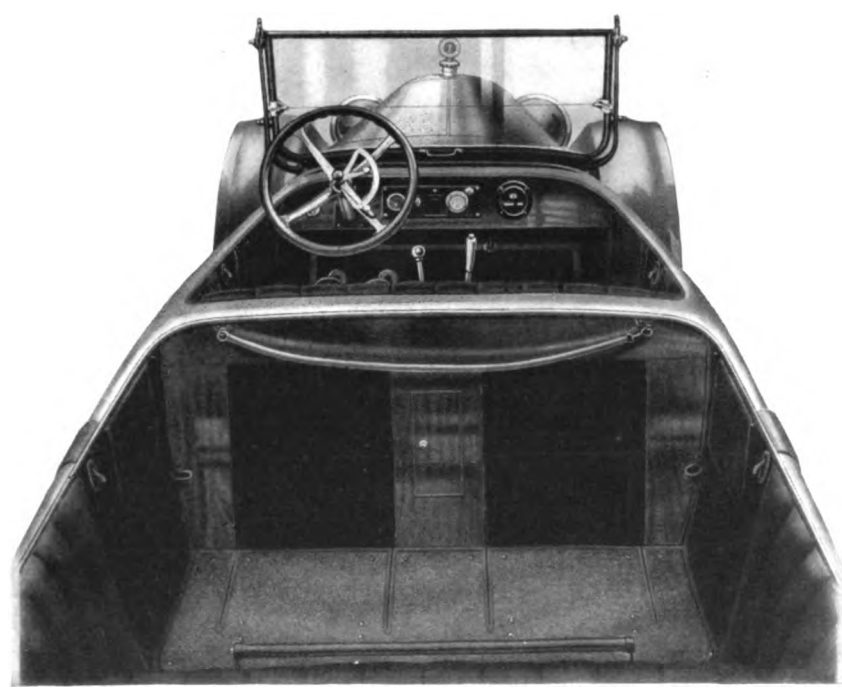
There is more room for the driver; more room in the rear seat; and a distinct innovation in seat cushions is introduced for the first time. The effect is almost pneumatic.

On special order the standard Jordan chassis may be fitted with custom made bodies by the world's leading makers.

A NEW COMFORT AND PROPER POISE FOR WOMEN

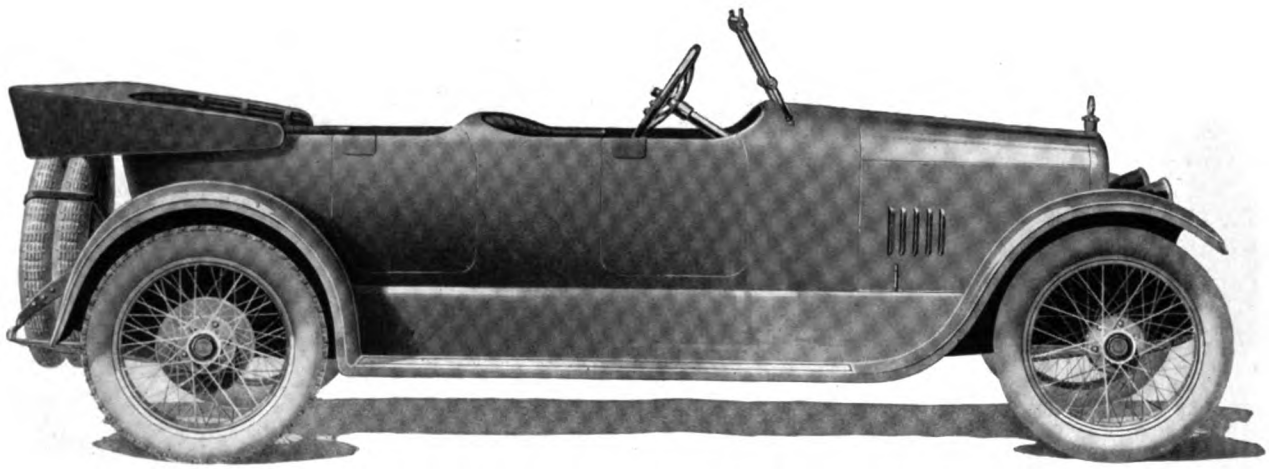
Jordan custom style bodies are designed to please the woman of good taste. She is an unerring judge of quality and in this car she will find a new kind of comfort and proper poise.

JORDAN



Interior of Jordan Seven-Passenger Luxury car. A straight line from motometer tip to top cover. Tilted overlapping windshield. Long levers within easy reach. Rear compartment in hand-buffed pleated leather, with custom style mahogany cabinet work. Tan leather round robe strap with nickel attachments. Auxiliary seats in concealed compartments. Cabinet for thermos bottle with Yale lock; 48 inch rear seat. Finest hair cloth carpet. Marshall cushion springs.

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Jordan Four-Passenger Sport Model, low and rakish, with seats cleverly arranged for complete comfort

JORDAN

The tall man and the short man will find freedom from discomfort in the adjustable pedals and convenient arrangement of pedals, steering pillar, and levers.

The woman who is accustomed to appear well in public chooses to ride in a car of such beauty of line, comfort, and seating arrangement as to give her proper poise.

In the Jordan car she always appears to advantage.

Watch her if you please when she inspects this car.

First the long, low line of the body catches her eye.

It is of the ultra straight line type with a gracefully tilted overlapping windshield.

Then she notices the richness of color and the little details of finish.

Too many cars are funereal—she has her choice of brightness in the Jordan—a snapping shade of rich maroon or the dignity of a Venetian green.

Next she places her hand on the hand-buffed leather upholstery. It is rare in quality and no buttons are visible. It is straight French pleated and dirt can find no resting place.

She glances at the back of the front seat and discovers the mark of the custom designer. An artistically turned double cowl—a broad expanse of mahogany panelling, a cabinet for thermos bottle and gloves, with a Yale lock for security—compartments which completely conceal the broad, comfortable auxiliary seats and a long, tan leather round robe strap with nickel attachments.

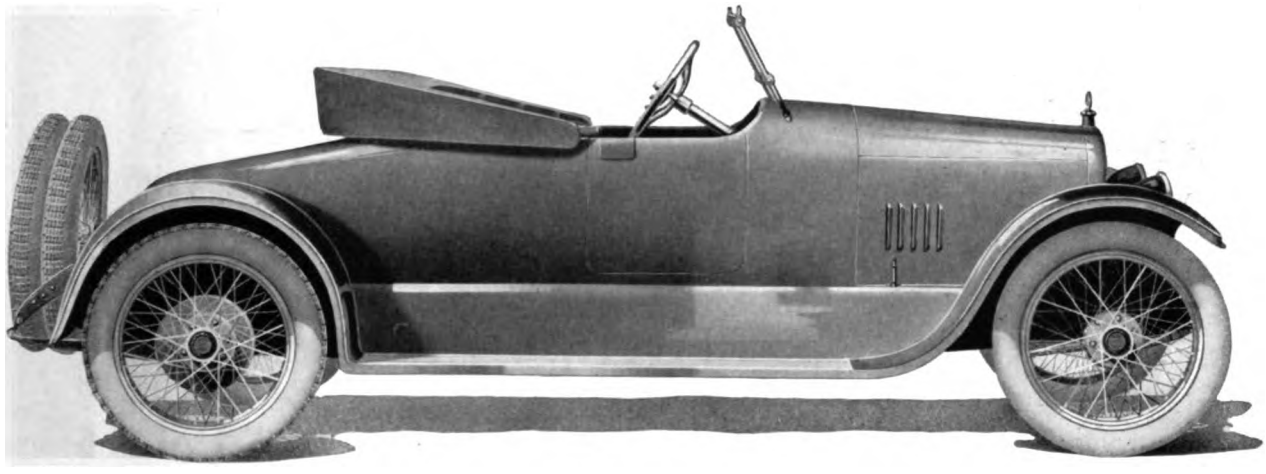
The woman next looks down at the rug. It is pleasing in color and soft in texture, the expensive gray hair material previously used only in the highest priced cars built.

She sits in the rear seat. It is 48 inches wide. Low enough for her to easily reach the foot rest yet high enough to avoid the clothing discomfort women experience when the position of the knees lacks grace.

She loves that feeling of sitting down in the car instead of on top of it.

Sitting upright while riding along the boulevard as a woman chooses to do, the upholstery supports the body at the proper point, while on the country road she may

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Jordan Sixty Roadster.
Model for red-blooded young men

JORDAN

lounge as she pleases and her shoulders always rest in deep cushions.

The new Marshall cushion seat spring used in the Jordan is the greatest contribution yet made to motor car comfort—it is almost pneumatic.

It was first adapted to the finest built upholstered furniture. Now it has brought the last touch of comfort to the Jordan car. No sagging or matting or hardening. Just a mass of small resilient spirals, each one enclosed in its own linen bag. It's an exclusive Jordan feature.

The woman finds the height of the seat arm just right so that her clothing does not bind.

The doors open wide and the auxiliary seats, finished in hand-buffed leather, leave plenty of room for the knees.

She is happy.

Picture the satisfaction of her husband as he seats himself at the 18-inch corrugated mahogany steering wheel.

He enters the seat from either side with perfect ease even when clad in heavy ulster. The woman who drives may enter or leave the front seat with equal ease.

There is a racy tilt to the steering post.

He sits down in the seat and finds the levers within easy reach without leaning forward a particle.

They are long and operate within a small radius.

The pedals are adjustable.

He doesn't feel cramped beneath the steering wheel.

The accelerator pedal is not in a cramped position.

The dash is beautiful in its arrangement and mahogany finish.

He looks straight out over the long hood to the motometer, puts his foot on the throttle and the car is away. It moves forward in admirable strength and silent ease.

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A CAR FOR RED-BLOODED AMERICANS

Red-blooded Americans love a car that will get away and run like a cottontail when dust threatens.

It is only human to admire power in reserve even though it is never used.

Mr. Jordan drove this car 5,230 miles, running night and day, with few stops, just to find out what would be the experience of the average owner in touring. He wanted to see what the car would do on all kinds of roads and under all conditions without the attention of an expert mechanic.

He chose the roads of Eastern Ohio and the mountains of Pennsylvania for the test.

At Uniontown, Pa., he wrote a letter in which he said:

"Until you visit Uniontown you will never be able to appreciate the feelings of a fly climbing out from the bottom of a milk pitcher. In this town there is no local speed limit necessary. You can go just as fast as you can go.

"The longest hill is a little more than two miles and there are two convenient watering troughs on the way up the mountain where many motor cars find it desirable to stop.

"At the foot of this hill is the famous 'Turkey's Nest,' a steep and tortuous curve and a heart breaker for cars that lack power.

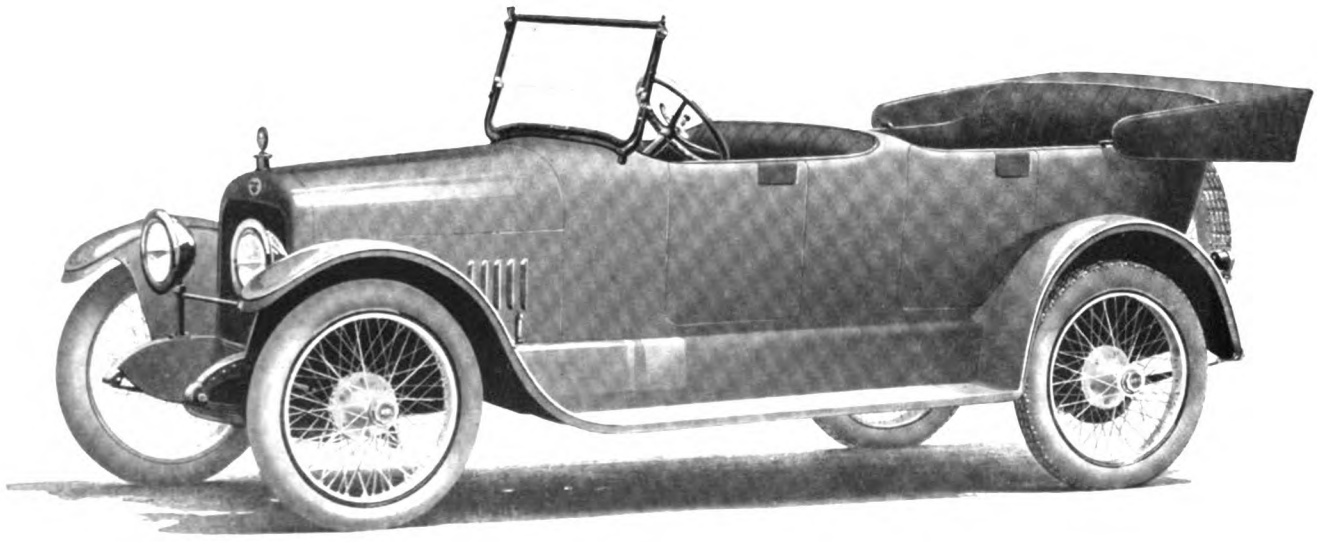
"I have seen motor cars driven into 'Turkey's Nest' at sixty miles per hour at the risk of the driver's life come limping out into the stretch beyond at scant thirty.

"To go over the crest of the hill on high gear is motor-car bliss and it means immortality in Uniontown.

"I drove the car out to the hill. Begg, the engineer, had told me that 'Turkey's Nest' was dangerous. You might meet a car coming around the hairpin. A man was stationed at the curve and I went back to give the car a chance for a getaway.

JORDAN

Distinctive and irresistible, the Jordan owner can always find his car among those at the curb or country club



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"I hit 'Turkey's Nest' going forty-five; came out of the turn at thirty and gave her the gas for two miles up that tortuous climb.

"We passed ten cars at the first watering trough and seven at the second. She was hitting thirty-two when I sighted the hotel at the summit. I gave her more gas. The little red line on the motometer was creeping up.

"'Give her more gas," yelled Begg above the roar of the cut out.

"The red line kept going up and the car was picking up.

"'Thirty-three,' the speedometer read.

"'Thirty-four,' and trembling on 'Thirty-five.'

"I shot the spark down a trifle, stood up on the throttle, and she went over the top at thirty-five."

THE ALL-AMERICAN CAR

If any well informed, critical individual set out to build a car to suit himself from the finest units available in the world today, he would, if he chose to build without experiment, pick the same units as are found in the Jordan.

It is the product of the best engineering minds in the industry.

No one man's ideas have prevailed.

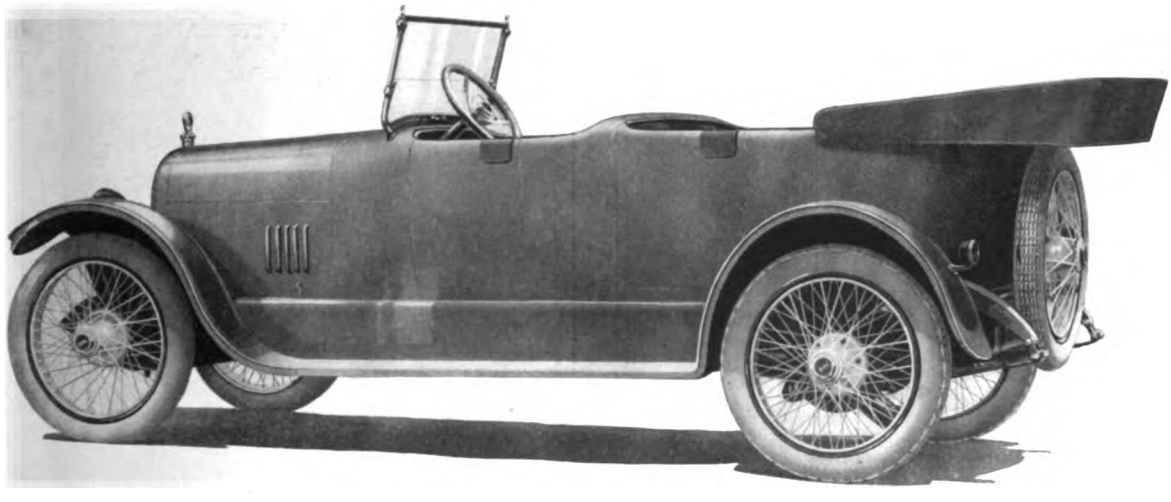
The one recognized engineering authority in the design of each specialized unit has not only vouched for the character of the product of his own genius, but he has also served jointly with the others in selecting the most approved design for each unit.

You could not buy or produce in the world today any motor car units which would excel in reputation, quality, and service the units which comprise the Jordan chassis and complete equipment.

Not a single high grade unit is lacking.

JORDAN

The Jordan, distinctive in line and color,
is unlike any other car on the road



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FEATURES OF THE JORDAN

A chassis including all the finest universally approved mechanical units.

A choice of custom style bodies.

A choice of brightness or the conservative in color—Jordan maroon or Venetian green. A lasting body finish.

Hand-buffed French pleated leather, Marshall cushion springs, hinges and locks concealed. Custom style mahogany panelling throughout.

More room and comfort for the driver. Rear seat 48 inches wide.

Continental built the modern high-speed, six-cylinder Jordan motor, 3½ x 5¼, cast en-bloc.

Jordan equipped it with Bosch D. U. 6-ignition A. C. spark plugs and Bijur two-unit, six-volt, starting and lighting system—the only positive system. Stromberg carburetor, horizontal plain tube type.

Wheel base 127 inches—real comfort is not possible in less.

Weight 3050 pounds—aluminum used extensively.

Vanadium steel springs, 59 inches in rear, 37 inches in front, 2¼ inches wide, semi-elliptic.

Timken axles and Timken bearings throughout. Front, drop forged I-beam, rear spiral-bevel floating.

Fedders diamond core radiator with Boyce motometer.

Gemmer steering gear. Short turning radius.

Brown Lipe multiple disc dry plate clutch and three-speed transmission, with chrome nickel heat-treated gears and shafts. Cane shift with extra long levers. Adjustable pedals.

Willard storage battery. Motor driven tire pump.

Drive, Hotchkiss type through tubular propeller shaft, double universal joints, oil tight. Powerful brakes.

Firestone oversize tires 35 x 4½ inches, non-skid on rear. Eighteen-gallon rectangular gasoline tank with gauge and Stewart-Warner vacuum feed to carburetor. Tilted overlapping rain vision windshield. Firestone demountable rims. Tire carrier.

Most complete equipment—tonneau foot rest, tool roll, tire repair kit, large Sparton electric horn, electric-lighted instrument board including speedometer, ammeter, oil pressure gauge, combination ignition and lighting switch and carburetor air adjustment. Solar headlights, large and powerful, equipped with small bulbs for dimming lights. Special design one-man, De Luxe Neverleak top, anchored to windshield. Long round tan leather robe strap with dog collar snap.

Curtains attach securely at all points.

Deliveries of seven-passenger Luxury Car commence August first.

Jordan seven-passenger Luxury Car $1650, wire wheels $100 extra.

Jordan four-passenger Sporting type $1750, with wire wheels, regular equipment.

Jordan Roadster $1650, wire wheels $100 extra.



JORDAN MOTOR CAR COMPANY

CLEVELAND OHIO

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This Will Be the Biggest Year of All for Dealers Who Sell

ADAMSON VULCANIZERS

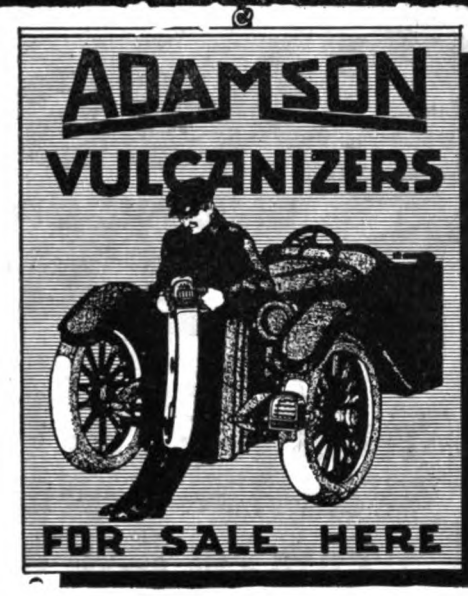
More touring will be done this year than ever before. Nearly a million four hundred thousand new cars will go into use without any tire repair equipment whatever. Tires cost more money than in the past. And it all sums up to this—

Every Car Owner Must Have a Vulcanizer

Are you prepared to cash in on a good share of this ready-created, profitable business? Hundreds of prosperous, successful dealers know "Adamson" Vulcanizers as the easiest selling Automobile Accessory on the market; know that the friendly recommendation of more than a million satisfied customers is a big sales asset.

Show Your "Adamson" Vulcanizers Right Up in Front

Give them a good display where your customers can see them. Right now is the season when "Adamson" Vulcanizers sell best of all. Somebody is going to sell vulcanizers to your customers and it might just as well be you. Let us tell you more about it. Write us today for your copies of new booklet, "Care and Repair of Tires." **It's free.**

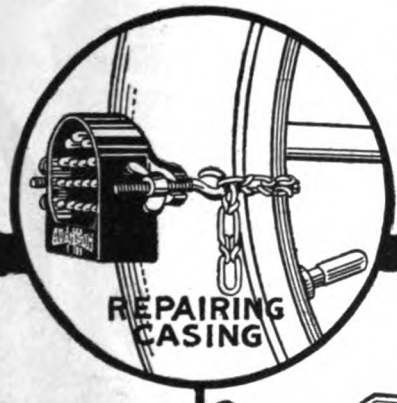


ADAMSON REPAIR GUM

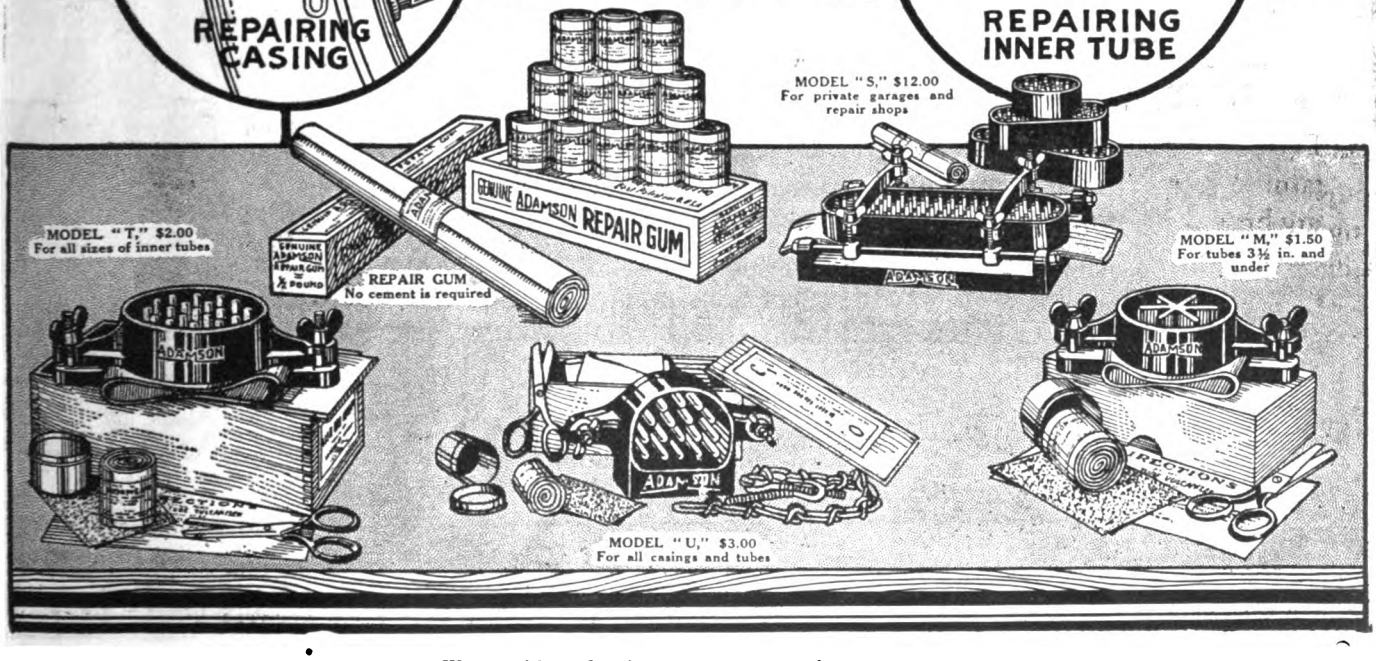
is essential to the most successful operation of "Adamson" Vulcanizers. It's a sure guarantee against failure. It is especially prepared for use with "Adamson" and any other portable Vulcanizers. Cures to just the right degree without the use of cement.

WRITE FOR PRICES TODAY

Adamson Mfg. Co.
East Palestine, Ohio







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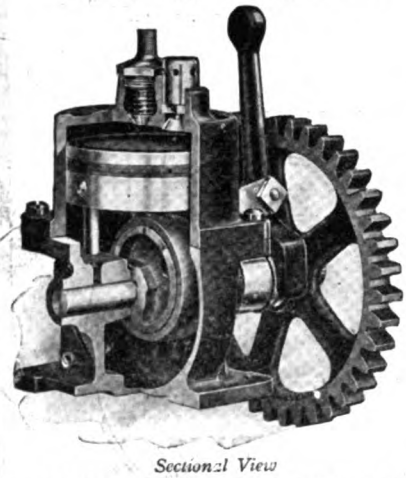
CASSCO ENGINE DRIVEN TIRE PUMP $8

"Let Your Motor Do the Work"

The Saving This Pump Effects In Your Tire Expense More Than Pays For Itself In One Season

Pumping your tires by hand is hard and disagreeable work. It's back-breaking, time-consuming, hand-blistering work—a slave's job.

With a Cassco Engine Driven Tire Pump you can *easily* keep your tires properly inflated, so that you'll get all the built-in mileage each tire has. And you can do it in a twinkling—simply sit back and "Let the Engine Do the Work."



Sectional View

Displacement—Stroke is 1 inch in length. Bore is 2½ inches in diameter, giving a piston displacement of 5 cubic inches.

The cost of the Cassco Engine Driven Tire Pump is only $8, a price surprisingly low when you consider that other pumps cost much more, yet are no more dependable or simple in operation than the Cassco.

Each Cassco Pump is packed in a substantial carton containing air hose, tire gauge, all necessary fittings, including brackets, gears, nuts, bolts, etc., with a card embodying a diagram of the installation and complete and detailed instructions for attachment. These instructions are so simple and explicit as to make the installation an easy matter—even for the motorist.

Orders Filled in the Order they are Received

EDWARD A. CASSIDY CO., Inc.

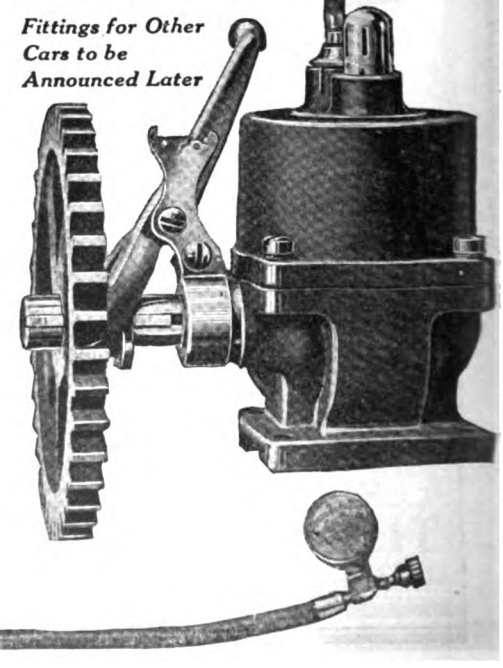
30 East 42d Street **New York City**

Complete With All Fittings

NOW Ready for the Following Cars:

Buick { 1915—Models C24, C25, C37, C38, C54, C55 / 1916—Models D44, D45, D54, D55
Chandler 1915 and 1916
Chevrolet { 1915—H-4 / 1916—H-4 and 490
Dodge 1915 and 1916
Ford 1915 and 1916 (when not equipped with Generator)
Hudson 1915-16 Light-Six; 1916 Super-Six
Hupmobile 1914-1915
Maxwell 1915-1916
Overland { 1915 Models 80-81 / 1916 Models 75 & 83-83R
Reo Four Cylinder 1915-1916
Saxon Six Cylinder 1915-1916
Studebaker Four and Six Cylinder 1915-1916

Fittings for Other Cars to be Announced Later



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DEALERS—Send this Advance Information Coupon—TODAY!

DEALERS

There Are 3,000,000 Eager Prospects Waiting for

TIREOID

"IT SEALS PUNCTURES"



65 Nails were driven into this tire—Tireoid sealed every puncture

TIREOID is the liquid puncture sealer that everyone is talking about. Men nationally prominent in motoring and financial affairs are backing it. These men, as well as constantly increasing thousands of other car owners, KNOW that TIREOID puts an end to the most aggravating trouble connected with motoring—PUNCTURES!

That is why TIREOID is sweeping the country. That is why every one of America's 3,000,000 motorists who values his tires, his time and his pocketbook is bound to come to TIREOID.

That TIREOID does end punctures anyone can prove to his own entire satisfaction on

Six Months' Money-Back Trial

Dealers appreciate that no motorist can consistently fail to take advantage of so liberal an offer.

It is unnecessary to point out to dealers that with TIREOID they can step into a run of ready-made business. No such remarkable opportunity has faced dealers for years.

Foresighted dealers never neglect to investigate any proposition that offers a chance of profit. Send coupon today, with no obligation on your part, for booklet, "The End of Puncture Troubles," dealer's proposition and full information.

Here is the Board of Directors of The Tireoid Company:

THESE men are nationally known in the financial and automobile world. Their names alone are sufficient assurance for the claims made for the merit of TIREOID.

A. WATSON ARMOUR, Vice-President of Armour & Co., Chicago.
MARTIN J. INSULL, President of the Middle West Utilities Co., Chicago.
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W. T. PERKINS, Assistant Cashier of the National City Bank, Chicago.
C. W. PRICE, President of Overland Motor Company, Chicago.
F. E. PRICE, Vice-President of Anderson Electric Car Company, Detroit.
W. L. ROHRER, President of The Tireoid Company, Chicago.
ROBERT F. WOOD, Assistant to the President, General Asphalt Company, Philadelphia.

The Verdict of These Men of National Prominence Counts

Send for advance information NOW. Use the coupon.

THE TIREOID COMPANY

1213 Michigan Ave., CHICAGO, ILL.

The Tireoid Company
1213 Michigan Ave., Chicago, Ill.

Rush to me today, full information, details and dealers' discounts on TIREOID.

Name .....

Address .....

.....

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An Internal Ge

Dealers Don't Miss This

WE thought we had the simplest, strongest and cheapest "converted-Ford" truck possible in the Rayford Commercial Chassis. But just look at this one! **An Internal Gear Drive** 1-ton truck made from a Ford, for $300.

¶Your customers know that an Internal Gear Drive combines the lightness and strength of Chain Drive with the silent smoothness and superior wearing qualities of the worm. They also know the Ford—its strength and compactness.

¶The Internal Geared Rayford combines the best form of heavy service drive with the tried and proven Ford Chassis, without disturbing a single Ford part in the slightest way.

¶The gear is attached to the Ford axle, and that axle becomes a jackshaft—nothing to do but turn the wheels. The Rayford I-beam axle carries the load.

Exclusive Territory — Immediate Deliveries

and the greatest personal latitude we give to dealers handling the Rayford. From the moment you order a demonstrator every sale in your territory brings you a commission. We do not insist that you contract to sell any certain quantity—we leave that to the truck.

Wire or write at once. Remember, this Rayford has absolutely no rival—so do not delay until your territory is allotted to someone else.

RAYFORD COMPAN

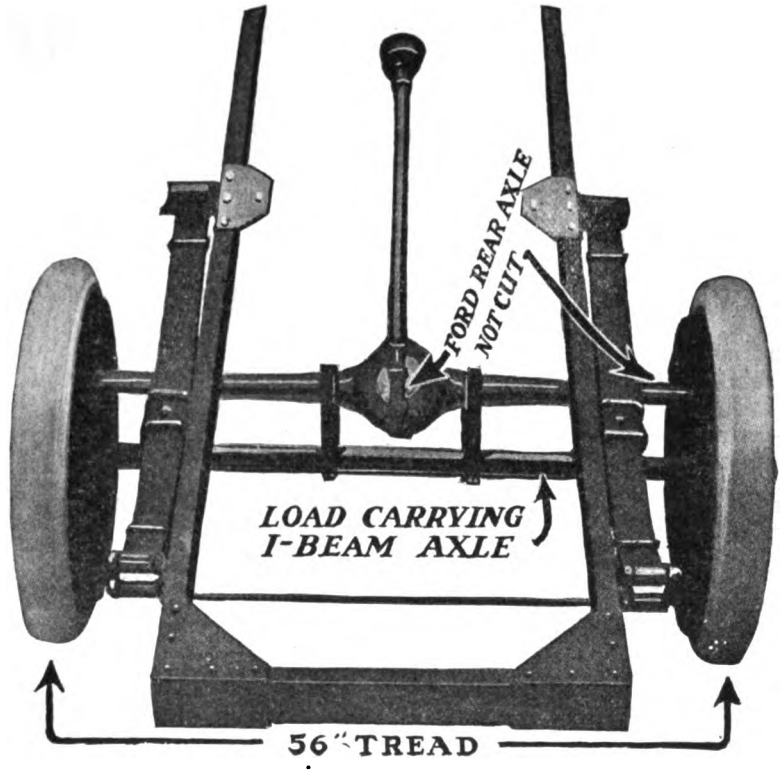
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Ford Rear Axle Not Discarded
Nor Cut Down

RAYFORD



$300 + A FORD

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PHILADELPHIA, PA.

Rayford Co.,
Palethorp & Indiana Aves,
Philadelphia, Pa.

Dear Sirs:

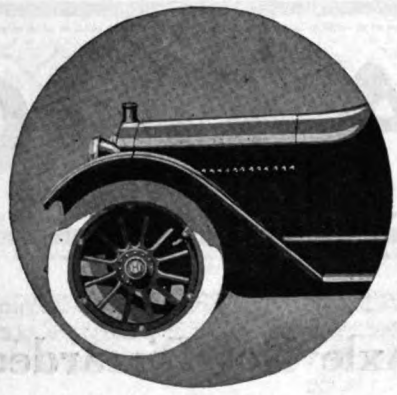
Please send particulars regarding agency for the Internal Geared Rayford.

Name .....

Address .....

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Hupmobile



ON New York's Fort George Hill; on Denver's Lookout Mountain; on Philadelphia's Tam-o'-Shanter; on Seattle's Coon Hollow Hill; in Florida's "ball-bearing" sand; in Louisiana's mud and Kansas' "gumbo"; on California's stiffest climbs—*side by side with cars of every type*—the Hupmobile is proving itself the superior of most, and the equal of any, in power-performance and high-gear work.

It is doing so in actual demonstration demanded by those who invest their good money in motor cars.

And it is showing that the boasted good points of multi-cylinder performance are simply the good points of Hupmobile performance.

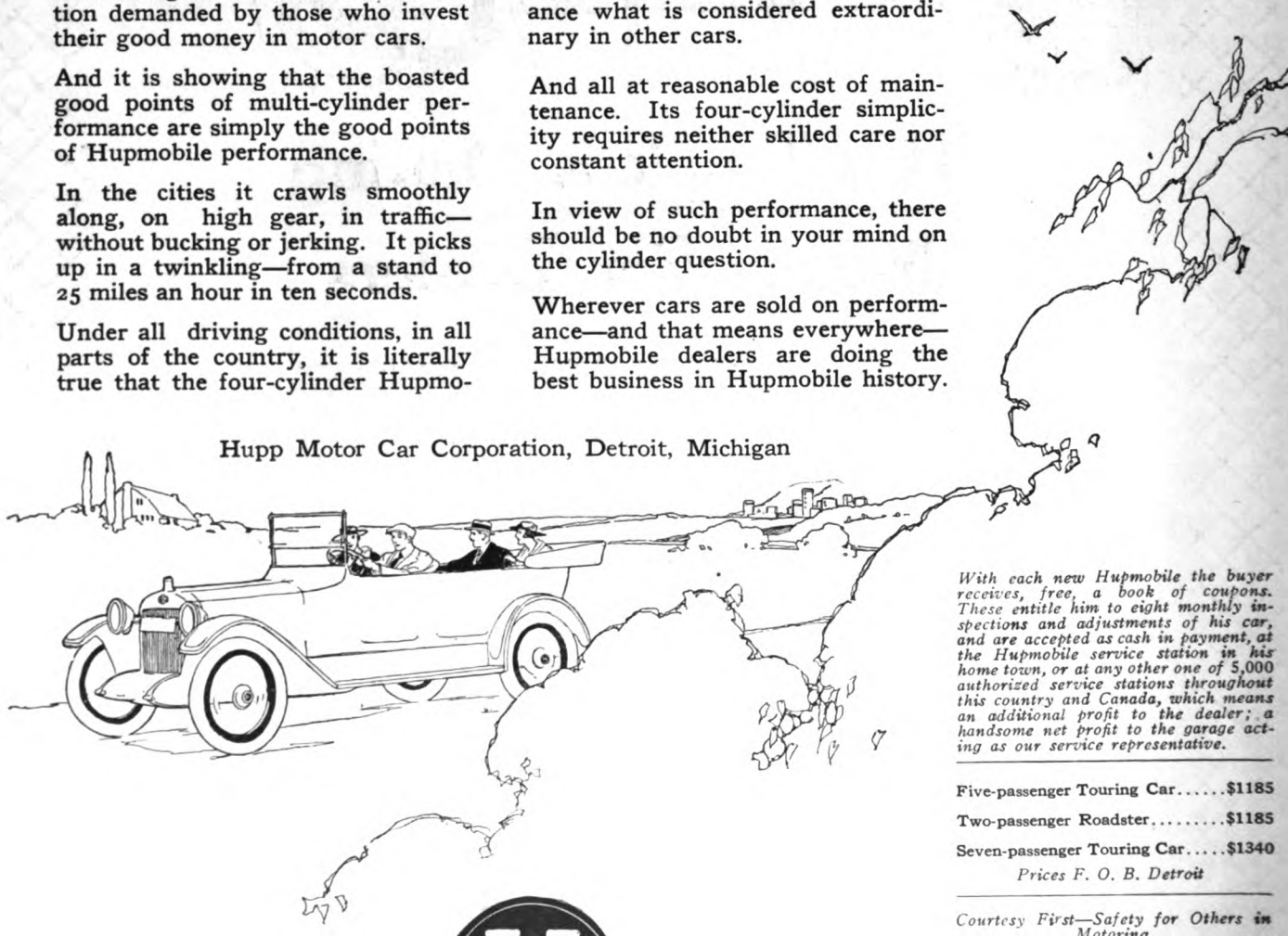
In the cities it crawls smoothly along, on high gear, in traffic—without bucking or jerking. It picks up in a twinkling—from a stand to 25 miles an hour in ten seconds.

Under all driving conditions, in all parts of the country, it is literally true that the four-cylinder Hupmobile is doing in ordinary performance what is considered extraordinary in other cars.

And all at reasonable cost of maintenance. Its four-cylinder simplicity requires neither skilled care nor constant attention.

In view of such performance, there should be no doubt in your mind on the cylinder question.

Wherever cars are sold on performance—and that means everywhere—Hupmobile dealers are doing the best business in Hupmobile history.



Hupp Motor Car Corporation, Detroit, Michigan

With each new Hupmobile the buyer receives, free, a book of coupons. These entitle him to eight monthly inspections and adjustments of his car, and are accepted as cash in payment, at the Hupmobile service station in his home town, or at any other one of 5,000 authorized service stations throughout this country and Canada, which means an additional profit to the dealer; a handsome net profit to the garage acting as our service representative.

Five-passenger Touring Car.....$1185

Two-passenger Roadster.....$1185

Seven-passenger Touring Car.....$1340

Prices F. O. B. Detroit

Courtesy First—Safety for Others in Motoring

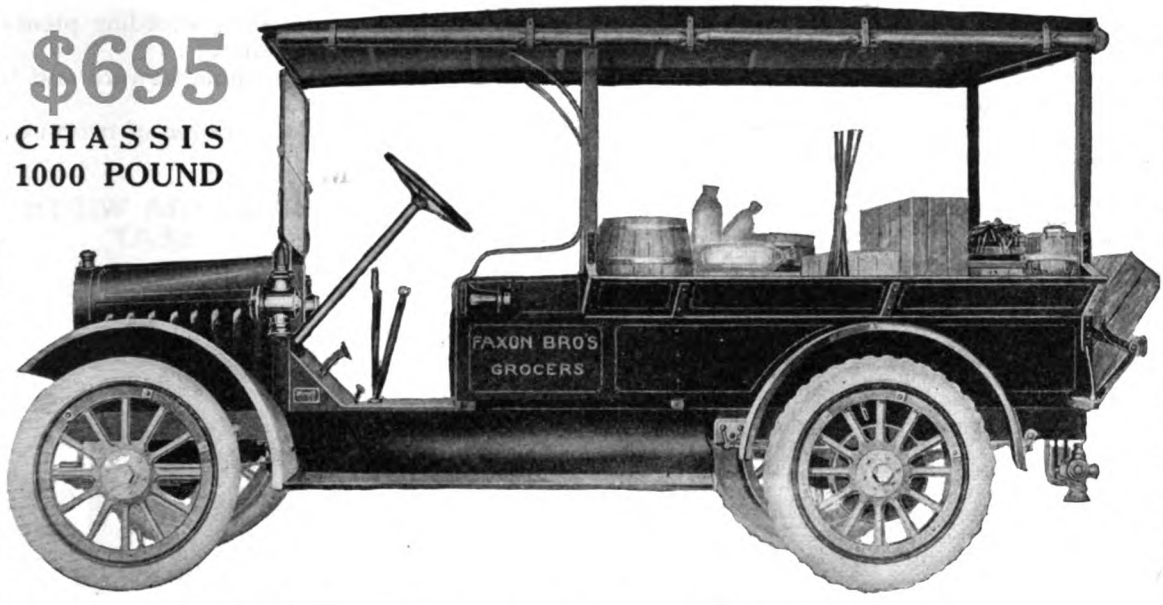
The mark of superior H *motor car service*

When writing advertisers please mention Motor World

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Stewart

$695
CHASSIS
1000 POUND



This Truck is Making Money For Dealers

Here is the 1000 lb. Stewart delivery truck that is setting new sales records every day. From all over the country come the steady, insistent calls for this popular Stewart truck. And Stewart output is rapidly increasing to take care of this demand.

This truck is built by truck makers of experience. Real truck rear axle, famous Internal gear drive type, overhead valve motor, oversize tires, etc., mark us as the first real 1000 lb. motor truck to be produced in quantity in this country. Dealers everywhere are reaping a harvest. Its sturdy construction appeals alike to the motor wise engineer and the novice. Use of real truck parts practically does away with service expense.

Write or wire us today for Stewart money-making proposition. Dealers who join with us now will get full advantage of our increased production and enlarged sales and advertising campaign.

Get in touch with us immediately.

Stewart Motor Corporation, Buffalo, N. Y.

Quality Trucks at Quality Prices

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De Luxe Bodies Transform Thousands of Ford Cars

Our dealers tell us that the remarkable success they are having in selling De Luxe Bodies lies not only in the fact that they are the finest and most beautiful bodies ever designed for Ford cars, but are the most complete and convenient ever built for any car.

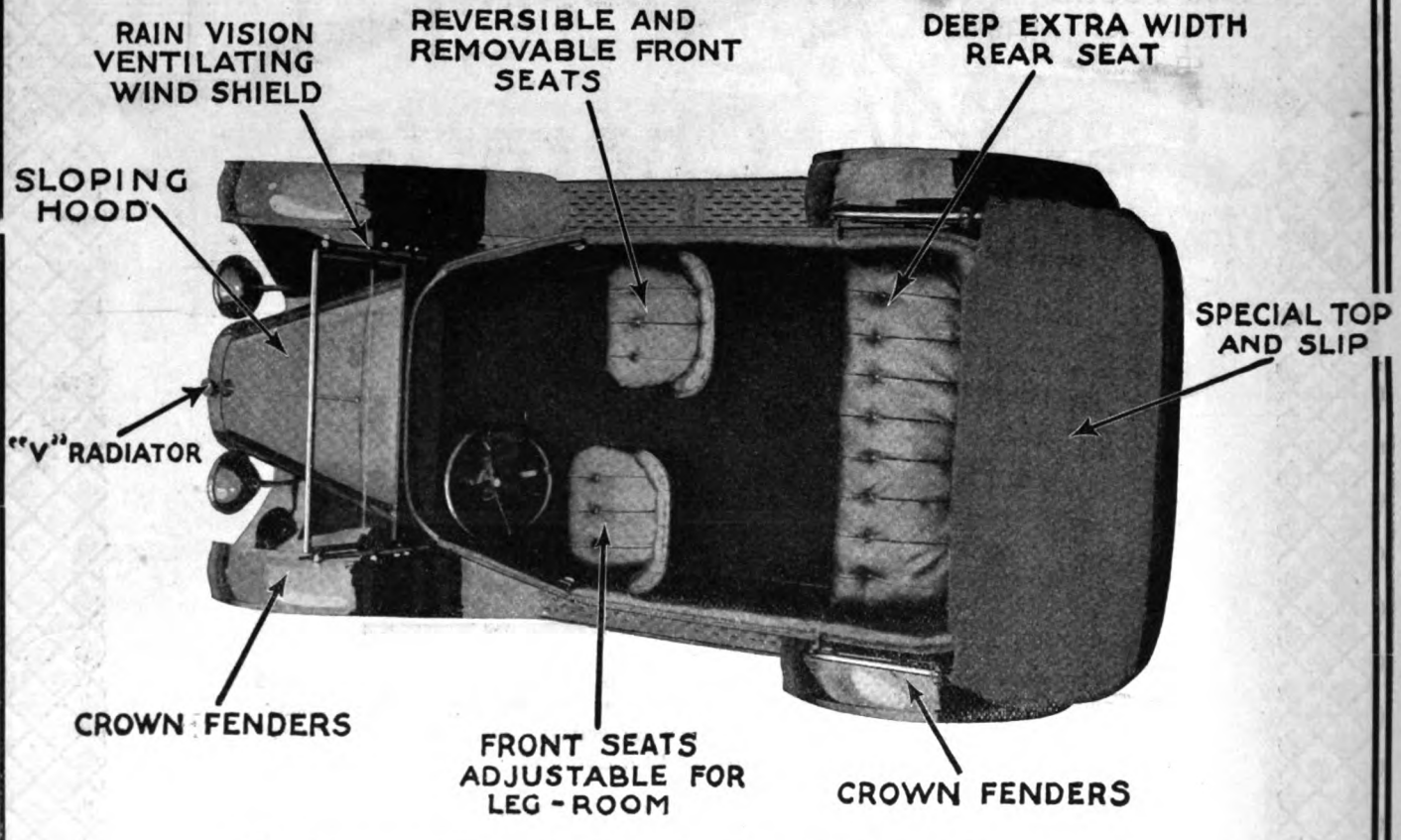
Note the special features shown in the interior view below. No other body built for any car at any price combines them all.

Special attention is called to the divided front seats, which are removable, affording plenty of room for baggage and sleeping quarters when touring.. You don't need a trailer.

These seats may be removed to face the rear when desired, and are movable forward and back any part of eight inches, giving proper leg-room for all drivers.

All of these front seat changes are "made-in-a-minute" by the simple operation of two nuts.

Send for a beautifully illustrated free booklet.



De Luxe Special and Exclusive Features

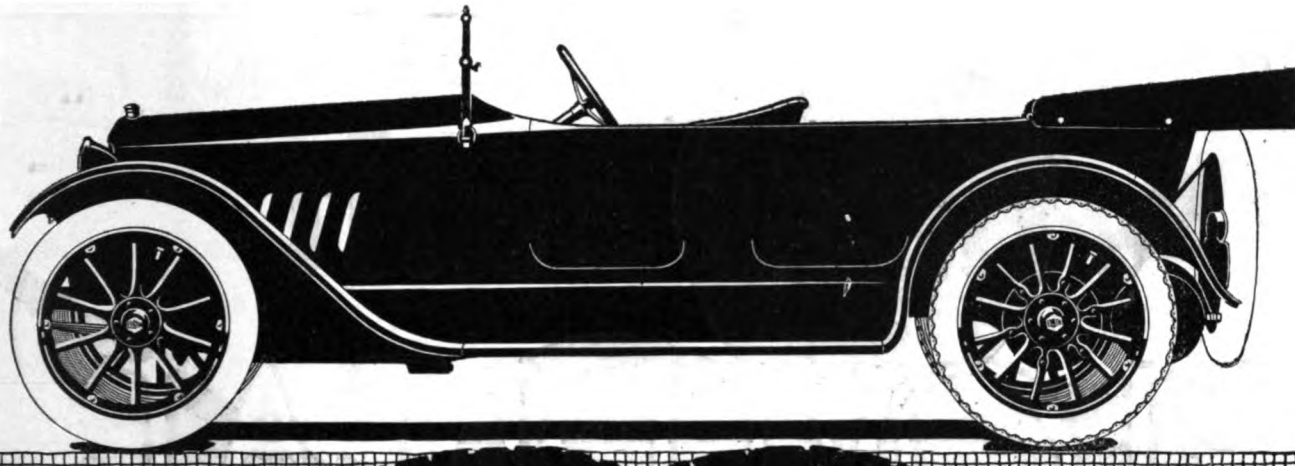
Price Touring Body complete, $260.00—f.o.b. Detroit. Includes "V" radiator, sloping hood, 9-inch crown fenders, dust shields, special rain vision ventilating windshield, splash plate, lamp bracket extensions, instrument board, foot accelerator, special one-man mohair top, single tire holder, Stewart Vacuum gasoline system. Snappy De Luxe Roadster Body, $197.50 f.o.b. Detroit. Includes above features except tire holder and gasoline tank. Single tire holder, $2.50 extra.

DEALERS: Many thousands of all light car owners, as well as owners of Ford cars, are becoming vitally interested in these beautiful De Luxe Bodies. And people who have not previously considered buying Ford cars are now purchasing them because they can get the De Luxe equipment.

We have some **exclusive** territory left to apportion to live dealers. Perhaps it is your territory. Write us and let us tell you all about the matter. We are receiving hundreds of inquiries weekly and these inquiries are invariably referred to the nearest dealer, so that our distributors get the entire benefit of our big advertising campaign. De Luxe Bodies are quickly installed on either old or new Fords.

DETROIT AUTO PRODUCTS CO. **31 Sherman St., Detroit**

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Elgin Character

BUILT LIKE A WATCH ELGIN

BUILT LIKE A WATCH ELGIN

The **Elgin Six** is a car of refinement and distinction. It is characterized by the dependability and easy-riding qualities found only in cars of much higher price.

Big, beautiful, powerful, yet strictly a "Light Six," with mechanical construction of the highest standard, from the powerful six-cylinder valve-in-head motor to the smallest detail.

In size, appearance and mechanical qualities the **Elgin Six** leads the field in its price class, embodying style and values found only in other cars selling from $200 to $400 higher.

There are so many big special selling features in the **Elgin Six** that Elgin Dealers keep the wires hot calling for "More Elgins." Some desirable territory open for dependable dealers. Write or wire.

These Special Features Make Elgin Sales Easy

- Six-Cylinder Valve-in-head 35 horsepower Motor.
- Unit Power Plant, Three-Point Suspension.
- V-Type Radiator, Thermo-Syphon Cooling.
- Combination Force Feed and Splash Lubrication.
- Two-Unit Dyneto Electric Starting and Lighting System.
- Delco Ignition System.
- Stewart Vacuum Feed, Rayfield Carburetor.
- Springs, Semi-Elliptic Front, Self-Oiling Cantilever Rear.
- Multiple Disc, Dry Plate Clutch—Steel on Raybestos.
- One Man Top—Jiffy Curtains.
- Quick Detachable and Demountable Rims.
- 114-inch Wheel Base.

Elgin Motor Car Corporation
Chicago, U. S. A.

$845

Five-Passenger Touring
$845

Clover Leaf Roadster
$845

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Amesbuilt CLOVERLEAF

The Exclusive 3-Passenger Roadster Body for Ford Cars



Dresses Your Ford In Fitting Style

The external refinement effected by the mounting of this beautifully lined Amesbuilt Cloverleaf 3-passenger Roadster Body on your Ford chassis gives you a car that is the object of admiration and envy on every hand. It is a source of genuine pride in car ownership—it is Ford reliability plus the beauty, comfort and stability of a correctly designed, correctly lined body with all the qualities of the most expensive bodies on the most expensive cars.

It is value plus beauty, plus pride, plus satisfaction.

Note the specifications and illustration on next page, then write or wire for one. Fine dealer proposition.

THE F. A. AMES CO., Incorporated
OWENSBORO, KY.
Makers of Auto Bodies of Class

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Specifications

Construction—20-gauge cold-rolled, stretcher sheet steel. Ample leg room. Pure stream lines.

Sills—Selected hardwood frame, substantial, reinforced and ironed by hand.

Doors—Nicely hinged, entrance from both sides.

Upholstery—Extra quality imitation leather stuffed with natural curled hair.

Top—One-man top, highest grade silk Mohair with Jiffy curtains and dust hood.

Windshield—Cowl fitting, folding, rain vision, ventilating windshield.

Gasoline Tank—Filler pipe and cap, also gas-line furnished. Tank carried in rear.

Hood—Graceful streamline hood and bull nose radiator shell, with special dash ledge linoleum covered running board, aluminum bound.

Fenders—Crown fenders of 20-gauge fender steel, cold rolled and finished in high gloss enamel, thoroughly backed, free from rattling. 9 inches wide. Also side skirt and skirt in rear to cover rear axle.

Painting—Standard colors, deep Brewster green, or a very glossy black. Any other color $10.00 extra and three weeks delivery.

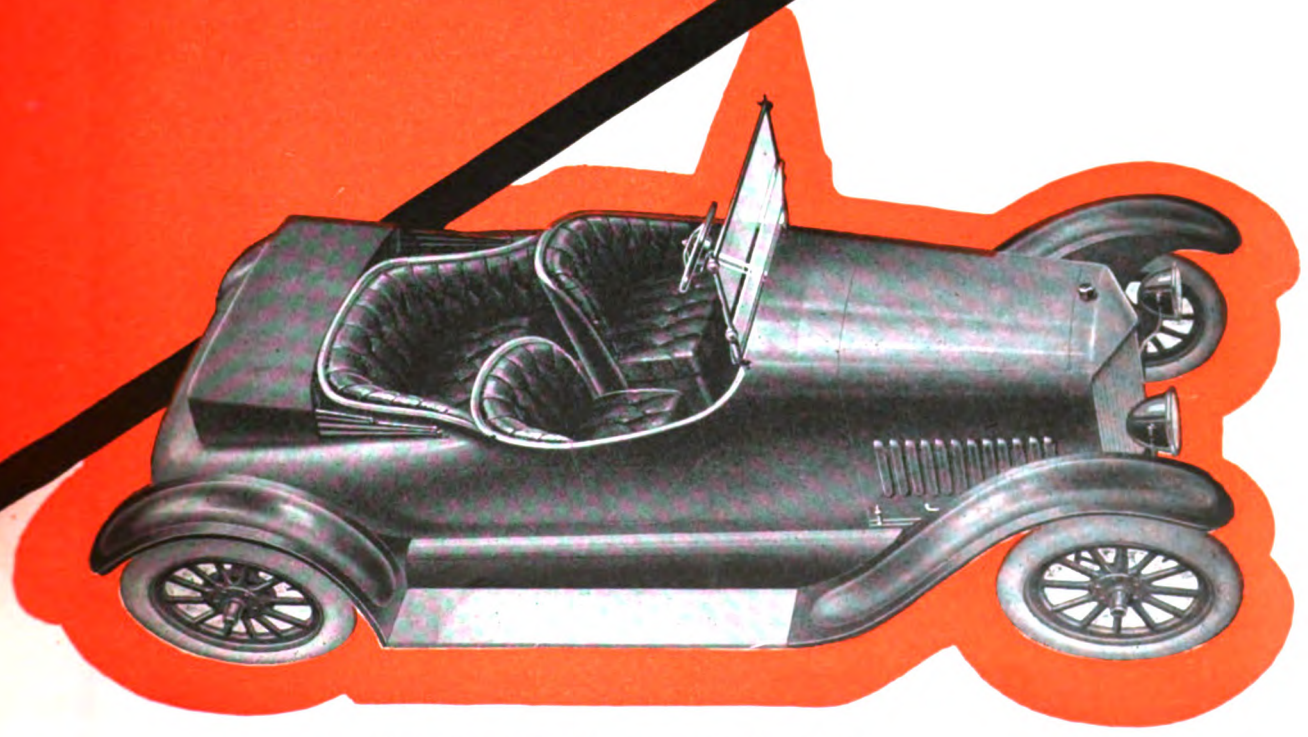
Equipment—All necessary attachments for mounting on Model T chassis, bolts, nuts, etc.

Weight—Crated ready for shipment, about 450 lbs. Net weight, 270 lbs.

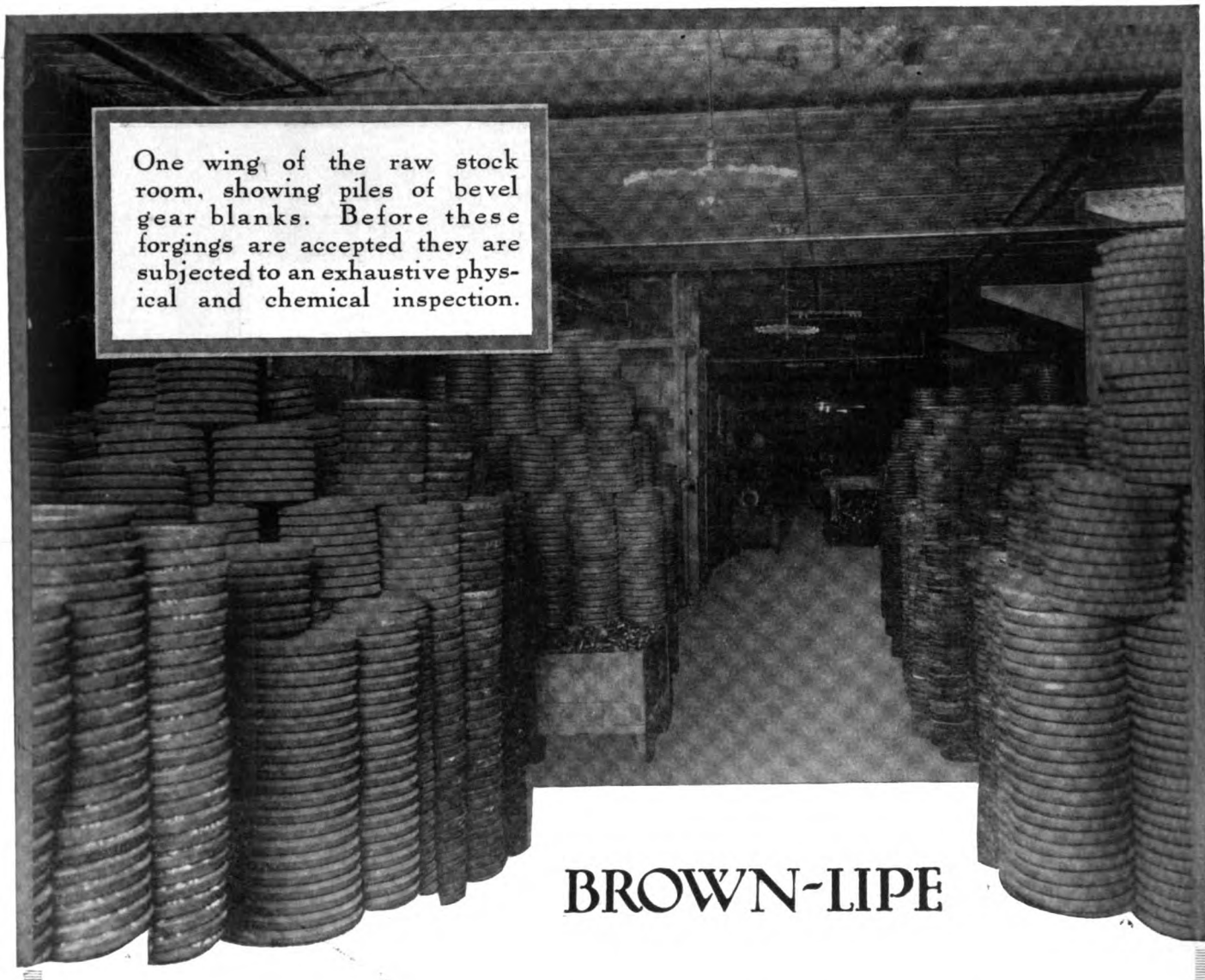
Price—Complete, $175.00 F. O. B. Owensboro, Kentucky.

Order today and be the first proud owner of this car of real class in your section.

THE F. A. AMES CO., Incorporated
OWENSBORO, KY.
Makers of Auto Bodies of Class



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One wing of the raw stock room, showing piles of bevel gear blanks. Before these forgings are accepted they are subjected to an exhaustive physical and chemical inspection.

BROWN-LIPE

IN order to insure quantity production, it is obviously essential to carry ample stock of raw materials. As a graphic illustration of the assurance of ample stock in the Brown-Lipe factories, the above illustration of one wing of the raw stock room is shown herewith.

These beveled gear blanks are first tested, both physically and chemically, in what is called the Raw Stock Inspection Department, before they are piled in stacks as indicated herewith. From this room they are then sent in to the factory for their first machining operation.

Imposing as this enormous stock looks, it is easy to understand how essential such a stock is when it is remembered that Brown-Lipe differentials are used on a dominant percentage of the pleasure cars in America—excluding one low-priced car.

BROWN-LIPE GEAR CO. SYRACUSE, N.Y., U.S.A. **BROWN-LIPE CHAPIN CO.**
Transmissions *Differentials*

NEW YORK
Thos. J. Wetzel,
29 West 42d St.

CHICAGO
K. Franklin Peterson,
122 So. Michigan Ave.

DETROIT
L. D. Bolton,
2215 Dime Savings Bank Bldg.

SAN FRANCISCO
A. H. Coates, 444 Market St.

Foreign Agent, Benjamin Whittaker, 2, Norfolk Street, Strand, London, W. C.

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Coming!

The next issue of *Motor World* will carry the finest printed reproduction of a motor car yet made; an illustration in actual colors of the most attractively finished car under $1,000. "Some car," to quote the lucky ones who have seen it.

A car that marks the beginning of a new epoch in motor car finish.

And better yet this remarkably finished, moderate priced car is mechanically correct. It has proven itself to the satisfaction of thousands of owners.

WATCH FOR IT!
ONE WEEK TO WAIT!

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NATIONAL

The Kit of Six
National Mazda
Auto Lamps



Name Your Car

Here they are—the proper lamps for any car! The KIT holds a set of six lamps—front, side, rear and meter lamps. The GUIDE (free) tells which Kit for which car.

With eight Kits, you've a Kit for nearly any car. You're fully prepared—yet with the very smallest possible capital involved.

Each Kit contains the new MAZDA C gas-filled headlight lamps now in popular demand.

Digitized by Google

MAZDA
AUTO LAMPS

Show this National MAZDA Auto Lamp Kit to your Customer. Then talk to him like this:

"That looks like a convenience, doesn't it—always having a complete set of renewal lamps handy? But even that isn't the big part of the idea!

"This Kit is no luxury. It's a much-needed accessory that every auto owner should have. It's safety insurance! Avoids arguments with corner cops. Prevents risky driving over dark and dangerous roads. When you need a new lamp you need it at once! And the price of the whole Kit would be cheap for just the one lamp you want! *The only way to have the lamp you need, when you need it, is to have it with you.*

"Here! Toss this under the seat. Stow it in the side pocket, or in any odd corner of the car. Then forget it. Some day when it saves you money, loss of time, police court fines, and inconvenience, you'll come in and *thank me* for selling it to you."

A stock of eight assorted Kits gives you the right Kits for 70 per cent of cars.

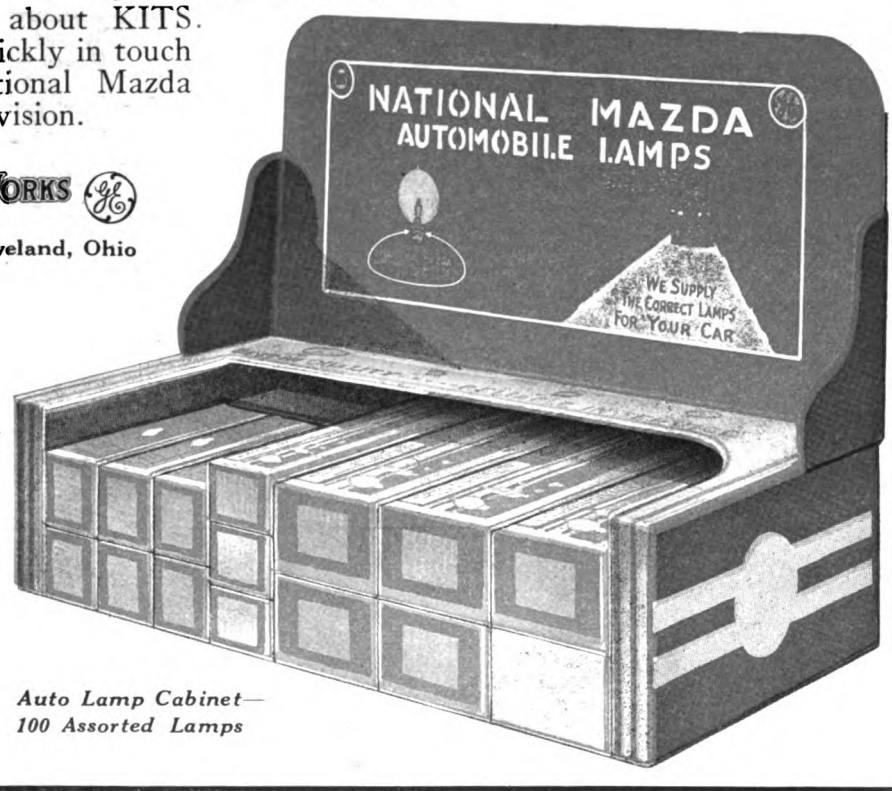
By selling Kits you sell six lamps instead of one. You make a six-fold profit *and you do your customers a service.* Selling Kits brings later business—for the customer will be back to have his Kit refilled.

For refilling the Kit, and for selling single lamps, you need the100-Lamp CABINET and the "National Guide to Proper Lamps for Any Car."

For full information about KITS and CABINETS, get quickly in touch with your nearest National Mazda Lamp Agent or Sales Division.

NATIONAL LAMP WORKS
OF GENERAL ELECTRIC CO.

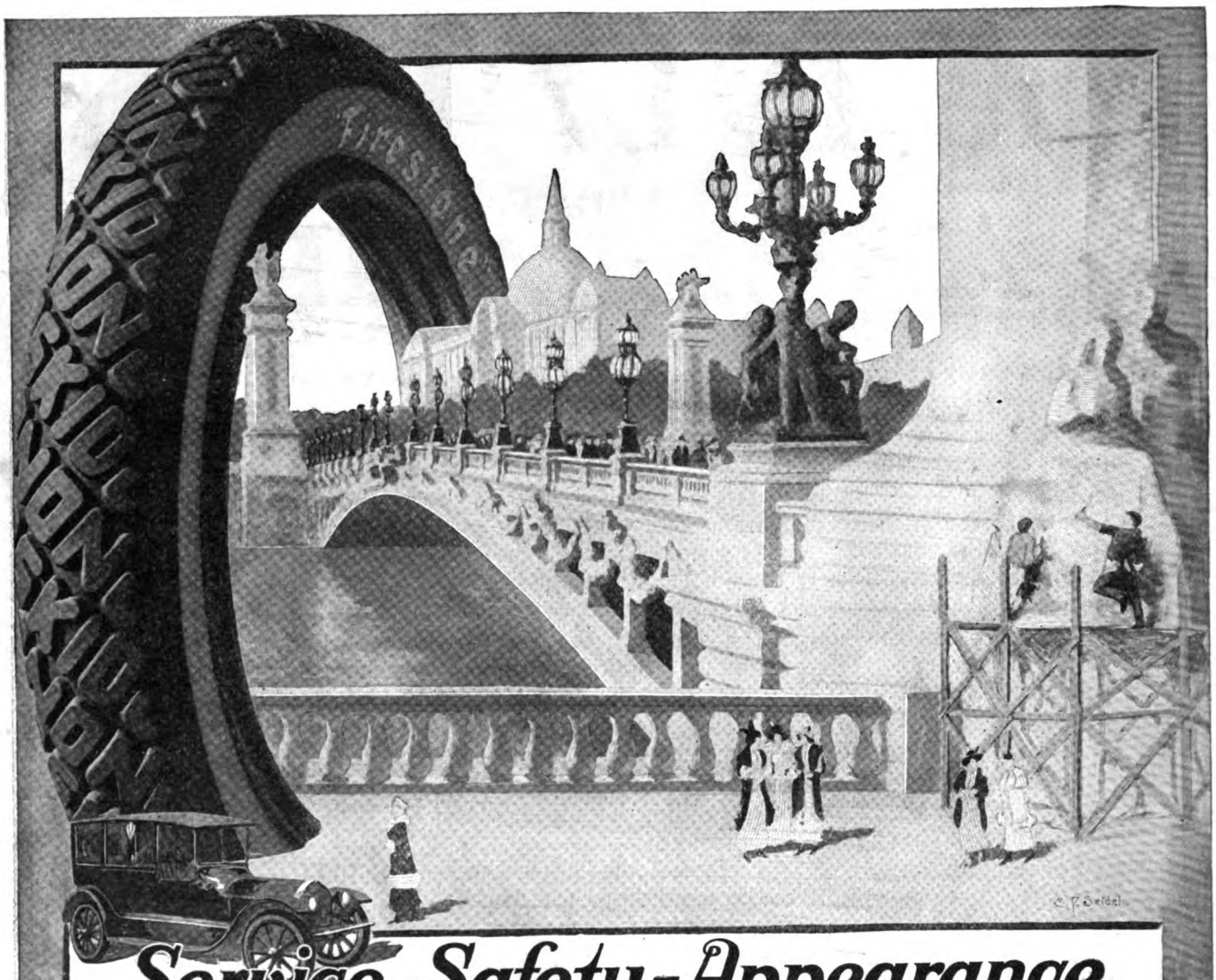
30 Nela Park **Cleveland, Ohio**



Auto Lamp Cabinet—
100 Assorted Lamps

THE Cabinet, from which you can refill the Kits or sell single lamps, covers a still wider lamp demand. The whole investment is small—the variety almost perfect—the keeping of stock is made easy—and the self-advertising, self-selling ability of both Kit and Cabinet make this the ONE way to handle the auto lamp business!

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Service-Safety-Appearance

THE expert who builds a bridge and the specialist who builds a tire are alike in this—they cancel distance and they greatly increase the comforts of travel.

They are alike, too, in this—that when service has reached the limit of excellence the builder turns his attention to outward ornament.

THE double refinement in building is shown in the color combination of this Firestone with its impressive trade-mark, Red Side Wall and Black Tread, harmonious on any car.

In Firestone Dealer Co-operation there is every possible help at hand. Ask for it.

FIRESTONE TIRE & RUBBER COMPANY, Akron, Ohio—Branches and Dealers Everywhere

"America's Largest Exclusive Tire and Rim Makers"

Firestone
NON-SKID TIRES

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The 1917 Enger

Pull the Little Lever

Your Twelve Is a Six

Push the Little Lever

Your Six Is a Twelve

THE most marvelous automobile improvement yet invented!

Just move a little lever and the trick is done—the trick that is turning the automobile world topsy-turvy.

One minute your car is a twelve with tremendous power for a lightning get-away, slow driving in crowded streets, or for hills and heavy going.

The next instant you have a six, for all normal driving—and the most economical six the world has ever seen—35 miles per gallon—read the affidavit shown below.

Just a touch of the little lever on the steering column does it all—cuts out six of your twelve cylinders and cuts them in again—in an instant.

This Enger invention makes possible the supreme motor car combination—luxury and economy.

In other cars emergency power eats up fuel all the time—needlessly—extravagantly.

In the Enger Twin-Unit Twelve you have emergency power in abundance—but it uses fuel for *surplus* power only when called upon. The six cylinders that are idling one instant are adding extra power and push the next.

Never has a car stirred up such enthusiasm. Never was a car such an instantaneous success.

For no other car at anywhere near the price even approaches such attainments in either luxury or economy—none at any price combines them.

35 Miles Per Gallon

Sworn Statement

STATE OF KENTUCKY } SS
COUNTY OF KENTON }

Affiant, J. H. Jolly, being first duly sworn, states that he made 36.8 miles per gallon of gasoline, at an average rate of speed of 20 miles per hour, driving an Enger Twin Motor Car, 1917 Model, carrying three passengers and equipped with the Economy Mechanical Device, on June 14, 1916, at the Motor Speedway, Indianapolis, Ind.

Subscribed and sworn to before me, a notary public, thi· 24th day of June, 1916.

John T. Murphy.
Notary Public, Kenton County, Ky.
My commiss on expires February 18, 1918.

J. H. Jolly.

The Enger Twin-Unit Twelve

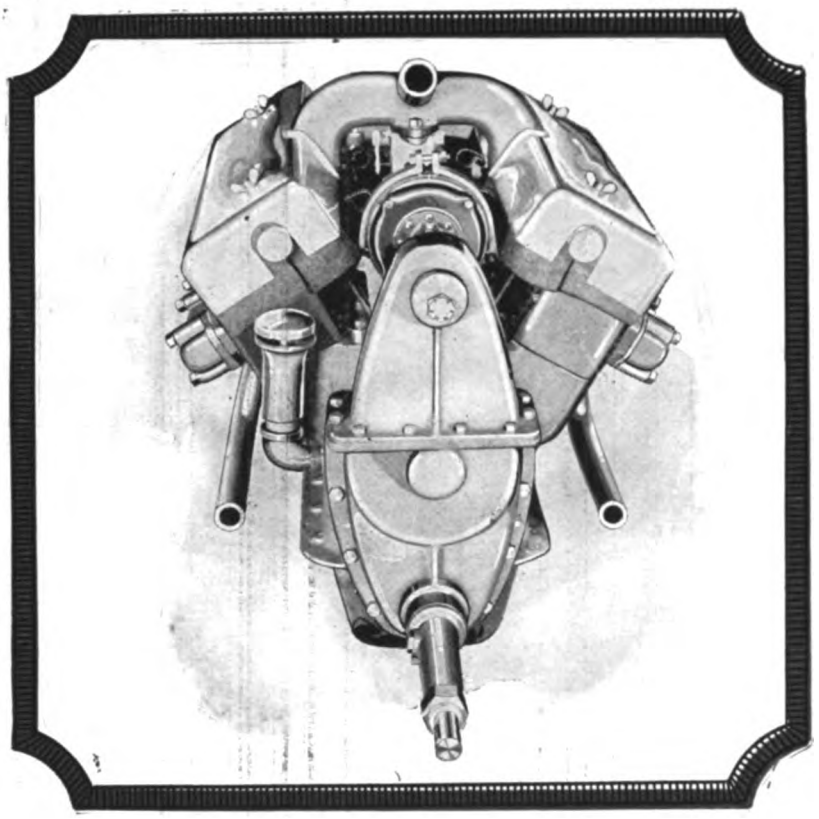
$1295
f.o.b. Cincinnati

$1295
f.o.b. Cincinnati

The Enger Motor Car Company, Cincinnati, Ohio

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Twelve and Six



The Motor That Has Upset All Calculations

HERE is the Enger Twin—Unit Twelve—the motor that has upset all calculations—the motor that has opened new realms of luxury and new realms of economy—the motor that is already creating an enormous enthusiasm.

The driver by means of a small lever on the steering column can cut out six of his twelve cylinders in an instant—and can cut them in again just as quickly whenever he needs them.

You have two motors—a twelve and a six—both in one.

And the mechanism is very simple—and practically fool proof. There is nothing delicate to get out of order—nothing to stick or jam. The action is absolutely positive.

The Enger Motor Car Co.

Cincinnati Ohio

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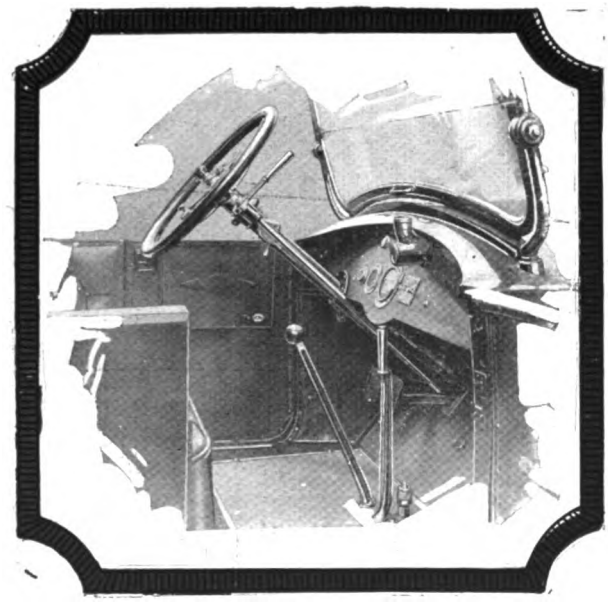
-Both In One

Within Easy Reach



JUST below the steering wheel on the steering column is the little lever that performs such wonders. A little push or a little pull makes your car a twelve or a six in an instant—with no fuss—no trouble.

Just Move the Lever



HERE you can see how inconspicuous the little lever is—and how conveniently it is located.

Just move it—and you have the most economical six in the world, that will take you 35 miles on a gallon of gas—or a powerful twelve with all its advantages.

The Enger Motor Car Co.

Cincinnati, Ohio

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The Greatest Dealer Opportunity of a Decade

DURING the last ten years there have been hundreds of improvements made in automobiles—both mechanical and in appearance.

Most of these improvements, however, have been gradual and have been common to all cars. They have meant nothing unusual to the dealer as far as any one make of car is concerned.

But here is an Enger invention—that comes like a bolt from the blue—years ahead of other improvements.

And it's an invention that means sales—greatly increased sales. It is exclusively an Enger invention—is found *only* on the Enger car.

Our Twin-Unit Twelve will revolutionize driving. It will create a demand for Enger cars—and the dealer who handles Enger cars will be in the limelight from now on.

Dealers in all parts of the country are already feeling the popular demand for the Enger Twin-Unit Twelve. Its success has been instantaneous.

And other dealers in open territory sensing the tremendous demand for such a car, are already getting in on the ground floor.

There are many places still open for dealers who can represent the Enger—who are alive and fully awake to the opportunities that the Enger car offers as a money making proposition.

Write or wire us at once and if your territory is still open and you are the right man you can tie up with this new Enger model with its marvelous motor.

Don't delay. Let us hear from you today.

Specifications

MOTOR—"TWELVE" Cylinder cast en bloc. Angle of cylinders 60 degrees from center line, 2 11/16" bore, 3½" stroke. Valve in the head Motor. Construction of Motor allows for removing head. Aluminum Pistons, Leak-proof rings.

LUBRICATION—Force feed, through hollow crank shaft.

CARBURETION—Carburetor with manifold hot water jacketed.

ELECTRIC STARTING AND LIGHTING SYSTEM—Electric Motor Meshing in flywheel gear for starting. Generator—Direct Drive.

SPRINGS—Cantilever in rear.

TRANSMISSION — Three speeds ahead, one reverse.

CLUTCH—Multiple Disc. Dry Plate.

REAR AXLE—Pressed Steel housing. Spiral Bevel Gears. Full Floating.

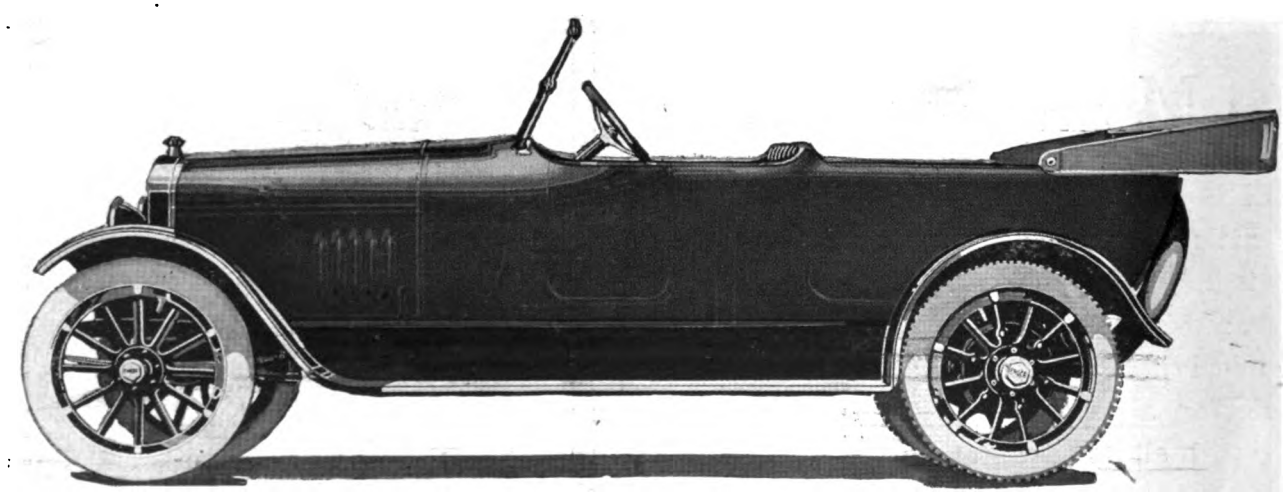
COOLING SYSTEM—Thermo-syphon.

CONTROL—Center.

COLOR—Body dark Brewster Green.

TIRES—Wheels equipped with Demountable Rims, and 32x4 non-skid on rear.

WEIGHT OF CAR—2685 lbs., fully equipped with top, windshield, battery lamps, starter, magnetic speedometer, tools and extra rim.



Write for Booklet "The Story of a Gallon of Gasoline"

The Enger Motor Car Co.

Cincinnati, Ohio

Digitized by Google





Ajax Non-Skid

AJAX TIRES

Guaranteed In Writing 5000 Miles

FOR 11 YEARS every Ajax Tire made has been guaranteed *in writing* for 5000 miles. The guarantee is in black and white, time-tried and tested.

Dealers: *Interest Chauffeurs in the Ajax Tire Mileage Contest*

Employed Drivers of automobiles are invited to enter the Fourth Annual Ajax Tire Mileage Contest for Chauffeurs, now begun and continuing until March 31st, 1917. Two hundred and eight cash prizes, totalling $5,000, are offered for the highest mileage received from any individual Ajax Tire, beyond 5000 miles. It costs nothing to enter. Any number of tires may be nominated. One driver may win only one prize, however, the highest mileage being considered in the awards if two or more tires are entered. Information and entry blanks on request.

"While others are claiming Quality, we are guaranteeing it."

Ajax Rubber Company, Inc.

1796-1798 Broadway New York

AJAX Branches

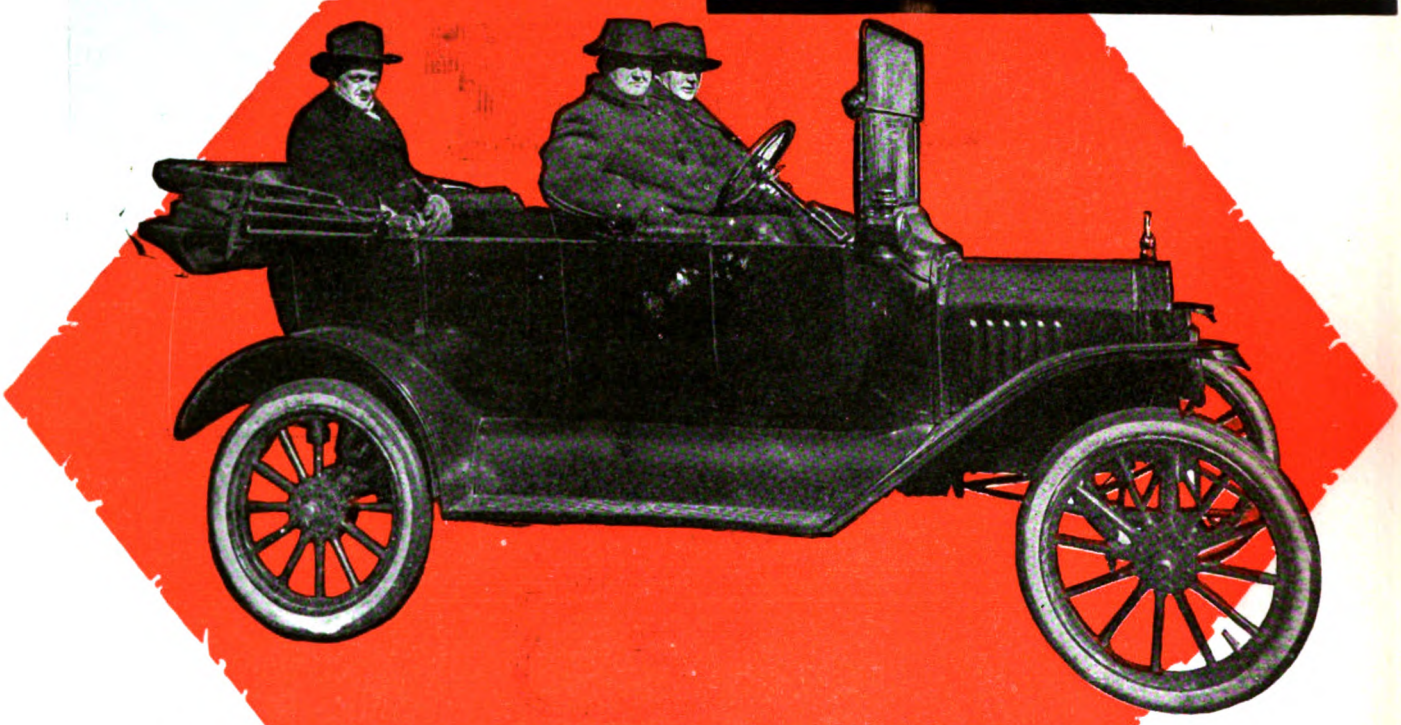
Atlanta, Boston, Brooklyn, Chicago, Cleveland, Dallas, Denver, Des Moines, Detroit, Indianapolis, Kansas City, Mo., Los Angeles, Minneapolis, Philadelphia, Portland, Ore., San Francisco, Seattle

Factories: TRENTON, N. J.

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37 4/10 Miles on One

Now Ready for FORDS



All Official Ford Economy Records Smashed!

IT'S here! The New Stromberg Carburetor for Fords—the one Carburetor long sought for by hundreds of thousands of Ford owners—the one Carburetor that will bring down gasoline expense.

Think of getting 37 4/10 miles on one gallon of gasoline!

In an official test April 1st, observed by F. E. Edwards, a representative of the A. A. A., a Model T 1915 Ford, carrying three persons and weighing 2170 lbs., traveled actually 37 4/10 miles on one gallon of gasoline—an official feat never before accomplished. Without changing the adjustment of the New Stromberg Carburetor, the Ford was accelerated from a standing start to 25 miles an hour in exactly 11.4 seconds— a marvelous feat, and conclusive proof of the New Stromberg's acceleration.

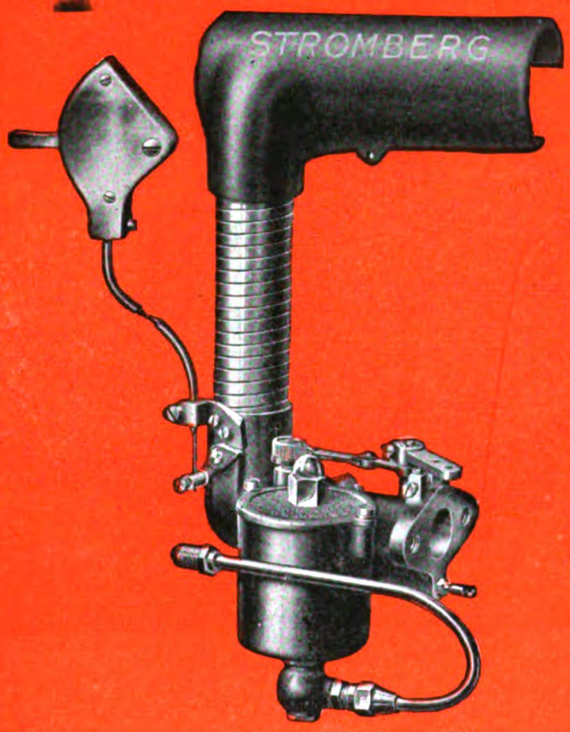
Then the Ford was speeded up to 43 miles an hour and throttled down to 7 miles an hour on high — extraordinary flexibility for a Ford car.

New STROMBERG Does it!
CARBURETOR

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Gallon of Gasoline

New STROMBERG Carburetor



43 Miles An Hour With Same Adjustment

The price is only $18 complete with all attachments—a low price for such a carburetor. It won't take it long to save enough in gasoline to pay for itself.

Every Ford owner wants better service and more mileage per gallon of gasoline. Equip your car with the New Stromberg Carburetor and get more mileage — more speed, power, flexibility, quicker "pick-up" and better all 'round service.

Mail the coupon at right for one on our money back guarantee.

If you are a dealer, we have an interesting proposition for you. Hundreds of thousands of these New Strombergs for Fords will be sold everywhere.

STROMBERG MOTOR DEVICES CO.
Dept. K, 64 East 25th Street Chicago, Illinois

STROMBERG
MOTOR DEVICES CO.
Dept. K, 64 E. 25th St.
Chicago, Illinois

Enclosed find $18 for which send me on your **Money Back Guarantee** New Stromberg Carburetor for my Ford.

Name.....

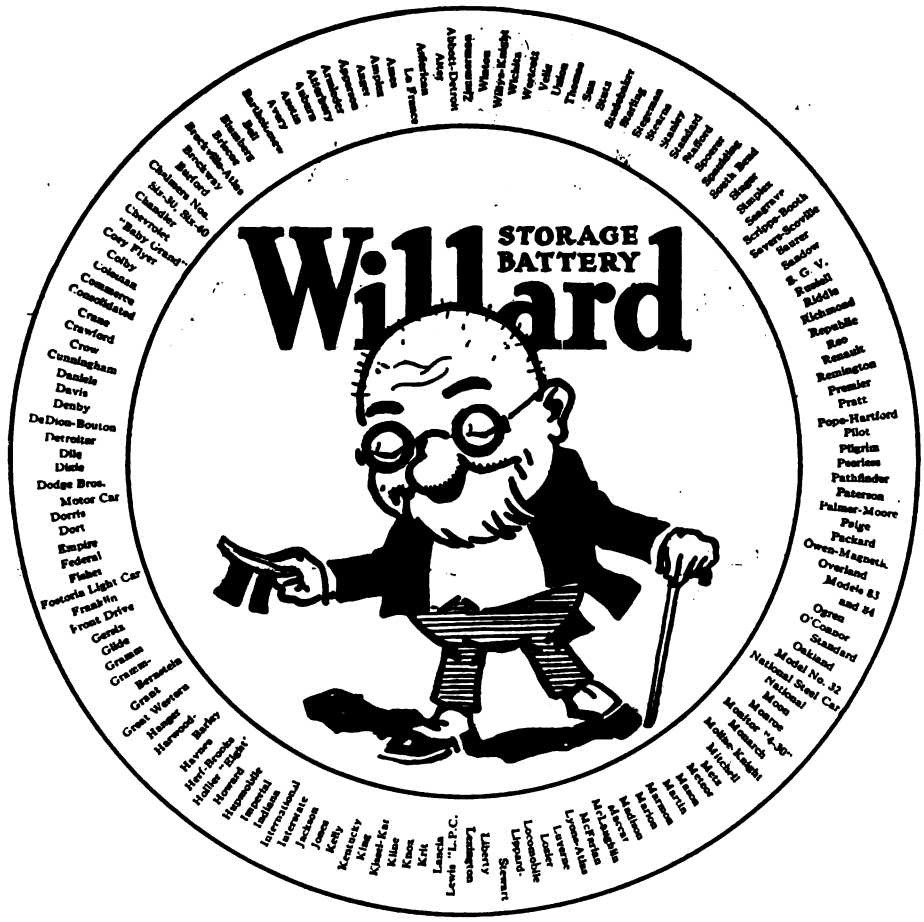
St. Add. or R.F.D. .....

City..... State.....

P. S.—If you do not order now, mail this Coupon for Free Literature.

New STROMBERG Does it! CARBURETOR

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The Center of Attraction

It's perfectly natural that over 150 car builders should merely say "Willard" and forget battery problems.

By doing so they accomplish three things.

Most important of all, they add to the salability of their car by assuring the owner of a reliable battery.

They lessen their own service responsibility by relying on 800 Willard Service Stations, every one in charge of an expert.

And finally, they make it easy for the car owner by affording him the battery helps which the name Willard implies—free inspection, advice, literature on care, and expert attention.

Booklets P-13 and P-14 go into more detail. Write for them—they're free.

Willard Storage Battery Company

Cleveland, Ohio

New York: 228-230 W. 58th St.
Chicago: 2524-30 So. Wabash Ave.
Atlanta, Ga.: 8-10 East Cain Street

Detroit: 736-38-40 Woodward Ave.

San Francisco: 1433 Bush Street
Minneapolis: 36-38-40 So. 10th St.
Indianapolis: 316-318 No. Illinois St.

Direct Factory Representatives in Philadelphia, Boston, Dallas, Kansas City, Omaha, Seattle

Service Stations in All Principal Cities in the United States and Canada

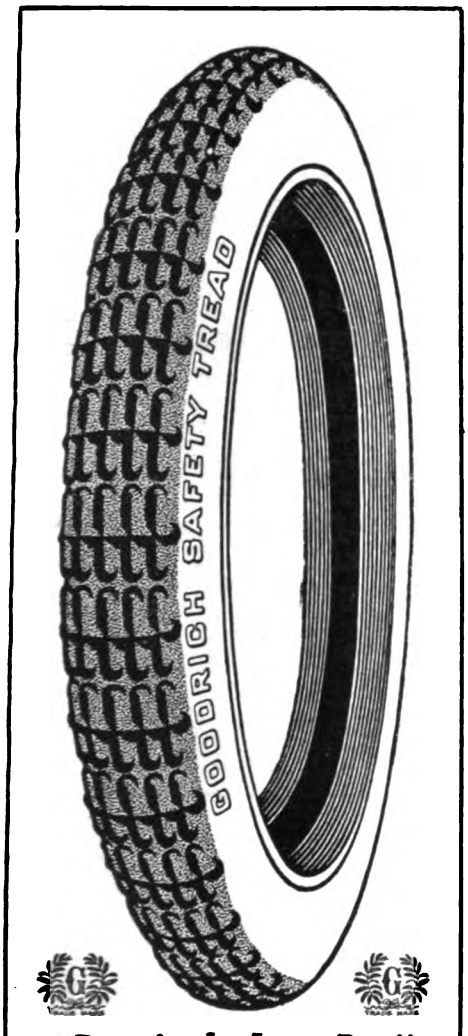
STORAGE BATTERY
Willard

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NATIONAL TOURING WEEK

AUGUST 6th to 12th—1916 **EVERYWHERE**

"SEE YOUR OWN STATE FIRST!" IS BATTLE-CRY OF GREAT PUBLICITY CAMPAIGN UPON CAR-OWNERS



"Best in the Long Run"

Goodrich
Black Safety Tread Tires

Over 1,000 Newspapers "Mustered In" to Picture and Describe Attractive State Tours During National Touring Week August 6th to 12th and Thus Give a Big Boost to Automobile Touring

The B. F. Goodrich Co., Advertising to over 60,000,000 Readers That Goodrich Road Maps, Route Cards, Etc., Will Be Supplied Free Through Tire Dealers. Dealers Not Yet Supplied Urged to Write Goodrich Immediately

Akron, O., July 20—EXTRA!—It looks as if Automobile Supply Dealers would slice a juicy melon during August. Cars which are run mainly about town use up few supplies in comparison with the supplies required by cars which are used for touring.

A great "National Touring Week" publicity campaign is scheduled for August 6th to 12th, during which time over 1,000 newspapers will carry pages of attractive pictures and alluring descriptions of short and long motor trips in their respective states, and The B. F. Goodrich Company



An assortment of Goodrich Route Cards, Road Maps, etc., suitable for free distribution in your particular locality will be sent on request to Goodrich dealers.

will advertise its free touring information service, consisting of road maps, route cards, state guides, etc., to over 60,000,000 people.

Will Increase Dealer's Business

While intended to educate car-owners to the pleasures and advantages of all year 'round automobile touring, it cannot help but to result in a big increase in August business for dealers selling tires, oil, gasoline and accessories provided they "do their bit" in assisting the plan.



This beautifully colored transparent window sign will be a permanent "puller" of new business to your place. The man planning a tour is a good customer to have. This sign will bring him to you.

The B. F. Goodrich Company, is supplying dealers who sell Goodrich Tires with attractive display material with which to hook up to the campaign.

Any who are not as yet supplied with Goodrich state maps, route cards, etc., to distribute free, will have same provided for them if they will *immediately* address the National Touring Bureau of The B. F. Goodrich Company, Akron, O.

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This Same Stamina in All Models of the STURDY STUTZ

INDIANAPOLIS
STUTZ
INDIANA.U.S.A.

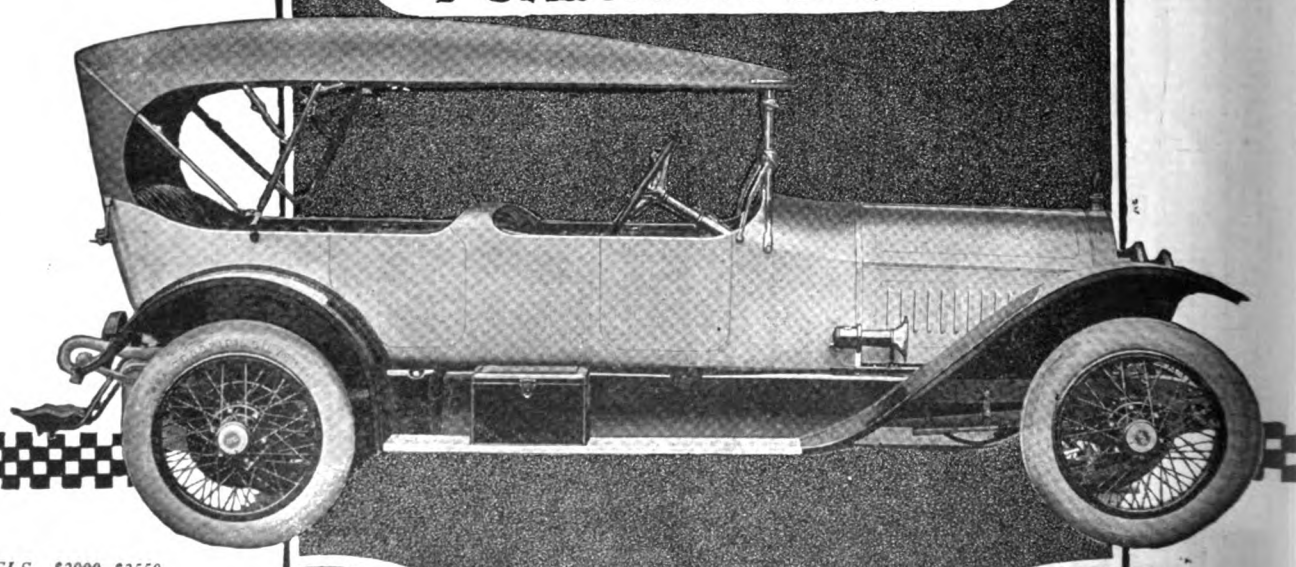
World's Champion

WORLD'S
Speedway Champion

WORLD'S
Road Race Champion

World's Long Distance
Records 250;300;350 mi.

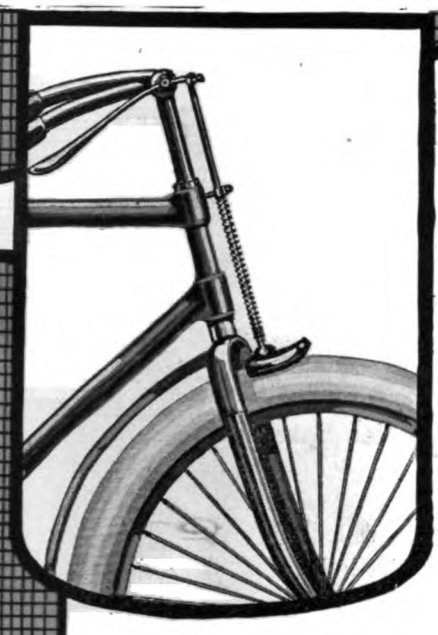
World's Record for Consistency
4 Consecutive 1st&2nds



FIVE MODELS—$2000-$2550
Literature on Request

STUTZ MOTOR CAR CO.
INDIANAPOLIS, INDIANA

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Safety Brakes Old and New

When small boys called "ice wagon" after the lumbering safety with its solid tires, low gear and its handle bar brake, Johns-Manville was making Asbestos Brake Lining.

The machinery that made the bicycle and countless other industrial machines where the severest braking requirements were to be met, had brakes and clutches faced with it.

And why—because it withstood the action of heat, grease, oil, water and grit. Because it wouldn't burn nor slip, and outwore other braking materials.

This was years before the motor car came.

Johns-Manville
Asbestos Brake Lining

has the same basic materials in it today as then.

And since there are more brakes to line now than in the old days, it has made more friends—an army of motorists, who buy it and rebuy it because of its record on their own car brakes.

H. W. Johns-Manville Co.

Executive Offices
296 Madison Ave., New York City

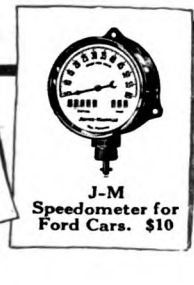
Akron	Galveston	Philadelphia
Albany	Havana	Pittsburgh
Atlanta	Houghton	Portland
Baltimore	Houston	Rochester
Birmingham	Indianapolis	St. Louis
Boston	Kansas City	St. Paul
Buffalo	Los Angeles	Sacramento
Chicago	Louisville	Salt Lake City
Cincinnati	Memphis	San Diego
Cleveland	Milwaukee	San Francisco
Columbus	Minneapolis	Seattle
Dallas	Nashville	Syracuse
Dayton	Newark	Toledo
Denver	New Orleans	Tulsa
Detroit	New York	Washington
Duluth	Omaha	Wilkes-Barre
El Paso		Youngstown

THE CANADIAN
H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver

To The Trade

Investigate the merchandising policy behind J-M Non-Burn Brake Lining by writing the J-M Branch nearest you. Nothing could be fairer than the jobber-dealer offer that provides an ample selling margin that is uniform regardless of the quantity purchased. You can buy as you need without impairing profit percentage.











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Several Features of Superiority

Found Only in the Full-Floating

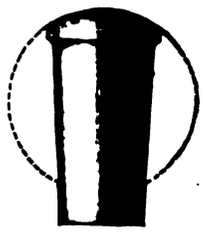
American Axles

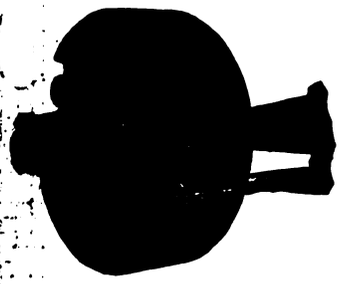
Equipped with Spiral Bevel Gears and Bock Taper Roller Bearings



Removable Axle Shafts drive the wheels. One-piece nickel steel Axle Tubes support *entire* weight of car. Hub is of *steel;* Driving Clutch is quickly removable and of *nickel steel.*

Two Bock taper roller bearings in each hub take end thrust like ball thrust bearings, and without the slippage, friction or jamming so destructive to other taper roller bearing assemblies.

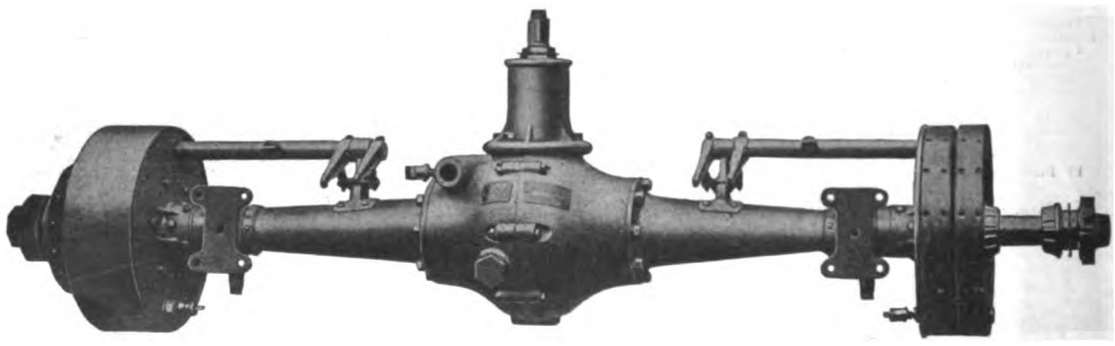




The Twin Internal Brakes do not grab, but exert a brake action always in direct ratio to effort exerted by driver.

The Spider carrying small differential pinions is free to float—equalizing all strains in the differential.





Licensed under The Kardo Company Patents

The American Ball-Bearing Company

Pioneer Axle Builders of America

Cleveland, Ohio

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Atwater Kent Ignition



Perfect Score in King Test

(See Newspapers and Automobile Publications)

11,000 miles (including idling distance) in 14 days without stopping motor *and without touching any part of the Ignition System!*

One hundred and twenty millions (120,000,000) of accurately timed, uniformly hot sparks at the rate of 1360 sparks per minute or 22 per second—with the motor firing as smoothly at the end as at the beginning of the run—good for perhaps another ten thousand miles!

This is undoubtedly the most rigid test to which any ignition device has ever been subjected.

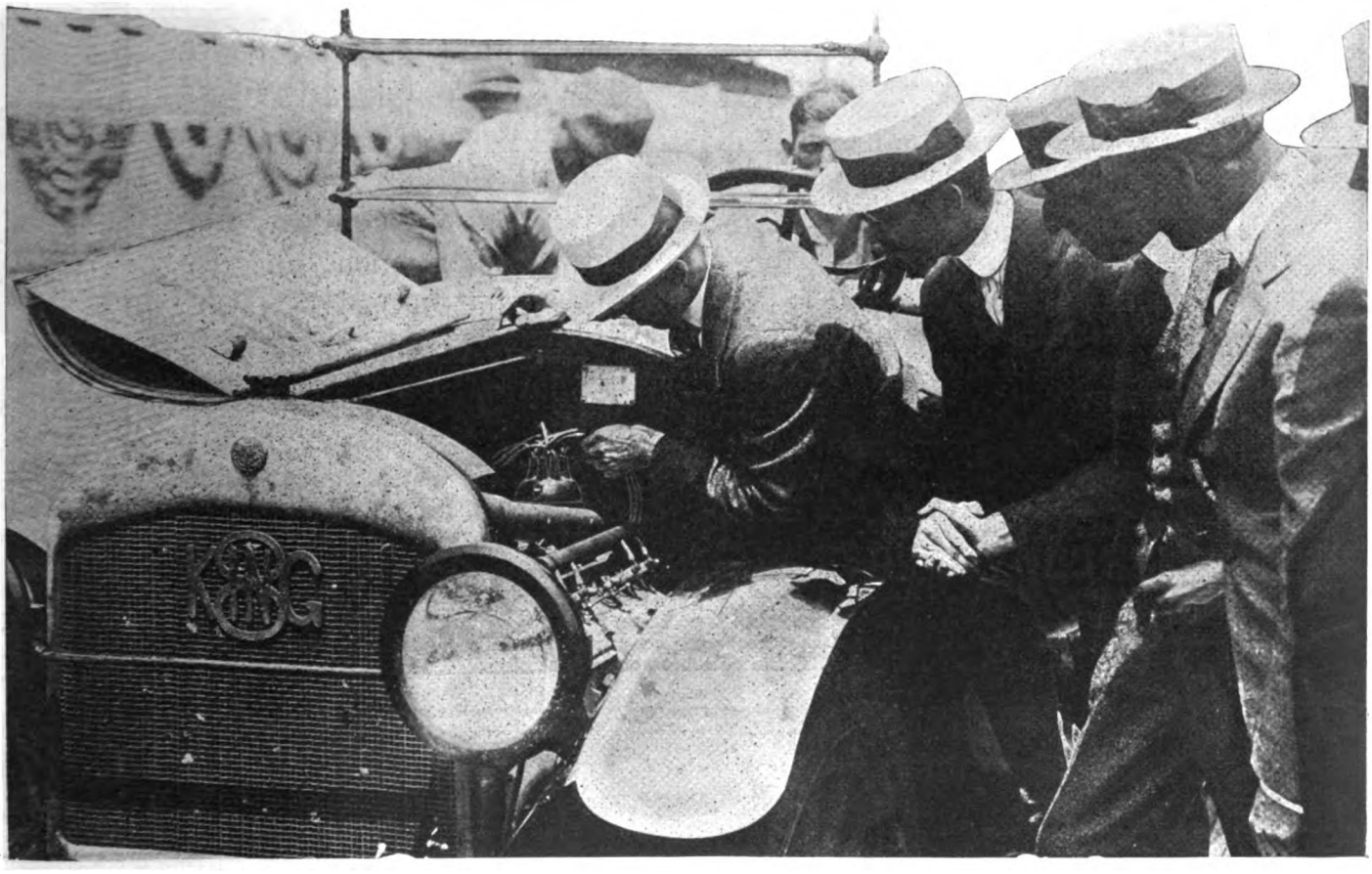
The performance of any car depends absolutely on the unfailing efficiency of its ignition system. That is why King and many other standard cars are ATWATER KENT equipped.

Furnished also for magneto replacement on any car—a wonderful opportunity for dealers, garages and repair shops. A special outfit for Ford cars.

President Ward and Chief Engineer Chase of King Company inspecting ignition system at end of 10,850 mile non-stop run.

WRITE US FOR DETAILS

ATWATER KENT MFG. WORKS, Philadelphia, U. S. A.



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The Safest Brake Lining For You to Sell

The Brake Lining that affords the highest degree of safety to the user—that reduces the mileage service cost to the minimum through an exceptionally long term of dependable service—is the safest brake lining for you to sell. In the highest degree these conditions are met by

GARCO
ASBESTOS BRAKE LINING

GARCO Asbestos Brake Lining through each step of its manufacture must meet standards that guarantee the highest quality in the finished product. It is solidly woven—heavily re-enforced with brass wire. GARCO will not heat or burn; the solution with which it is impregnated fully protects it from the action of water, oil, grease or dirt. **GARCO resists wear.**

Your jobber has GARCO Asbestos Brake Lining in stock. The next time you are in the market insist that he supply you. GARCO literature will give you valuable information on the Brake Lining Business. It will be gladly sent you on request. Write us today.

TRADE ARCO MARK

GENERAL ASBESTOS & RUBBER COMPANY

Main Offices and Factories CHARLESTON, S. C.

Branch Offices at #58 Warren St., New York; #312 1st Ave., Pittsburgh; #530 Golden Gate Ave., San Francisco

We manufacture a special type lining for Ford Transmission Bands, put up in rolls and complete sets with rivets. Also a full line of Asbestos Automobile Specialties.

TRADE ARCO MARK

GARCO

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Now!—In This New Attractive Package

The Shaler Tire Repair Kit—the popular accessory that has been known for years to motorists everywhere through national advertising—is now packed in this new red package.

This gives this well-known, quick-selling accessory a distinct advantage, as this new package is by far the most attractive ever designed for the use of tire repair kits.

Both the Vul-Kit and Ford-Kit will come in this new striking box. Put them on your shelves—in your show case or window. They will make a fine display.

Sold and recommended by all jobbers.

Dealers:

Dealers sold over 100,000 last year.

Investigate the profit possibilities of Shaler Tire Repair Kits. They are needed by every motorist to carry in his tool box to eliminate tire trouble on the road and double his mileage. And the motorist must buy it from his dealers because no car comes equipped with a tire saving device.

Write for dealer's discounts—terms and information about the many selling helps furnished free, including display stands, posters, hangers, window displays, window cards and folders.

C. A. Shaler Company, 423 Fourth Street, Waupun, Wis.

Oldest and Largest Vulcanizer Manufacturers

Canadian Distributors—John Millen & Son, Ltd., Toronto, Montreal, Winnipeg, Vancouver

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"Use Water for Washing; O-So-Ezy for Polishing"

Your customers have the highest regard for your advice, and expect you to give them the best advantage of your expert judgment.

O-So-Ezy Cedar Oil Polish is the fit medium for you to cement even closer this regard and friendship.

Once Over with O-So-Ezy

You can tell them with confidence that one application of O-So-Ezy will bring out and emphasize every bit of gloss and luster possessed by any painted, varnished or enameled surface. The unanimous commendation of the automobile industry bears you out in this statement.

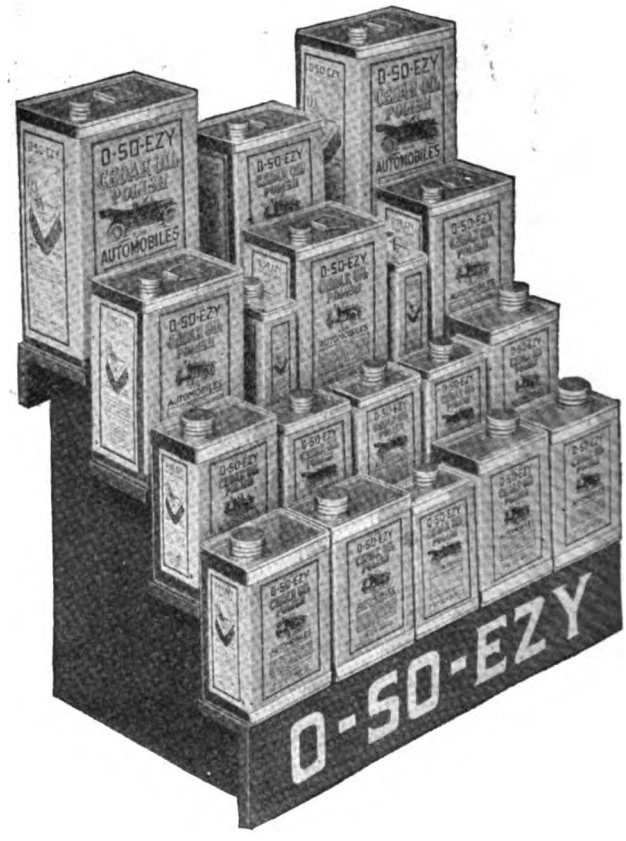
O-So-Ezy is not an automobile wash; that function can be performed only with water. Warn your customers against rubbing over grit; that is the only necessary admonition.

Here is your Opportunity

The accompanying photograph shows the ideal polish stock with free Silent Salesman, which we are holding for your order.

A sensible, widely advertised article, endorsed by unqualifiedly authority and staged in a way that will ornament any store or salesroom—that is the O-So-Ezy story.

We will fill your order direct or through your jobber.



O-So-Ezy Cedar Oil Polish is recommended and supplied as Standard Equipment of each new car by

Abbott-Detroit	Jeffery
Briscoe	King
Buick	Maxwell
Chalmers	Oakland
Chevrolet	Oldsmobile
Detroit Electric	Overland
Detroiter	Paige-Detroit
Dixie	Reo
Empire	Saxon
Grant	Scripps-Booth
H. A. Lozier	Stutz
Haynes	Willys-Knight
Hupmobile	Winton
Inter-State	

6 Pints . . .	each	$ .50	$3.00
6 Quarts . . .	each	1.00	6.00
4 Half Gallons .	each	1.50	6.00
2 Gallons . .	each	2.50	5.00
	Total . .		$20.00

ALL FOR **$12.00** AND WE PAY THE FREIGHT

HANDSOME MAHOGANY-FINISHED "SILENT SALESMAN" DISPLAY STAND *FREE*

O-SO-EZY PRODUCTS COMPANY

264-266-268 Jefferson Ave. DETROIT, MICHIGAN

Pacific Representatives

The Phil. B. Bekeart Co., San Francisco

Gold Medal—Highest Award—Panama-Pacific Exposition, 1915

When writing advertisers please mention Motor World

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

Bank on John W. Bate

There is no safer reliance for a motor car dealer—or a motor car owner—than to bank on John W. Bate.

As an efficiency engineer in machinery lines Mr. Bate stands first. And he has for 30 years.

His crowning work has been done for the Mitchell. This model plant is of his creation. And this Mid-Year Mitchell is the 17th model built under his direction.

What Efficiency Is

John W. Bate's idea of efficiency includes many items. It means utmost value through reduced factory costs. Mr. Bate has cut our costs 50 per cent. No other plant could build a car like the Mitchell at the Mitchell cost.

It means, in Mr. Bate's mind, a lifetime car. He has studied every part to this end. He builds oversize parts, fixes big margins of safety, uses much Chrome-Vanadium steel. In the Mid-Year Mitchell 440 parts are either drop forged or steel stamped.

As a result, six Bate-built cars have averaged 164,372 miles each—over 30 years of ordinary service.

It includes the extreme in tests and inspections. No faults or flaws or errors are found in Mitchell cars.

Amazing Results

You will find in the Mitchell greater value than in any other high-grade car.

You will find 26 costly features which other cars omit—all paid for by factory savings.

You will find in one car all the best new ideas of all the this-year models. We examined 257 Show models before completing this.

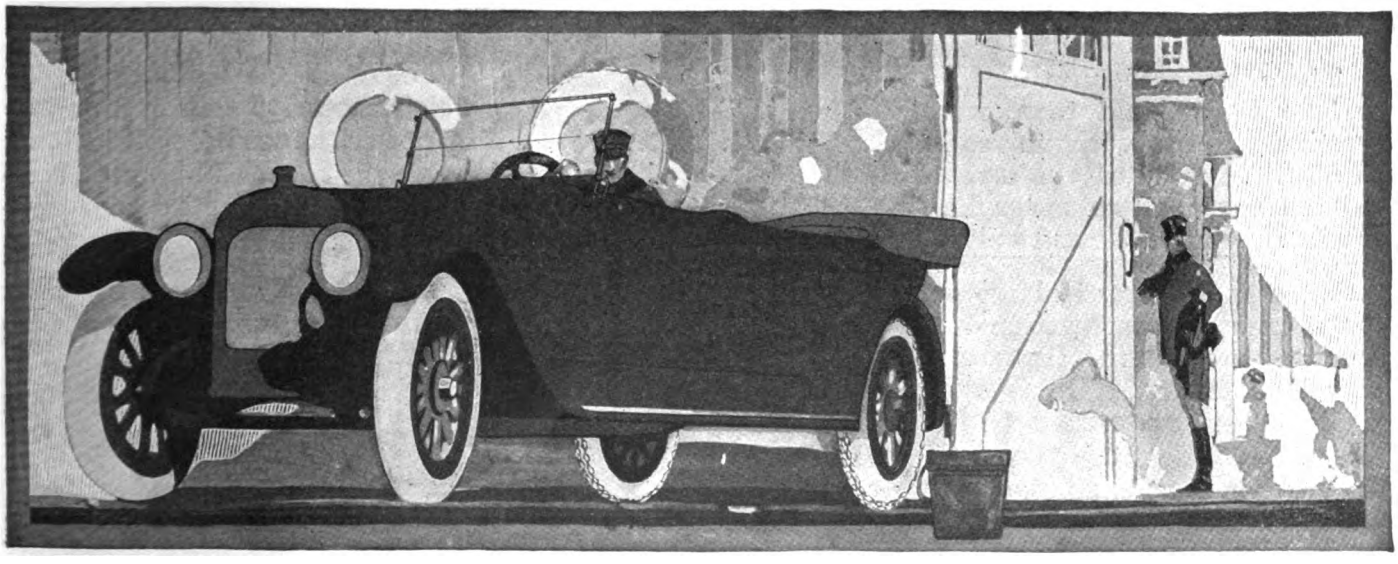
You will find the finished product of John W. Bate's efficiency. His every idea has reached its fruition in this Mid-Year model.

We have much more to say to competent dealers in sections not yet closed. And such dealers should hear it.

In the past 12 months Mitchell sales have trebled. And they are going to treble again.

$1325 F. o. b. Racine
For 5-Passenger Touring Car or 3-Passenger Roadster
7-Passenger Touring Body $35 Extra
High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment including 26 extra features.

MITCHELL-LEWIS MOTOR CO.
Racine, Wis., U. S. A.



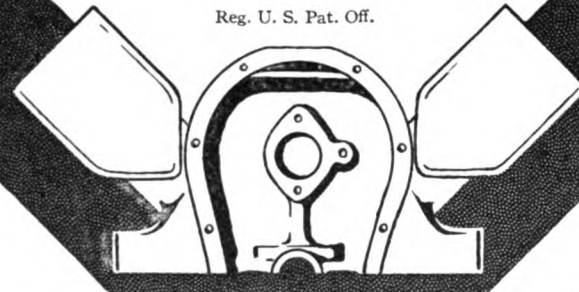
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FERRO MOTORS

Reg. U. S. Pat. Off.



There were V-type motors before Ferro, and there were vertical motors with valves in the head, but until the arrival of the Ferro, there never had been a V with overhead valves.

Even in the vertical motor, valve-in-head construction has become noted for its power development. In the V-type motor, there are added to the paramount advantages common to valve-in-head engines, others to be found nowhere else.

The result: A compact, light-weight motor, with an abundance of power, unusual acceleration, unequalled accessibility, marked freedom from vibration and low up-keep cost.

There's a Ferro for any size car from 2000 to 5000 pounds—three Eights and a Twelve.

We shall be glad to send full information at your request.

The Ferro Machine & Foundry Co.
798 Hubbard Ave. Cleveland, Ohio

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For All Ford Cars

Not Limited to 1915-16 Cowl Dash Models

Immediate Deliveries Guaranteed



No Need to Charge More Than $16

To Give 1916 Style to Any Ford

DEALERS

We are Snowed Under With Orders for

Detroit Streamline Hood and Scroll Type Radiator Shell

The popularity of DETROIT Streamline Equipment for Ford cars is assured. Hundreds of live prospects are lined up by dealers where Ford cars are in use. Hundreds of others either have received their shipments or are about to, in the near future. DETROIT Streamline Equipment is the logical buy for owners of Ford cars. Makes their cars look like $1000 at the low cost of $16. Conforms to the latest style in hood and radiator designs, and serves a field limited only by the full number of Ford cars in use.

For All Ford Cars—Old and New

Don't tie up to a Streamline equipment for Fords that fits only a limited number of cars. DETROIT Equipment sells regardless of model or type. No dealer turns down an order because DETROIT Streamline Hood and Scroll Type Radiator Shell won't fit. It always fits—and generally closes the business. It's the right equipment at the right price. Easiest to put across.

Made of substantial steel, with concealed hinges. Water-proof. Finished in best black baked enamel. $16—the popular price.

Territory Going Fast. Write or Wire Today



The Harry Svensgaard Sales Corporation

214 Jefferson Avenue, East Detroit, Mich.

Factory, Ionia, Mich.

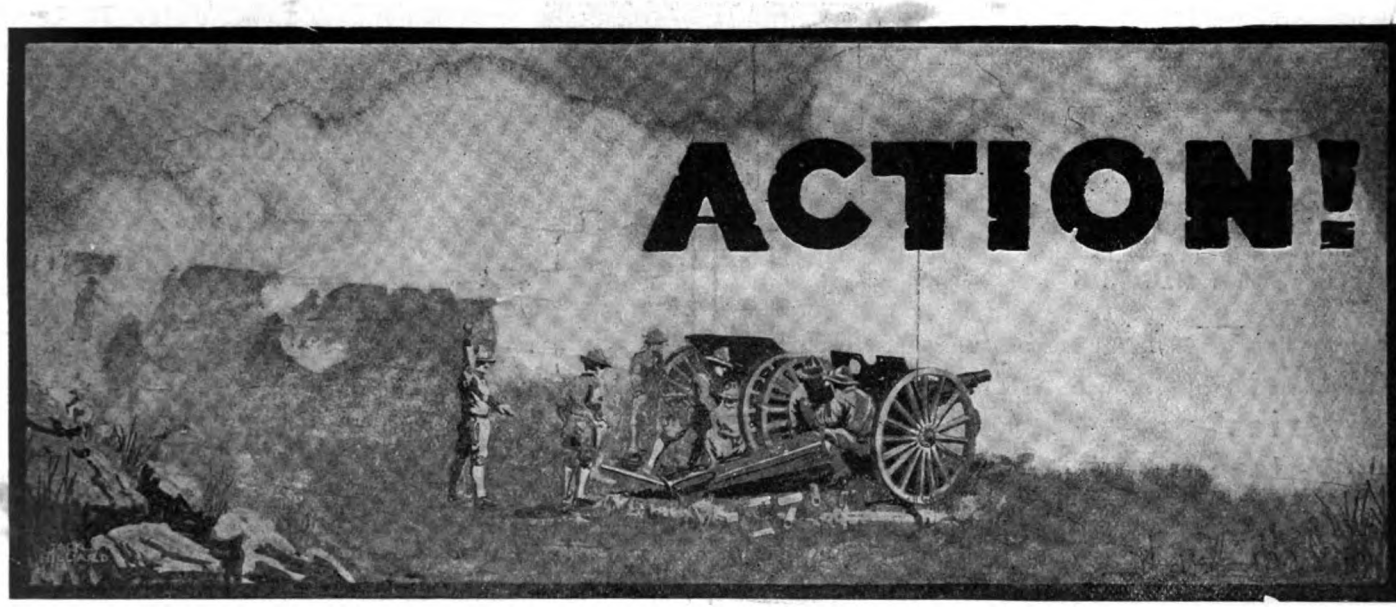
Warehouse, Windsor, Ont., for Canadian Deliveries.

We will protect dealers and users against infringement suit.



The Only Scroll Type Radiator Shell for Ford Cars

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Rapid-fire snap—vim—power! That's what you get when your ignition is right. The harder you press on the accelerator pedal the smoother she runs—the electrical impulses can never come hard enough or often enough to phase the big, husky electrodes and honest, capable insulation of

JUMBO MOLITE
The Plug With The Punch

Whether it's a mile of typhoon-swift going on the boulevard, or a snake crawl through the traffic of the shopping district, Jumbo Molite will keep the heart of your car beating smoothly—steadily—surely.

Jumbo design and Jumbo construction assure trustworthy service, even under the terrifically severe conditions imposed on spark plugs by the present day high-speed, high-compression motor.



Dealer Service That *Is* Dealer Service

—the sort of service that keeps plugs moving off your shelves and into your customers' motors—is at the disposal of any of you dealers who want to ask for it. This service covers everything from descriptive circulars to striking window displays. If you want all the spark plug business that should be yours, better write today for details of our dealer proposition.

Gibson-Hollister Mfg. Co.

3380 Washington Street **Jamaica Plain, Mass.**

Distributors

Blacklock-Posner Tire Repair Co., 429 South Twentieth St., Birmingham, Ala.; Bailey-Drake Company, 149 New Montgomery St., San Francisco, Cal.; Foster Auto Supply Co., 138 16th St., at Broadway, Denver, Colo.; A. C. Hine Company, 314 Pearl St., Hartford, Conn.; The Chenn Company, Richmond, Va.; Wales-Adamson Company, 1402 S. Michigan Ave., Chicago, Ill.; Hoyt Sales Company, 803 Wulsin Building, Indianapolis, Ind.; The Liberty Oil Co., Cor. S. E. 6th & Elm Sts., Des Moines, Ia.; A. F. Wolke Rubber Co., 624 South Third Ave., Louisville, Ky.; W. E. & B. J. Harmon, Inc., 228 Middle St., Portland, Me.; John F. Barker, Jr., Stearns Bldg., Springfield, Mass.; Prismatic Lens Co., Osgood Bradley Bldg., Worcester, Mass.; The Auto Tire Rubber Co., 1106 Harmon Pl., Minneapolis, Minn.; Weldon Sales Company, 4137 Holmes Street, Kansas City, Mo.; Auto Devices Company, 3212 Locust Street, St. Louis, Mo.; The Meinhard Auto Sup. Co., 846 Main Street, Buffalo, N. Y.; Asch & Company, 1779 Broadway, New York City; J. Edward Strater, 2060 Euclid Avenue, Cleveland, O.; Bogen Bros. Co., 18 West Third St., Cincinnati, O.; Detsch & Company, Panama Building, Portland, Ore.; Auto Specialties Co., 5103 Jenkins Arcade, Pittsburgh, Pa.; J. E. Chumbley & Co., 1008 Stahlman Bldg., Nashville, Tenn.; The Boss Rubber Co., 322 Texas St., El Paso, Tex.; Guarantee Tire & Rubber Co., 420 South Main St., Salt Lake City; W. A. Wright's Garage, Cor. R. R. & Portland Sts., St. Johnsbury, Vt.; Bailey-Drake Co., Los Angeles, Cal.; Otto Specialties Co., Philadelphia, Pa.; The Southern Engineering Corp., Baltimore, Md.

CANADIAN DISTRIBUTORS: The Northern Electric Co., Ltd., Montreal, Halifax, Toronto, Winnipeg, Calgary, Regina, Vancouver, Victoria.

JUMBO SPARK PLUGS

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Power for Fords

A Real Opportunity For the Trade

THE Bosch-Ford Attachment makes the Ford car really efficient, it makes possible an easy and mechanically correct installation of the Bosch Magneto on Fords.

The result is a positive betterment of the car, giving more power, more speed, more economy, and, at the same time, reduction of wear on the engine and the car in general.

The magneto is a Bosch Magneto, the same quality, workmanship and material that go into the Bosch Magnetos supplied to the manufacturers of the White, Pierce-Arrow, Marmon, Mercer, Chandler and other high-class makes of motor car. The few fittings that are necessary are made in the Bosch Factory, too.

If you sell automobile accessories, or run a garage, take advantage of this proposition. The ability of the Bosch-Ford Attachment to meet every claim assures satisfied customers, which are necessary for your success. It's not a luxury—it's a NECESSITY.

Stock a few of these attachments now. Your orders will be shipped from nearby supply stations, thus cutting down shipping expense and making your profits real profits.

Be Satisfied *Write for the "Key to Ford Efficiency" if you want to know more* **Specify Bosch**

Five of a Thousand Endorsements

"...The Bosch Company make strong claims for this equipment, but after having tried it thoroughly I am of the opinion that they do not claim enough....I am using one-fourth less gasoline and am not troubled with carbon, overheating or ignition difficulties of any kind....with the present equipment it is a revelation and you could not buy mine back for several times its cost, if I could not replace it.
"E. U. GRAFF, Supt. of Schools, Omaha, Neb."

"...I would not take $100.00 for the outfit today if I could not buy another one. It has given me perfect satisfaction in every respect, and I can highly recommend it to any prospective purchasers. J. E. CAUDLE, Richmond, Va."

"...I can start easier on cool mornings than with any of the other systems and run smoother. There is greater elasticity to the engine, absolutely no overheating (in fact the water in the radiator has not once boiled since Bosch was installed) and can 'pick-up' from low speed without missing a 'shot.' This statement is hardly believable, but nevertheless absolutely true...
"J. F. BERGESCH, Lankershim, Cal."

"It is a pleasure for me to recommend your magneto to Ford owners...the motor will pull 100% better up hills and in bad places with a Bosch than it will on a coil. ...It took me only two and one-half hours to install it with the tools that came with the car.
"J. W. TRACY, Lansing, Mich."

"...I was obtaining from 12 to 15 miles before the change on a gallon of gas and have made from 20 to 22 miles after the change. The first trip was 240 miles and accomplished it on 12 gallons of gas. ...I have been able to take every hill on high speed. I used my Ford Dynamo for lighting and head lights and it gives light enough to satisfy anyone. I would like to let every Ford owner know the improvement that the Bosch Equipment makes...if the cost was double it would more than pay to install one...
"WILSON MARKS, New York."

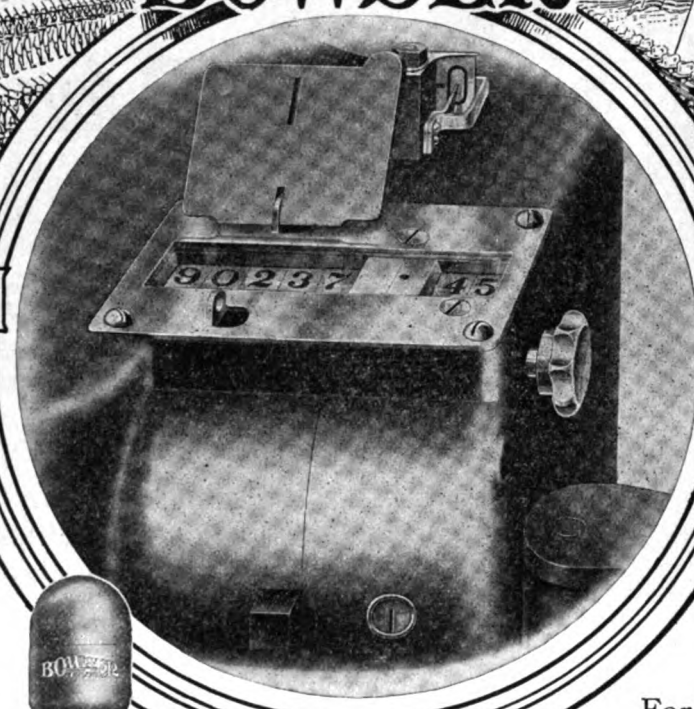
BOSCH MAGNETO COMPANY, 224 West 46th St., New York

CHICAGO DETROIT *Over 300 Service Stations Back Up Bosch Users* **SAN FRANCISCO TORONTO**

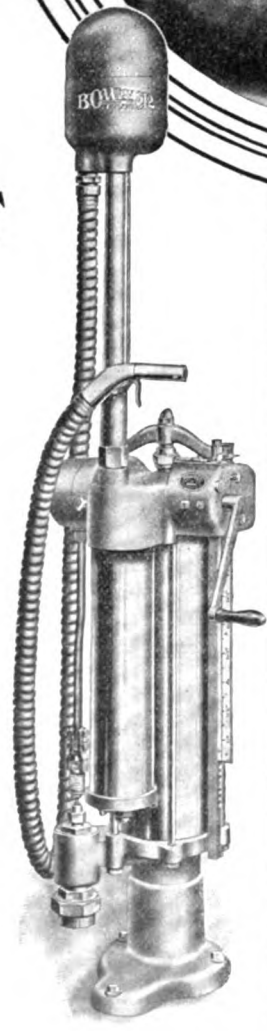
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BOWSER
ESTABLISHED 1885

SYSTEM



WILL PROTECT YOU



For inside use or installation in protected locations you can't beat this "Red Chief" Gasolene Outfit. Pumps, filters and accurately measures five gallons at a stroke—or you can set it for any intermediate quantity as low as a quart.

It faithfully records every bit of gasolene drawn from your tank and no matter how many around your garage, use this pump you are protected against waste, spillage, theft or other losses.

It's especially adapted for use where there are a number of cars to be filled each day—all at about the same time—as with fleets of commercial trucks, etc.

We make storage tanks in all sizes for under or above-ground and portable use, with inside or outdoor pumps suitable for handling volatile or non-volatile fluids of all kinds.

S. F. BOWSER & COMPANY, Inc.

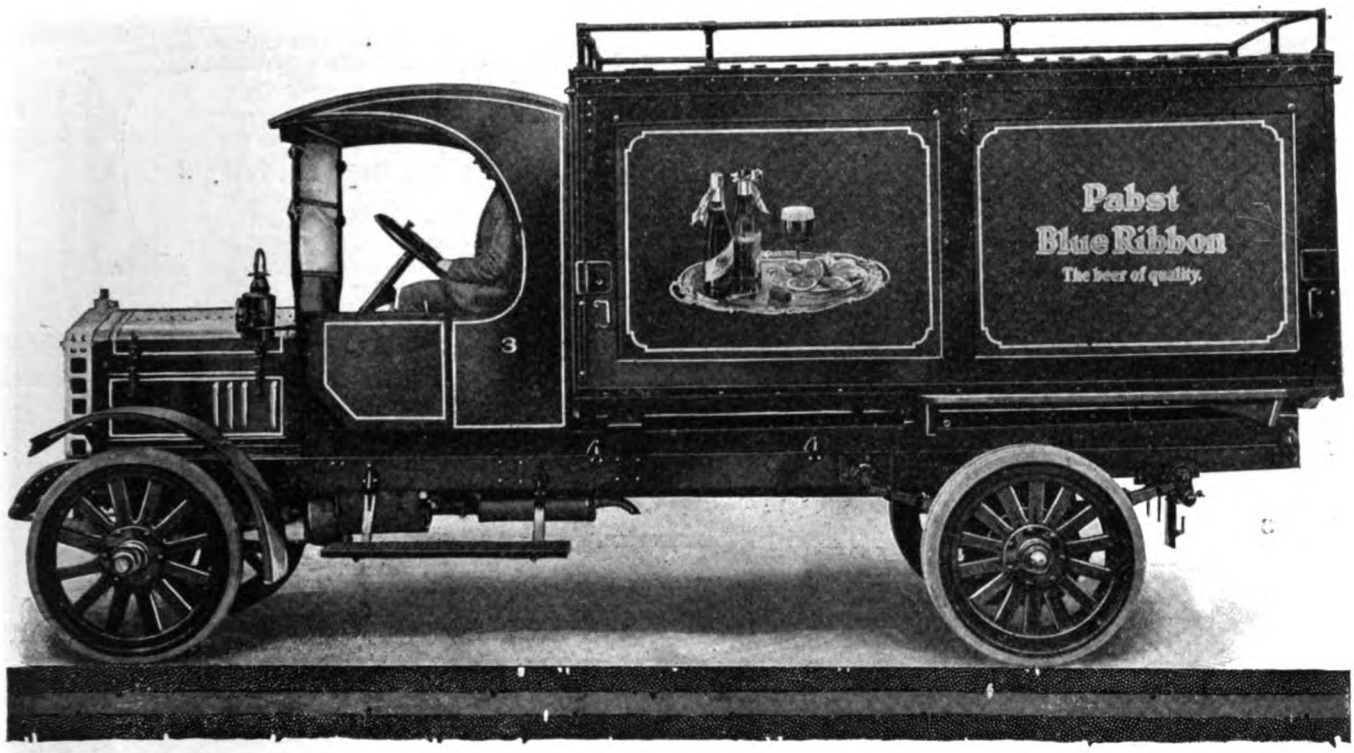
Engineers and Manufacturers of Oil-Handling Devices

FORT WAYNE, INDIANA, U.S.A.

Sales Offices in all Centers and Representatives Everywhere

G-15

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Why The Pabst Brewing Company Uses Sterling Trucks

PABST'S—one of the largest breweries in the Country and of world wide reputation—uses Sterling Trucks. Here is an organization able to buy the best of everything. Price isn't the big feature with them. They demand the most in quality for the money spent—the basis on which every highly efficient organization or individual buys.

Before they bought, the Pabst Brewing Company made a thorough investigation of trucks. They found one truck in the field that predominated in quality—the Sterling offered them greater truck value than any other make. And now they own a Sterling fleet—have standardized Sterlings.

You can sell more trucks this year, and every year, if you handle the Sterling Line. Sterling Trucks are simpler—over 300 parts have been eliminated in their construction. They cost less to operate and less for maintenance. They're built to stand up to the daily grind of rough roads and heavy loads—built for hard work and long life. Five sizes—¾ to 5-ton, worm-drive; 7-ton chain drive.

Write today for open territory. Prices, terms, full information about the Sterling selling plan on request.

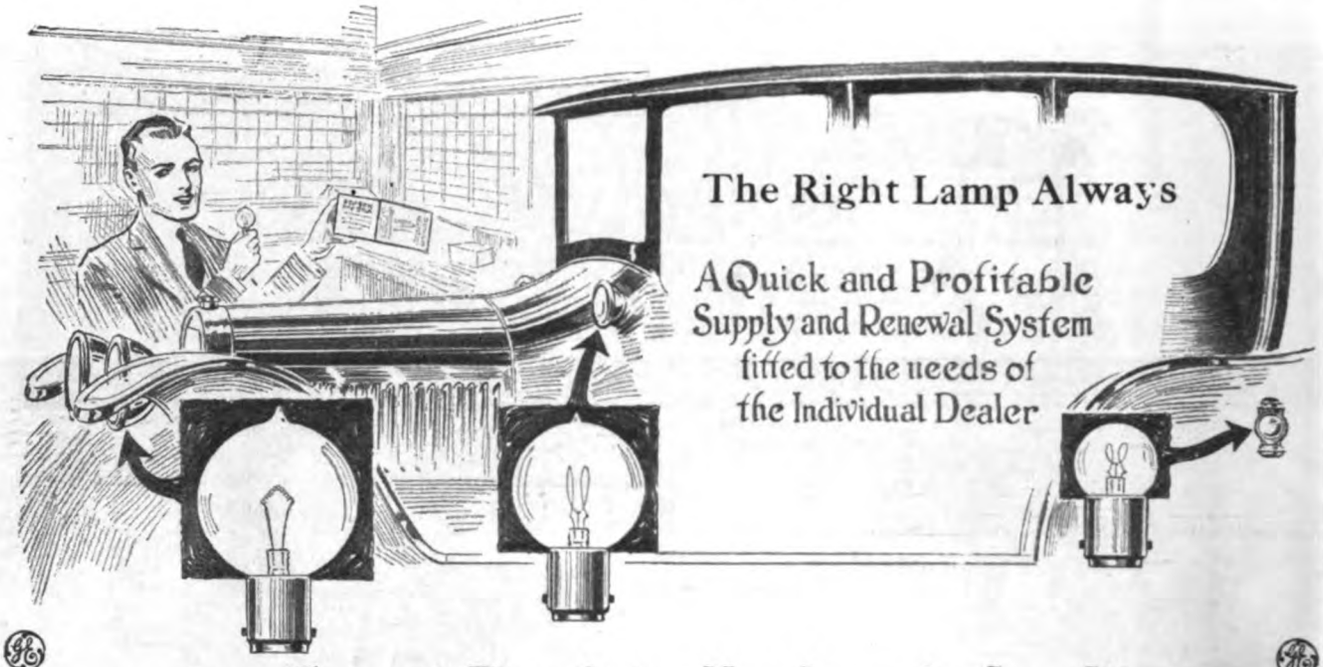


STERLING MOTOR TRUCK COMPANY

BUILDERS OF MOTOR TRUCKS EXCLUSIVELY FOR NINE YEARS

780 Rogers St., Milwaukee Wis.

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and a Good Profit all along the line

FOR the price of a good tire you can put on your counter our Automobile Lamp Assortment containing enough selected sizes and types of lamps to supply the **right** lamps to practically every automobile owner in your locality.

Our booklet lists the proper lamps for all electrically lighted cars so your clerk can't make a mistake. Better still, our new lamp chest makes it easy for you to sell six lamps instead of one to every driver. From the Assortment stock you select the proper head, side, rear and meter lamps and pack them in the lamp chest. With it the car owner is insured against **any** lighting emergency.

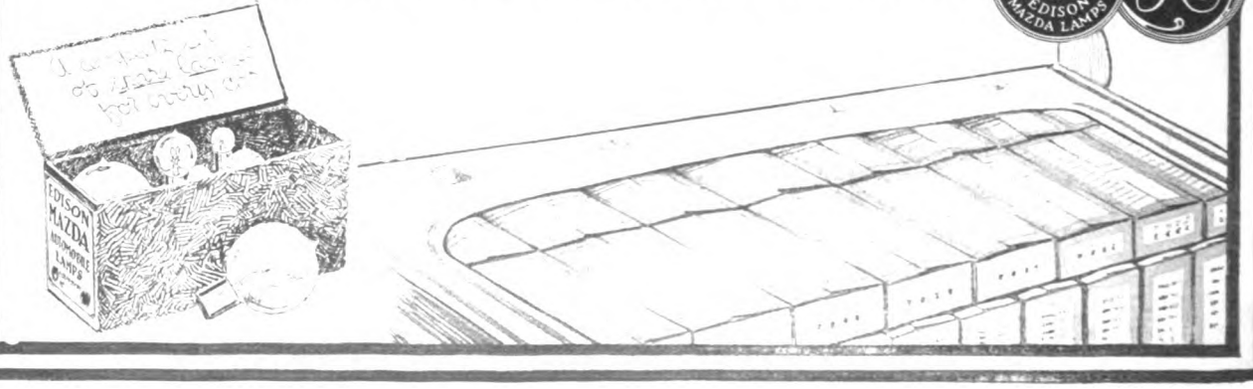
Write today for our money-making dealer proposition. Be the **first** in your locality.

EDISON LAMP WORKS
OF GENERAL ELECTRIC COMPANY
HARRISON, N. J.

EDISON MAZDA

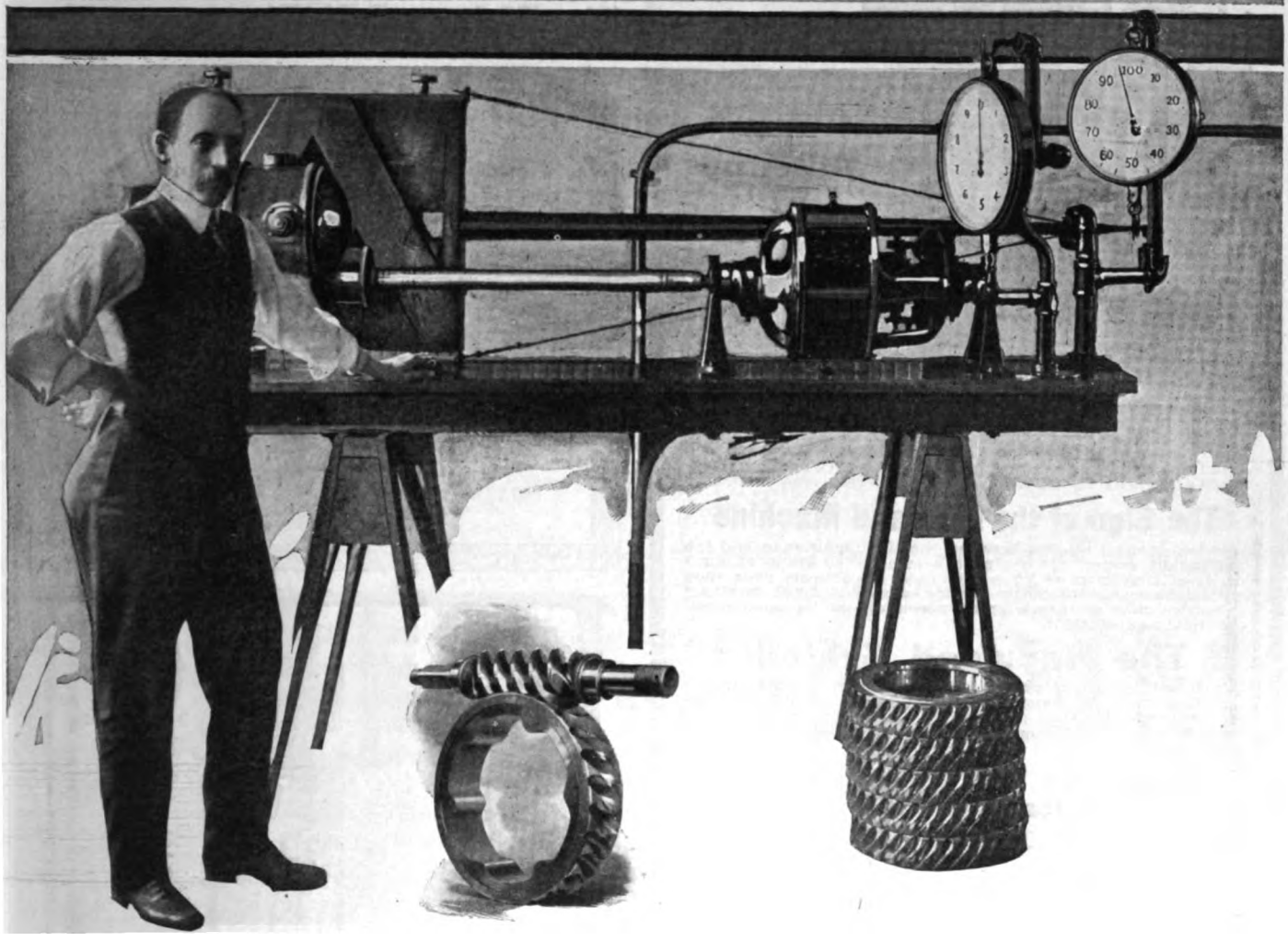
6614

Auto Lamp Chest and Auto Lamp Assortment



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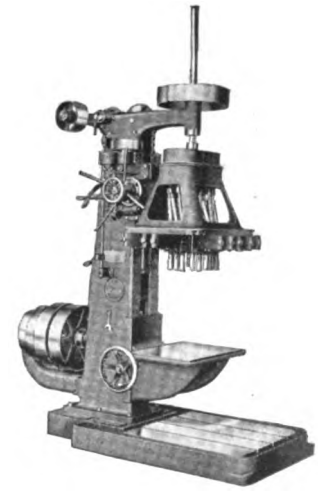
BAUSH
WORM DRIVE



Extreme accuracy in manufacture is one of the essentials of satisfactory worm gear performance. In cutting Baush Worm Gears many of the worm surfaces are held accurate within a ten-thousandth of an inch.

With these slight permissible variations it is necessary to check our machine work with extremely sensitive micrometers. Not only do we employ micrometers, but these micrometers are frequently inspected so as to be certain that the machining operations are held within the specified limits.

Not only are Baush Worm Gears produced by special machines particularly adapted to this work, but these machines are handled by specialists who make worm gears day after day—worm gears and nothing else.



We are also manufacturers of Multiple Spindle Drills, Radial Drills, Lassiter Stay Bolt and Bolt Turning Machines.

BAUSH MACHINE TOOL CO.

Springfield, Mass.

When writing advertisers please mention Motor World

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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.
1042 N. Capitol Ave., Indianapolis, Ind.

Haywood Tire & Equipment Co.,
1042 N. Capitol Ave., Indianapolis, Ind.

Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

Name .....

Address .....

.....

Quality, Service, Price

—are the distinguishing features of our methods, as well as our output.
Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.
Years of steady, unremitting effort have concentrated in

VULCAN QUALITY

SPRINGS a Quality of material and workmanship seldom equalled.
Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.
Our determination to divide fairly with dealer and consumer alike has fixed our prices at the lowest level commensurate with good business practice.

Write us today for liberal proposition in territory still open.

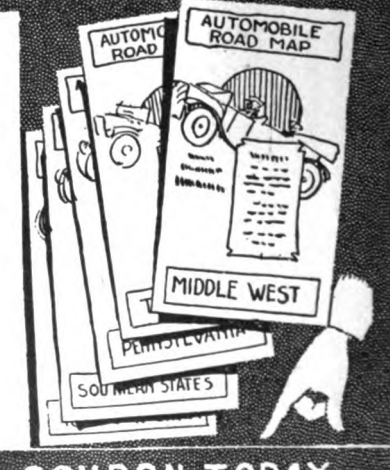
Jenkins Vulcan Spring Co.
1402 Chestnut St., St. Louis, Mo.
708 Commerce St., Fort Worth, Texas
29 Caldwell St., Sumter, S. C.



FREE ROAD MAPS

Check Maps desired and mail to

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Dept. 1879
Frick Annex
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MAIL THIS COUPON TODAY

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- ☐ Pennsylvania
- ☐ Texas
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Name .....
City ..... State .....

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A STYLE FOR EVERY BUSINESS

International **Motor Trucks,** in three sizes, 1000, 1500 and 2000 lbs. capacity, are now furnished in styles to meet the needs of every business.. Two or four cylinder motors; chain drive, or shaft; solid tires or pneumatic; high wheels for country road driving or low wheels for work on city streets; any desired style or size of body—all the advantages which a great organization give are at the service of International Motor Truck purchasers.

New Models—Attractive Prices

M—1000 lbs. capacity, complete with express body..... $710
E—1500 lbs. capacity, complete with express body..... 950
H—1500 lbs. capacity, internal gear drive (chassis)..... 1225
F—2000 lbs. capacity, internal gear drive (chassis)..... 1500

Any model can be equipped with pneumatic tires for $50 more than the above prices. All prices are cash f.o.b. factory.

International Motor Trucks may be seen at any one of the 87 completely equipped service branches scattered throughout the United States. This network of gratifying service has contributed not a little to the popularity and success of the International. Write for catalogue and any special information you may desire.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
155 Harvester Building (INCORPORATED) Chicago U S A



METHOD OF MOUNTING

TWIN-RIM

PATENTED FEB., 1916

A Demountable Rim for FORD CARS

AND ALL OTHER 30″x3½″ OR 30″x3″ CLINCHER RIMS

IN CASE OF TIRE TROUBLE the Twin-Rim with inflated tire is placed beside the damaged tire, the four bolts tightened and you are ready to run again. Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is "They would not be without the TWIN-RIM."

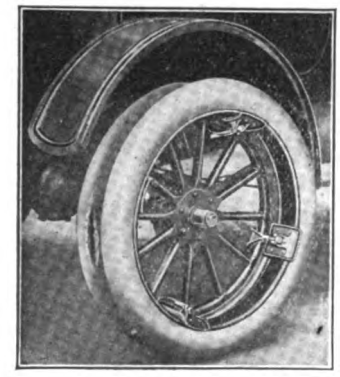
You Don't Have to Remove Damaged Tires

It is strong and durable; looks well on your car. Fits either front or rear wheels. An absolute necessity for Doctors, Salesmen, Tourists, Taxicabs and Deliveries.

TWIN-RIM $5.00
SPECIAL TIRE HOLDER FOR $2.00

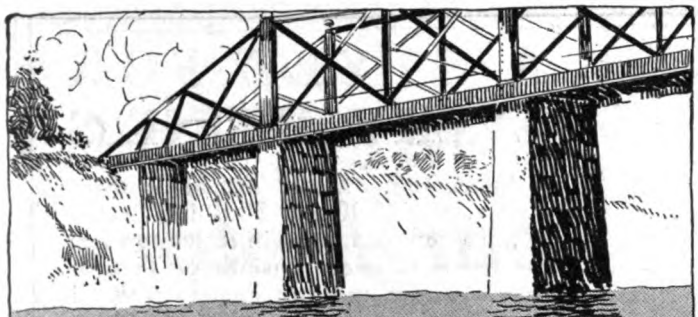
DEALERS—Through our advertising campaign we are reaching the Ford Car Owners all over the United States. Get your share of this business. Write now for our dealer proposition.

TWIN-RIM CO., INC.
103 Massachusetts Avenue Boston, Mass.



MOUNTED READY TO RUN

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Built Sturdy as a Bridge

W & C Double Arm Shock Absorbers are built **with the same exacting care and consideration** for the widest margin of safety as the heavy girders of steel bridges.

W & C is invariably the choice of Ford owners who know most about shock absorbers. A prominent physician in a western city wrote us he had tried 5 different makes of shock absorbers on his Ford car without satisfaction. No sooner had he equipped with W & C Absorbers than he wrote us that at last he had discovered the **ultimate** shock absorber for Fords.

W & C

Original Double Arm

SHOCK ABSORBERS

FOR FORDS

Regardless of how many different makes of shock absorbers you have used, if you have never tried W & C you have never tried the best quality and easiest-riding shock absorber on the market.

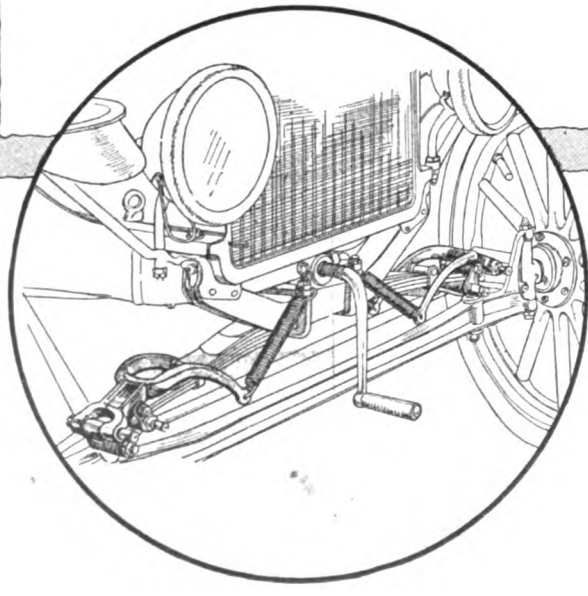
Every part entering the construction of W & C Shock Absorbers is guaranteed. Double arms, malleable castings, milled surfaces, hard oilers, steel bolts, bronze bushings and special alloy springs are guaranteed. At $10 per set of four, the W & C leads its class. Ask your dealer for full particulars, or write us direct.

Dealers: Here is the best constructed, handsomest and fastest selling shock absorbers for Fords—without exception. Every set you sell convinces five new customers. Wire or write for proposition today.

Manufactured by

PHILIP H. WEBBER & COMPANY

HOOPESTON, ILLINOIS





Wash Your Car

with this brush, which cleanses instantly the most delicate surface without a scratch or mark.

No sponge needed and your chamois lasts three times as long.

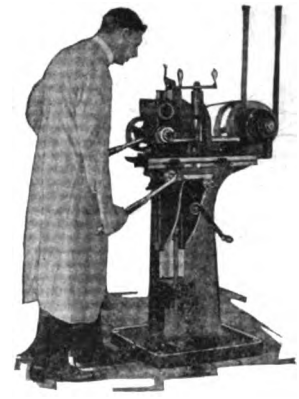
Attach it to ordinary garden hose and it is ready for instant service. Spray, stream or heavy flow, as desired, right through the brush.

Especially good for rinsing wire wheels.

Price, $3.50 complete, including extra handy grease brush of stiff bristles.

Mack Manufacturing Co.

Harrisburg *Penna.*



Here's What You Need in Your Garage or Repair Shop

because it is an all-around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling where small cutters and high speeds are necessary.

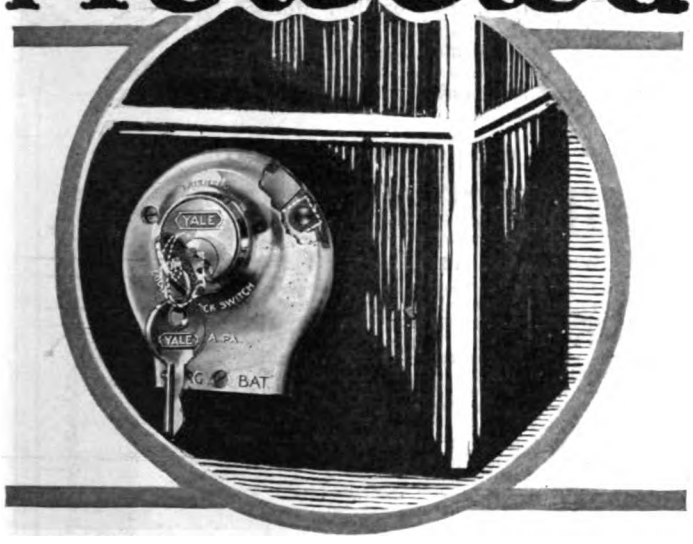
Simply drop a postal for our Miller Bulletin.

The Whitney Mfg. Co. Hartford, Conn.

Chains—Keys—Hand Milling Machines.

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Protected



A Lock Switch which can be removed, picked or bridged by a thief is as bad as no lock at all. Protect your Ford against theft with a

GOODRICH AUTO SWITCH

With Yale Lock ***FOR FORDS***

Many thousands in use. So constructed that the most clever thief cannot pick or remove it. When locked, metal shutters inside the switch completely cover the deeply sunk screw heads by which the switch is attached to the metal coil box, making it absolutely impossible to remove. Each switch equipped with an Unpickable YALE lock. Your key [illegible] that will fit it. Easily attached by any one in five minutes.

PRICE COMPLETE, $3.25

Dealers: Write for discounts.

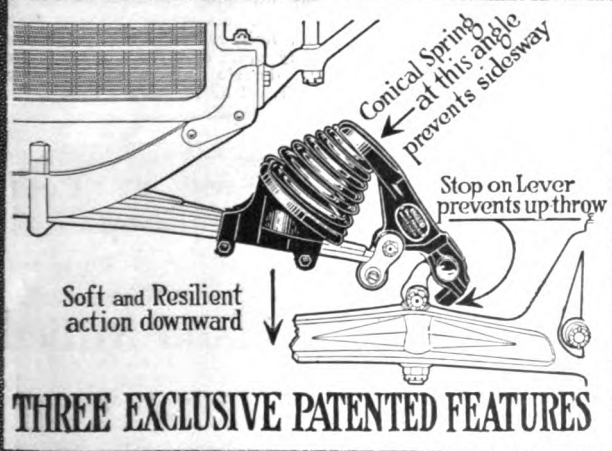
GOODRICH ACCESSORY ASSOCIATION

Widener Bldg., Philadelphia, Penna.

HASSLER

Shock Absorber

For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

Meet Your Motor Half Way!

Any good motor will give you what you want if you give it what it needs.

Not one of its needs is more vitally important than a sure, dependable, red-hot spark—the kind that guarantees complete, rapid combustion—the kind the motor always gets, at any speed, from the

EISEMANN MAGNETO

The test of a Magneto is its low speed efficiency—the quick pick-up, the responsiveness of the motor. The superiority of Eisemann Ignition is as apparent at low speed as at high.

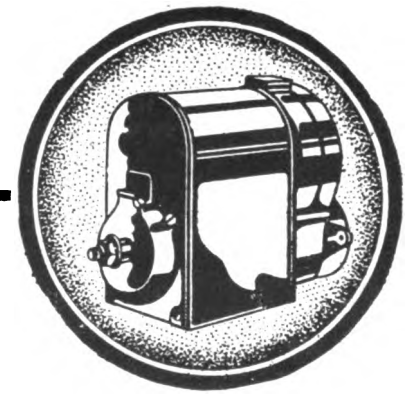
Durable
Dependable
Powerful

EISEMANN MAGNETOS are made in a range of types and sizes to meet every requirement of gas or gasoline engines.

THE EISEMANN MAGNETO CO.

Sales and General Offices:
32-33rd Street, Brooklyn, N. Y.

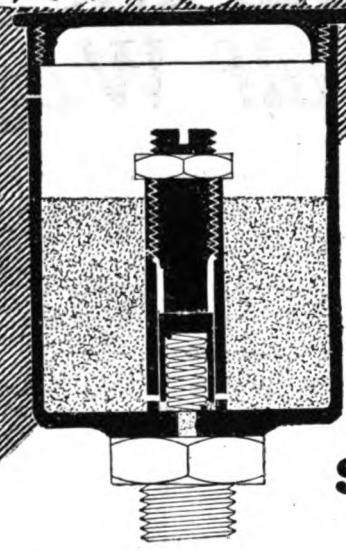
Indianapolis, Ind., 415-417 N. Capitol Ave.
Detroit, Mich., 802 Woodward Ave.



Type G-4

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The Auto Graphite Lubricator



$6

To Energetic Dealers and Distributors—

Here is your opportunity to build up a new, profitable, high-class trade, selling The Auto Graphite Lubricator. This device employs dry Motor Graphite as its lubricating medium and is a radical departure from former less efficient methods of lubricating motor cylinders. For years the value of dry graphite as a lubricant has been known throughout the engineering profession, but no method heretofore existed for its use in cylinder lubrication.

The Auto Graphite Lubricator is attached to the intake manifold and the graphite is automatically fed into the cylinders. Dry Graphite withstands a higher temperature than any other known lubricant and as a result it provides a permanent coating on cylinder walls, piston rings and valves, preventing carbon from adhering, building up compression and saving fuel.

The Auto Graphite Lubricator is not a fly-by-night device, but fills a definite need on the part of every motorist. It is being advertised to retail at $6, allowing you a substantial margin of profit. In addition we offer you a well-defined, business-building co-operative service. We want live representatives in every town—so get in touch with us today.

The Graphite Lubricator Co.
328 Diamond Street, Pittsburgh, Pa.

The Largest Gasoline Cars in the World are fired by Splitdorf Plugs

The 300-H. P., self-propelled, McKeen gasoline rail cars are used for most difficult service in Austraiia, Mexico and the United States. The high efficiency of these great gasoline cars is another testimonial for the

SPLITDORF SPARK PLUG

With the Green Hexagonal Jacket

Ninety per cent. of all engine troubles are due to faulty ignition. Seventy-five per cent. of them can be remedied at once and forever by the use of Splitdorf Plugs.

These plugs are practically indestructible, positively gas and oil tight. They are as nearly soot-proof as a plug can be. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned.

Made in all sizes and in types to suit every car, motorcycle, motor truck, motor boat, aeroplane, tractor, and stationary gasoline motor. Write for Splitdorf Directory which tells which plug to use in *your* motor.

Splitdorf Plugs sell for one dollar everywhere. If you can't get them from your dealer, send to us for them.

Splitdorf Electrical Co.
Newark, New Jersey



PITTSFIELD TIMERS

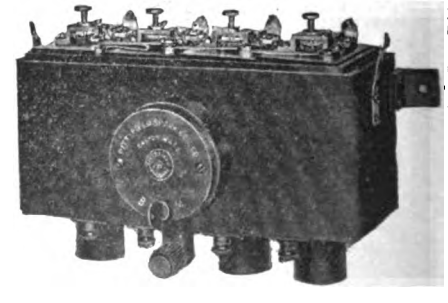
Do Not Lie!



Their Established Reputation for Accuracy was not gained by chance; it is due to carefully selected materials, skilled workmanship, and perfection of design. *Double ball bearings* prevent wobbling; *grooved roller*, with sharp edges, cuts grease and gets positive contact; *tight contact lever* prevents unnecessary wear; *dust proof* cover protects. Strong, durable and reliable, they save your engine's reputation, often smirched by inaccurate timers.

PITTSFIELD Spark Coils



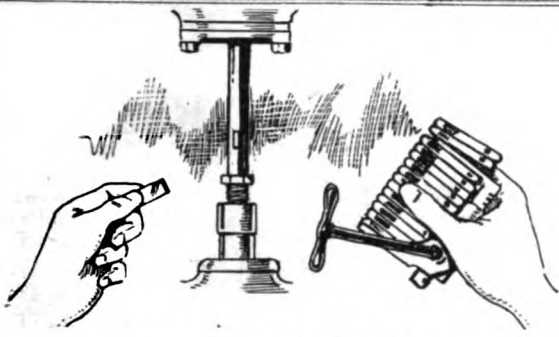


by continued tests and long service under severe working conditions, have demonstrated their *absolute reliability*. Produce a hot, flaming spark, with minimum current consumption, and so increase *the life of your battery*. Switches *never short-circuit*. Greatest frequency vibrators, with positive make and break at all times.

PITTSFIELD SPARK COIL CO.
Pittsfield, Massachusetts

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STEVENS & CO. NEW YORK



Bryant Valve Spring Remover

is designed to accomplish easily the removal of valve springs in all motors. Operated with key (as shown above), it can be used on motors where the valve springs are hard to get at.

THE BRYANT TOOL handles the springs quickly and surely, does not slip—and

It holds the spring compressed, and makes it easy to get it back in position again.

From your jobber, or from

STEVENS & CO.
375 Broadway, New York City

MANUFACTURERS OF
Automobile Parts & Accessories

Save Time and Temper



K.P. UNIVERSAL RIM TOOL

FOR ALL TRANSVERSELY SPLIT RIMS

Mr. Dealer, here's the perfect rim tool for opening or closing all transversely Split Rims. Makes tire changing both quick and easy. Collapses the rim no matter how badly the tire may be stuck, and forces the rim back onto the tire with utmost ease even with undersize tires.

UNIVERSAL FITTING

The K. P. fits all sizes and types of cross-cut rims. Baker, Stanweld, Kelsey, Detroit, any make whatever, for straight side or clincher—it makes child's play of them all.

EASY TO SELL

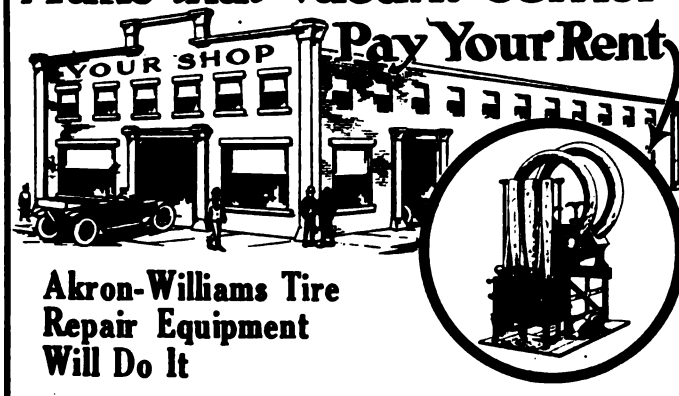
Over a million cars in use today are equipped with transversely split rims, and every car owner with a car so equipped needs a K. P.—the first really practical tire tool on the market.

A national advertising campaign is under way. Get ready to get your share of the business that is sure to develop. Send in your trial order today for a dozen tools.

Price $2.00—Dealers Discounts *Generous*

THE K. P. MFG. CO., Inc.
254 West 54th Street, New York City
Makers of K. P. Foot Rest Heater, K. P. Universal Rim Tool and other specialties soon to be announced

Make that Vacant Corner Pay Your Rent



Akron-Williams Tire Repair Equipment Will Do It

CAR owners in your neighborhood are spending thousands of dollars every year for tire repairs. Every motorist who enters your doors is anxious and willing to have his tires repaired—kept in the best of condition, till the last bit of mileage has been taken out. He'll gladly give you the business if he knows you have the best and most practical equipment.

AKRON-WILLIAMS Tire Repair Outfits

Used and endorsed by 60 leading Tire Manufacturers (Names furnished on request)

Akron-Williams Tire Repair Equipment is used by more than 90 per cent of the leading Tire Manufacturers in their factories and branches; it is recommended and sold by them to their dealers. Could there be any higher proof of its superiority over all others?

Your Success is Assured

We don't sell you an Akron-Williams Outfit and leave you to work out your own salvation. We help you get started on a paying basis; we supply you with forms for business letterheads—stationery and envelopes—printed matter and merchandising plans that bring the business your way—that assure big success from the *very start*.

Write For New Booklet 45 Just Published

It gives you facts and figures on the Tire Repairing Business; shows you how an Akron-Williams Outfit brings more customers—means bigger business and bigger profits for you on all kinds of automobile supplies. Don't delay—grasp this opportunity—write for booklet at once.

THE WILLIAMS FOUNDRY & MACHINE CO.
45 CHERRY STREET AKRON, OHIO

Exclusive Distributors for California
THE WATERHOUSE & LESTER CO., SAN FRANCISCO

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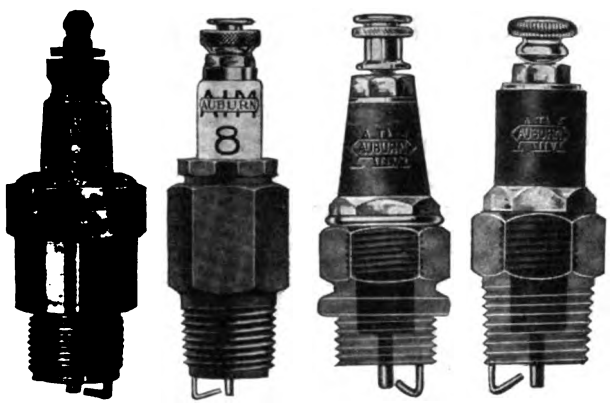
SPARK PLUGS AIM AUBURN REG. U.S. PAT. VALVE LIFTERS

LOOK FOR THE AIM BEHIND THE NAME

AUBURN VALVE LIFTER

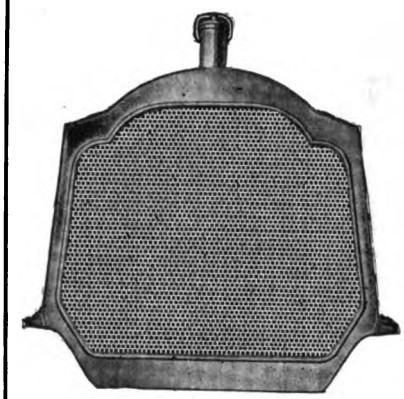


Price 75 Cents Each



BLAZER	AUBURN	AUBURN	AUBURN
Proite Insulation	Porcelain	Motorcycle	Mica
Price $1.00	75 Cents	Price $1.00	Price $1.00

Auburn Ignition Mfg. Co.
Auburn, N. Y., U. S. A.



Fedders Radiators

Fedders quality is largely the result of 18 years' specializing in radiator production.

Fedders Manufacturing Co.
Buffalo New York

Gould STORAGE BATTERY

***The* Strong Right Arm *of a* Starting-Lighting System**

GOULD STORAGE BATTERY CO.
General Offices, 30 E. 42nd St., New York
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NEW YORK CITY

SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

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Managing Director

CYLINDER REGRINDING and PISTONS FOR ALL MAKE MOTORS

Butler's Semi Cast Iron Light Weight High Efficiency Pistons

Give Light Weight the Great Motor Improvement with Close Clearance
Special Price on Ford Pistons
Standard Cast Iron Pistons of Improved Design and Engineering
Butler's Special Alloy Pistons are a Proven Quality
Strictly high class work and material

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MARTIN TIRE COVERS

Will fit any tire on any bracket on any car

An easily attached, water, dust, and mud-proof cover for tires with or without demountable rim. Made of selected high grade leather cloth. In all sizes and four styles. Send for literature.

The Martin Bucket holds a gallon, stows under seat cushions or can be rolled and carried in your pocket.

Sent prepaid for 50 cents.

Send for liberal proposition for Jobbers and Dealers.



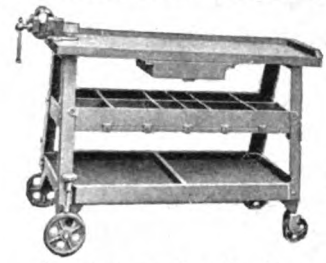
The Martin Manufacturing Co.
Lancaster, Ohio.

Russel
Internal Gear Drive Axles

Let us send you the history of the Internal Gear Drive Axle and tell you how the RUSSEL has been a big factor in its success.



RUSSEL MOTOR AXLE COMPANY North Detroit Michigan



MANLEY "QUICK ACTION" PORTABLE BENCH

Are you moving the big car to your workbench or are you moving the light, portable Manley bench to your car?

By using this "Quick Action" bench you can finish a job in the time it takes to move the car.

This bench is specially made to hold exactly the tools needed. Wheels can be locked, making bench immovable when using vise. It is just the right size to slip between cars and get anywhere in the place easily, quickly and conveniently. It is invaluable when tearing down a car, to keep all parts together.

A glance at this illustration tells you where the right tools are kept, convenient to the hand at all times.

A convenience no garage should be without, it is sold at a price to justify its purchase for any shop.

Top 13x44 inches. Height, 33 inches.
Bottom width 22 inches.
Price, $27.50; with vise, $31.50.

The United Engine & Mfg. Co.
"Pioneers in Garage Equipment"
Hanover, Penn.

THE Manley SHOP AND GARAGE EQUIPMENT

SPARTON
Safety Signals

Have the far-reaching call for country roads—the quick, snappy shriek for city traffic. Use the Sparton on your car



Model "F"
$4.00

Finish in satin black and nickel or all black.

The Sparks-Withington Co.
Jackson Michigan

RAJAH TERMINALS

For Ignition, Starting, Lighting Systems



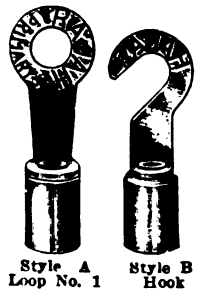
Ferrule Clip (¾ Actual Size)

CLIP

Ferrule Clip furnished to fit any wire up to ½" in diameter.

Wing Clip for quick attachment any size cable.

Collars supplied with Clip Terminals to use with any plug.



Style A Loop No. 1 Style B Hook
(Actual Size)

PRIMARY

Style "A" made in 3 lengths from the bend of the Ferrule, ½", 11/16" and 13/16".

Style "B"—1 size only.

Primary with ferrules same as Ferrule Clip.

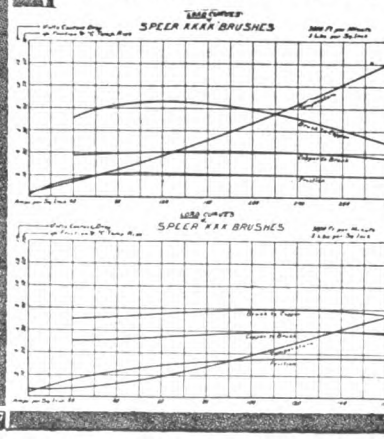
RAJAH AUTO-SUPPLY CO., Bloomfield, N. J.
John Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver

HIGH CONDUCTIVITY BRUSHES

SPEER Composition-Metallic Brushes have compelled recognition of a carrying capacity far above the limits of carbons and graphites with the minimum of brush and commutator wear.

Our grades KKK and KKKK have a range between 6 and 40 volts and are capable of 110 and 150 amperes respectively per square inch.

Grade Metal B is composed almost wholly of metal and represents the highest attainment in the production of a composition-metallic brush. This brush stands alone in the sphere of electric starters and is capable of current densities as high as 200 amperes on continuous load and will take care of 100 per cent overloads on intermittent service.



These brushes are a necessary factor in obtaining the highest efficiency in generators and motors for high speeds and high current densities.

Speer Carbon Co.
St. Marys, Pa.

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EVAPCO GAS SAVER

35 to 50% Gasoline
Saving Guaranteed

EVAPCO MANUFACTURING CO.
427 Grand River Ave. Detroit, Mich.

LONG HORN
INVENTED BY G. P. LONG
Always Warns

The ONE perfectly made—the highest priced mechanical horn. Pleases user and *doubly* satisfies dealer. $5 Retail. Send for our new 1916 Sales Plan.

G. P. Muffler Cut-Out
"Tells the Motor's Secrets"

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Long Island City, N. Y.

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Our Literature on Request.



STANDARD For FORDS

Used as factory equipment on Ford cars until a short time ago, and fully indorsed by the Ford Motor Company's engineers. Built on the tried and tested centrifugal system which does not alter. Hand steady as a rock at all speeds.

Guaranteed country-wide service assures your lasting satisfaction. Dealers, write for proposition.

List, $12

Standard Thermometer Co.
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Empire Tires
RED WEAR LONGEST

Longest Mileage — Longest Profit
The first and only all red tire
Write for Special Proposition
EMPIRE RUBBER & TIRE CO., Trenton, N. J.

*Hartford
SHOCK ABSORBER
Makes every Road a Boulevard



EDWARD V. HARTFORD, Inc.
Heretofore Known as Hartford Suspension Co.
142 Morgan St., Jersey City, N.J.
Branches New York, Boston, Chicago
Distributors in Principal Cities, Dealers everywhere

SHELDON

MAKERS OF SPRINGS & AXLES FOR OVER FIFTY YEARS

"Clero Horns"
is the other name for
"Dealer Profit"

Every live dealer in this country realizes that the only successful business is a profitable business.

We want to aid in making your business more profitable—and ***we can do it.***

Clero Horns are manufactured by a big organization with unexcelled facilities for putting highest quality into large production, and thereby ***insuring*** low list prices, liberal discounts—and consequent good profits. We want every dealer who handles accessories to write us at once. We will send our irresistible profit making proposition by return mail.

Don't put it off until a later time, but write for our "AA" dealer proposition ***at once.***

Most Liberal and Liveable Discounts to the Trade

THE FITZGERALD MANUFACTURING CO.
Department C **Torrington, Conn.**

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ALMACO

SPECIAL ALLOY ALMACO BEST BY TEST

Aluminum Alloy Pistons and Connecting Rods "Makes a four Run Like a Six"



Any size for any make of car

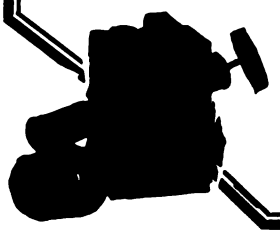
ALMACO Pistons weigh only one-third as much as the cast iron or steel pistons now on cars you repair and practically eliminate carbonization. The highest grade and most efficient pistons and connecting rods on the market. Stand up under hardest tests. Complete stock on hand for all leading makes of cars. Others built to order on short notice.

A lasting test is a fair trial. Ask your jobber. *Write for descriptive literature, liberal discounts and prices. Manufactured by*

Aluminum Manufacturing Co., Des Moines, Iowa

WONDER-MIST

For Cleaning Automobile Bodies



Garagemen find it cheaper to use than soap and water—cheaper and infinitely more satisfactory to their customers.

THE WONDER-MIST CO.

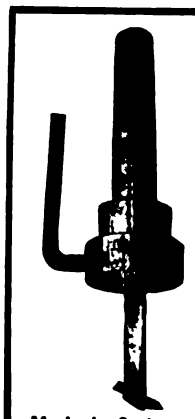
General Offices, 14 Federal St., Boston, Mass.
New York Office, 1789 Broadway.
Chicago Office, 162 No. Dearborn St.

Swinehart Tires

The established reputation of SWINEHART TIRES is responsible for their demand which will not be affected by the pleas or promises made for other tires.

Write for our agency proposition

SWINEHART TIRE & RUBBER CO.
AKRON, OHIO



Made in 2 sizes any shape

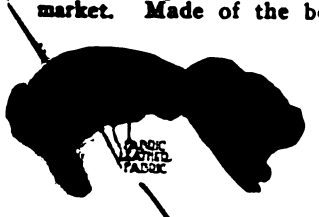
Let Us Ship You This Tool on 30 Days Trial

Think of it. This low-priced "Simpl" Adjustable Boring Tool will bore any hole from ¼ to 5½ inches. Start your trial today. Out of the hundreds we have sent out—only one has been returned. Send it back at our expense if you are not entirely satisfied. Write for Bulletin No. 14.

ALLEN & CURTISS CO.
"SIMPL" TOOLS
445-447 S. MAIN ST.
MISHAWAKA, IND.

The Hampton Blowout Patch Is Guaranteed To Hold

You can guarantee any HAMPTON Blowout Patch to hold and become part of the tire it repairs, at our risk. The quickest and easiest selling patch on the market. Made of the best materials, by superior workmen. Holds like vulcanizing. Sells at the right price. Write for full details and discounts for big Spring and Summer profits.



Hampton-Campbell Co.
Indianapolis Indiana



For Samples, Prices and Catalog, Address

THE WARNER AUTO TOP CO.
1640-1644 Central Avenue
Cincinnati, O.



ZENITH CARBURETOR

KNOWN the world over as the zenith of simplicity and efficiency.

A precision instrument giving permanently, exact carburetion for your car.

Zenith Carburetor Co.
Detroit, Mich.

Add to Garage Profits by Oxy-Acetylene Welding

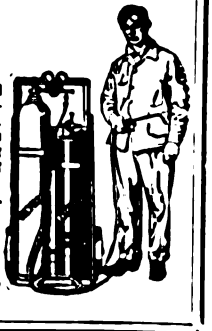
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Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high-grade welding apparatus for $60.00 (Canada, $75.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



THE PREST-O-LITE CO., Inc.
The World's Largest Makers of Dissolved Acetylene
287 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario

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$740 PULLMAN MOTOR CARS $990

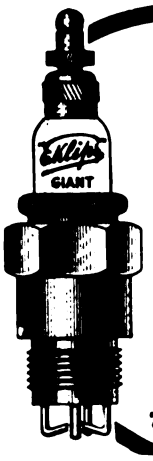
THE new Coupe De Luxe with C-H Magnetic Gear Shift, built and beautifully finished primarily for women, is a splendid example of the products of the Pullman factory. ($990)

Pullman cars are attainable in a Five Passenger Touring model, a Three Passenger or Clover Leaf Roadster model, and a Two Passenger Roadster—all on one standard chassis (114-inch w.b.) at $740.

Good territory for this fast selling line is still open to live dealers. Write for our proposition.

The Pullman Motor Car Co., York, Pa.

Established 1903



"Eklips" SPARK PLUGS

Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

Write for full description, prices and discounts.

THE FULTON CO.

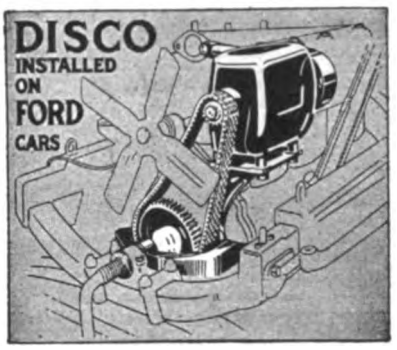
72 1-23 National Ave. Milwaukee, Wis.

National REDWALL Speedway Type TIRES



30 x 3	Non-Skid	$12.05
30 x 3½	Non-Skid	15.60
32 x 3½	Non-Skid	17.95
33 x 4	Non-Skid	25.65
34 x 4	Non-Skid	26.20
36 x 4½	Non-Skid	36.95

National Rubber Co., Pottstown, Pa.



ELECTRIC
STARTING AND LIGHTING SYSTEM
FOR FORD CARS

The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system, simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

$75 Complete

Dealers Write for Agency

DISCO ELECTRIC STARTER CORPORATION
Detroit, U. S. A.

HYATT Roller Bearings

HORN and FAN Combined



Oakes Gets the Roads

No gears, motor, batteries or wires to give trouble. Gives warning signal by merely pushing the button at driver's seat. Increases efficiency of fan and motor. Keeps radiator cool. Never fails to sound. Long life. Is easily interchangeable with fan on any Ford in a minute's time. Most reliable and safest horn. Write for dealer's proposition.

Also Oakes Kranklock 50c. and $1.00

The OAKES COMPANY
Dept. A Indianapolis



Combination Tires

The "Hold-On" Tread

are as superior in quality to ordinary tires, as the Combination liberal sales policy is superior to the "cut and dried" ordinary selling policy under which the ordinary tires are sold.

Get the exclusive territory proposition.

The Combination Rubber Mfg. Co.

Manufacturers of High-grade Rubber Products for 50 Years

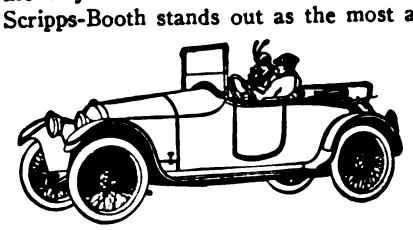
Trade Mark

BLOOMFIELD, NEW JERSEY

Write or Wire for Particulars Regarding Our Proposition

SCRIPPS-BOOTH

Luxurious light cars which in their first season have found the way into America's and Europe's most refined society. Scripps-Booth stands out as the most attractive motor car in the roadster class. A car of beauty, possessing comfort heretofore unknown in a motor car. Roadster $825 — Coupe $1450. Dealers wanted.



Scripps-Booth Company
Detroit, Mich.

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FOSTER OWL LIGHT

NOW ONLY $5



A Necessary Safeguard—Not a Novelty

Ordinances compelling the dimming of headlights make the OWL Light today an indispensable part of every up-to-date car's equipment.

No motorist who values the safety of his car or the safety of others can afford to be without an OWL Light at the new price—$5. One night smashup or accident averted—and the OWL Light has paid for itself.

Consider that the new OWL Light at the new price is in many respects a more powerful, if not a more handsomely finished searchlight than the $7.50 model which last year set the quality standard in the searchlight field.

Constantly increasing demand, coupled with a resultant increase in production, make possible the reduction in price to $5.

Send for FREE Booklet illustrating many different uses for the OWL Light

The OWL Light adds to the appearance of any make of car. By means of its clean-cut, positive action swivel the OWL Light *stays* in any position you put it. *This patented FOSTER Universal Swivel cannot be obtained on any other searchlight.* Look for this exclusive feature—demand it. OWL Lights can be obtained from the highest-grade dealers everywhere.

In ordering, state make and model of car, also battery voltage.

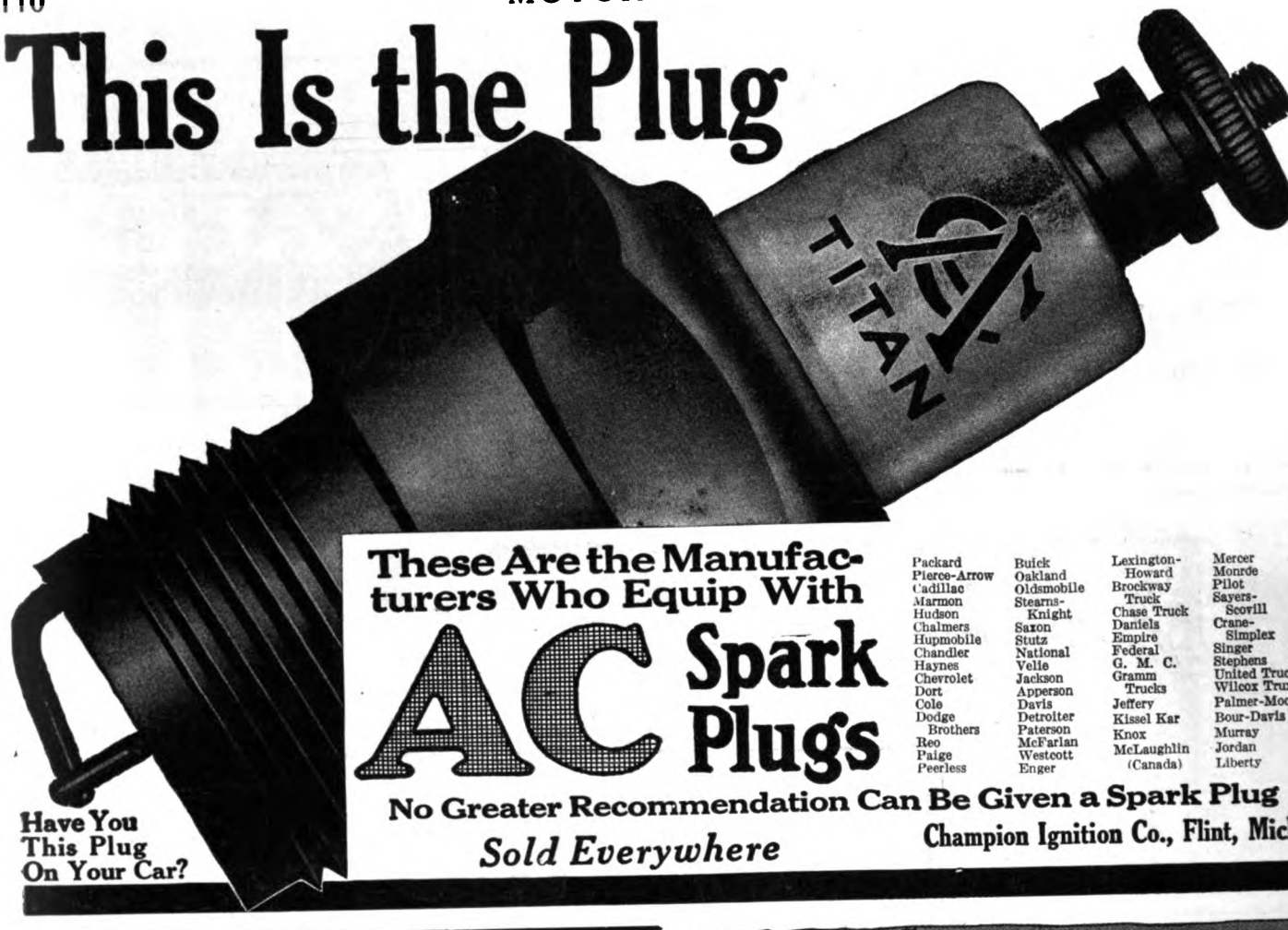
DEALERS: The OWL Light is the pioneer quality searchlight. The demand for it at the new price has quadrupled. Wire or write for interesting proposition today.

C. H. FOSTER ACCESSORIES COMPANY

2303 Michigan Ave. **Chicago, Illinois**

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This Is the Plug



Have You This Plug On Your Car?

These Are the Manufacturers Who Equip With

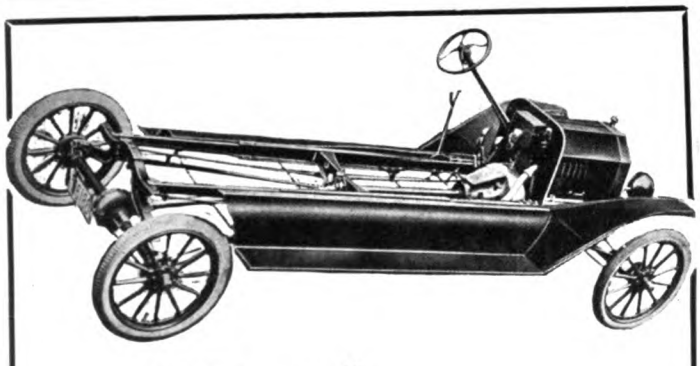
AC Spark Plugs

Packard	Buick	Lexington-Howard	Mercer
Pierce-Arrow	Oakland	Brockway Truck	Monrde
Cadillac	Oldsmobile	Chase Truck	Pilot
Marmon	Stearns-Knight	Daniels	Sayers-Scovill
Hudson	Saxon	Empire	Crane-Simplex
Chalmers	Stutz	Federal	Singer
Hupmobile	National	G. M. C.	Stephens
Chandler	Velie	Gramm Trucks	United Truck
Haynes	Jackson	Jeffery	Wilcox Trux
Chevrolet	Apperson	Kissel Kar	Palmer-Moore
Dort	Davis	Knox	Bour-Davis
Cole	Detroiter	McLaughlin (Canada)	Murray
Dodge Brothers	Paterson		Jordan
Reo	McFarlan		Liberty
Paige	Westcott		
Peerless	Enger		

No Greater Recommendation Can Be Given a Spark Plug

Sold Everywhere

Champion Ignition Co., Flint, Mich.



"Forbes" System

Patent Pending

A LONGER CHASSIS
A STRONGER CHASSIS
A BETTER CHASSIS

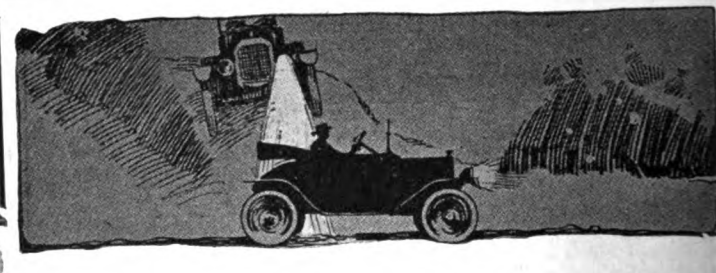
results from applying the "Forbes" system to Ford cars, lengthening the chassis for commercial purposes without reducing the simplicity and efficiency of the original construction.

The "Forbes" system is an addition to, not an alteration of the chassis. Each side of the Frame is trussed throughout its entire length, brackets for ends of truss rods clamp to frame, making unnecessary any additional holes in frame.

We use only the highest grade material obtainable and positively guarantee results.

We have a very interesting proposition for distributors. Send for it today.

WALTER J. FORBES 243 COLUMBUS AVE. BOSTON, MASS.



A Safe, Certain, Bright Light at Slow Speeds for FORDS

The VAN SICKLEN Concentrator assures such a light at slowest engine speed, when you need it most.

At 5 m. p. h., 10 m. p. h. or 15 m. p. h. with a VAN SICKLEN Concentrator you always have sufficient light for every driving purpose. $2.00—the price of the Concentrator—is a very small price to pay for so necessary a convenience.

$2



VAN SICKLEN AUTOMATIC **HEAD LIGHT CONCENTRATOR FOR FORD CARS**

The VAN SICKLEN Concentrator at all speeds below 15 m.p.h. automatically disconnects the right headlight, shunting double current into the left headlight. At 10 m.p.h., for instance, the left headlight burns as brightly as it ordinarily would at 20 m.p.h. Above 15 m.p.h. the regular Ford 2-lamp system automatically re-asserts itself.

Price, $2.00 complete, ready to put right on. Easily installed. Full instructions with each order. Installed under hood on dash. Guaranteed not to injure magneto or bulb. Neat, compact, handsome.

Obtainable from most good dealers or sent prepaid direct upon receipt of price.

Dealers: Some desirable territory still open. Over 600,000 prospects. 40,000 sold in last two months. Wire or write.

The Van Sicklen Company
14 Chicago Street, Elgin, Illinois



Note simple installation

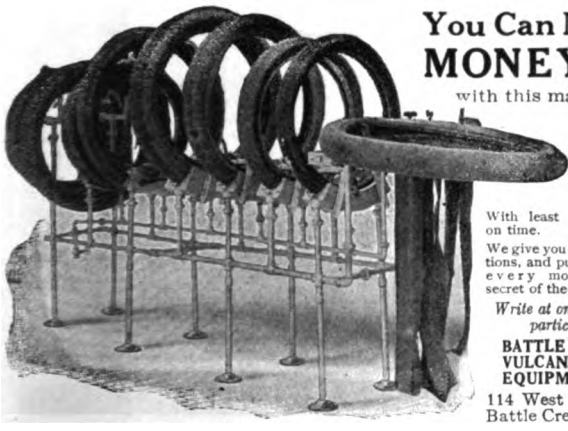
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You already know the quality of our 400

H-S Repair Parts
for the Ford Car

Send for our new list of H-S Repair Parts for Overland.

Hill-Smith Metal Goods Company
88 Pearl Street, corner High Street
Boston, Mass.



You Can Make MONEY
with this machine—

Guaranteed to be the best Vulcanizer on the market.

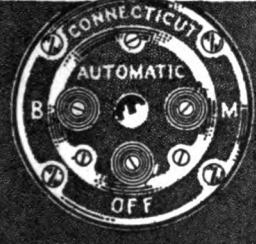
With least Fuel. Sold on time.

We give you free instructions, and put you on to every money-making secret of the trade.

Write at once for full particulars.

BATTLE CREEK VULCANIZING EQUIPMENT CO.
114 West Main St.
Battle Creek, Mich.

AUTOMATIC · IGNITION
CONNECTICUT



Gives the most effective spark at every speed for four, six or eight cylinder motors.

Delivers hottest spark at low speeds and a better spark than the magneto at high speed.

Connecticut Telephone & Electric Company, Inc.
Meriden, Conn., U. S. A.

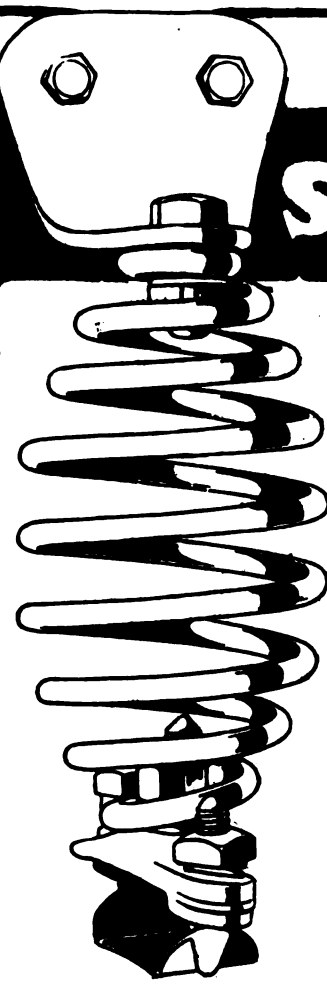
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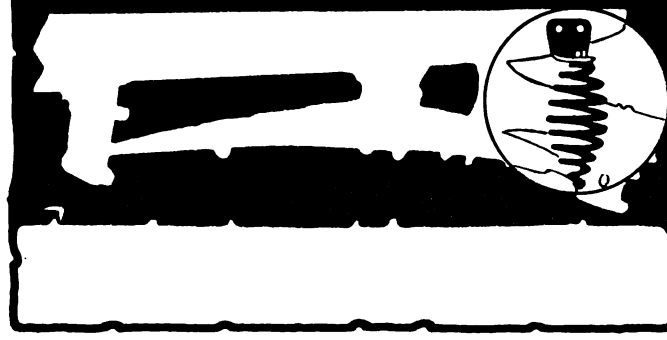
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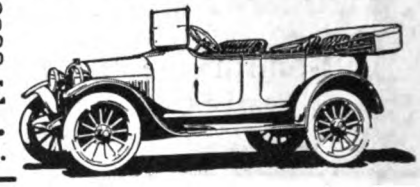
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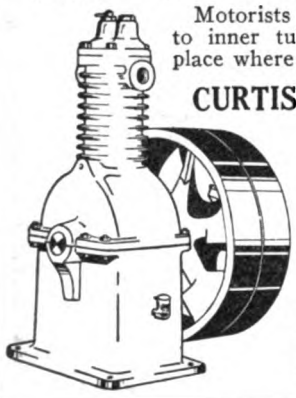
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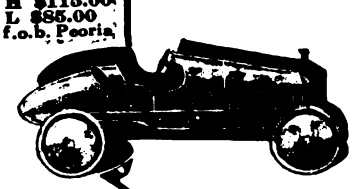
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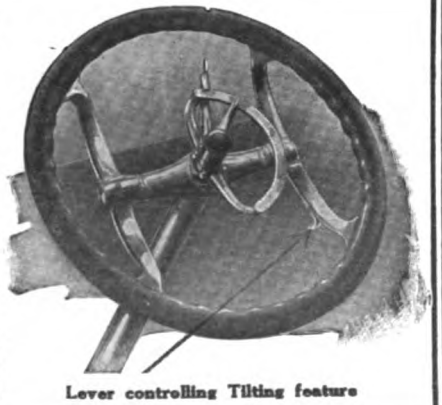
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32x4	12.55	13.40	35x4½	18.55	19.45
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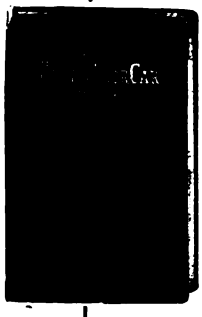
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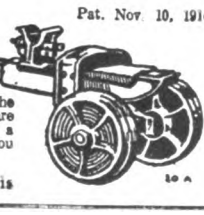
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STOCKED BY ALL JOBBERS

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HOLMES Wrecking Truck

Pat. Nov. 10, 1914



ROBERT HOLMES & BROS., Danville, Illinois

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It's poor policy to risk repeating the annoyance of a broken or weak spring—and the delay—by saving only a very little in buying or selling a *cheaper* spring instead of a "NEW ERA *BETTER* SPRING." Don't replace a broken spring with one no better. Wise dealers sell only the best. New Era "BETTER" Springs are the oldest and largest used line for replacement—at same price as from car factories. Made for all cars. GUARANTEED one year against breakage or sagging, graphited between leaves for two years' lubrication. Write for complete lists, discounts—or state requirements and class of business.



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Permanently repairs the leak in any radiator or cooling system without clogging the system—Our Guarantee

A Demonstration proves a mend in water jacket will stand 250 lbs. air pressure—we can prove it—only one tablespoonful necessary.



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of Commercial Bodies and Trailers is Complete

For whatever line of business you desire a commercial body for Ford, or Maxwell chassis, you will find the right model in the PARRY Line. Parry Commercial Bodies are built to give *service in users' hands.*

The same high grade materials and conscientious workmanship goes into the Parry Line of Two and Four Wheel Trailers.

Every automobile dealer should have the Parry Catalog F, describing these attractive models. It points a way for greater profits to you.

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The World's Largest Carriage Factory
310 Parry Avenue Indianapolis, Ind.

Facilities to make prompt deliveries and 35 years of knowing how.

Advertisers' Index

A

Adamson Mfg. Co. 57
Ahlberg Bearing Co. 121
Allen & Curtiss Co. 107
Aluminum Mfg. Co. 107
American Ball Bearing Co. 84
Ames Co., F. A. 66-67
Atwater Kent Mfg. Works 85
Ajax Rubber Company 77
Allen Motor Car Co. 69
Auburn Ignition Mfg. Co. 104

B

Battle Creek Vulcanizing Eq. Co. 111
Bausch Machine Tool Co. 97
Benford Manufacturing Co. 2
Bosch Magneto Co. 93
Boston Blacking Co. 123
Bowser & Co., S. F. 94
Brown-Lipe-Chapin Co. 68
Brugan Co. 48
Buttler Mfg. Co. 104

C

Cassidy, E. A. ..... 106 and 58
Chalmers Motor Co. 124
Champion Ignition Co. 110
Chicago Auto Supply House 121
Combination Rubber Mfg. Co. 108
Connecticut Tel. & Elec. Co. 111
Craven Co., E. T. 121
Curtis Pneumatic Mchy. Co. 112

D

Detroit Auto Products Co. 64
Disco Electric Starter Corp. 108
Durkee-Atwood Co. 122

E

Elgin Motor Car Corp. 65
Elkhart Carriage & Motor Car Co. 113
Eisemann Magneto Co. 101
Empire Rubber & Tire Co. 106
Enger Motor Car Co. ..... 73 to 76
Evapo Mfg. Co. 106

F

Faw, J. H. 106
Fedders Mfg. Co. 104
Ferro Machine & Fdy. Co. 90
Firestone Tire & Rubber Co. 72
Fitzgerald Mfg. Co. 106
Forbes, W. J. 110
Ford Motor Co. 111
Foster Accessories Co. 109
Fried & Stonier Co. 112
Fulton Co. 108

G

General Asbestos & Rubber Co. 86
General Electric Co. 96
Gibson-Hollister Mfg. Co. 92
Goodrich Accessories Corp. 101
Goodrich, B. F. 81
Gould Storage Battery Co. 104
Graphite Lubricator Co. 102
Grossman Mfg. Co., Emil 121
Gulf Refining Co. 98

H

Hampton-Campbell Co. 107
Hartford, E. V. 106
Hassler, Inc., Robt. H. 101
Haywood Tire & Equip. Co. 98
Hill-Smith Metal Goods Co. 111
Holmes & Bros., Robt. 121
Hotel Marie Antoinette 104
Houk Mfg. Co. 104
Hudson Motor Car Co. ..... Front Cover
Hupp Motor Car Co. 62
Hyatt Roller Bearing Co. 108

I

International Harvester Co. of America 99
Inter-State Motor Co. 112

J

Jenkins Vulcan Spring Co. 98
Johns-Manville Co. 83
Jordan Motor Car Co. ..... 49 to 56

Digitized by Google

Advertisers' Index

K

K.-P. Manufacturing Co. ... 103

L

Laird & Lee ... 121
Lennon Manufacturing Co. ... Back Cover
Lusterall Co. ... 113

M

Mack Mfg. Co. ... 100
Martin Mfg. Co. ... 105
Michigan Auto Trailer Co. ... 121
Michelin Tire Co. ... 45
Mitchell Lewis Motor Co. ... 89
Mosler & Co., A. R. ... 112

N

National Lamp Works ... 70-71
National Rubber Co. ... 108
New Departure Mfg. Co. ... 112
New Era Spring & Specialty Co. ... 121
New Process Gear Corp. ... 112
N. J. Car Spring & Rubber Co. ... 121
Norma Co. of America ... 3

O

Oakes Co. ... 108
O-So-Ezy Products Co. ... 88

P

Parry Mfg. Co. ... 122
Pittsfield Spark Coil Co. ... 102
Prest-O-Lite Co. ... 107
Pullman Motor Car Co. ... 108

Q

Quaker City Rubber Co. ... 112

R

Rajah Auto Supply Co. ... 105
Rayford Co. ... 60-61
Russell Motor Axle Co. ... 105

S

Sager Co., J. H. ... 111
Scripps-Booth Co. ... 108
Shaler Co., C. A. ... 87
Sheldon Axle & Spring Co. ... 106
S. J. R. Motor Co. ... 121
Silvex Co. ... 121
Sparks-Withington Co. ... 105
Speer Carbon Co. ... 105
Splitdorf Electrical Co. ... 102
Standard Thermometer Co. ... 106
Standard Woven Fabric Co. ... 3rd Cover
Sterling Motor Truck Co. ... 95
Stevens & Co. ... 103
Stewart Motor Corporation ... 63
Stewart-Warner Speedometer Co. ... 2nd Cover
Stromberg Motor Devices Co. ... 78-79
Studebaker Corp. ...
Stutz Motor Car Co. ... 82
Svensgaard Sales Corp., H. ... 91
Swinehart Tire & Rubber Co. ... 107

T

Tay-Miller Mfg. Co. ... 123
Tireoid Company ... 59
Twin Rim Co. ... 99

U

United Eng. & Mfg. Co. ... 105

V

Van Sicklen Co. ... 110
Velie Motor Vehicle Co. ... 46-47

W

Warm Hand Steering Wheel Corp. ... 112
Warner Auto Top Co. ... 107
Webber & Co., P. H. ... 100
Whitney Mfg. Co. ... 100
Willys-Overland Co. ... 4
Wonder-Mist Co. ... 107
Willard Storage Battery Co. ... 80
Williams Foundry & Mach. Co. ... 103

Z

Zenith Carbureter Co. ... 107

Mr. Car Owner:

Keep your car looking new, by using

Be-Be-Co Shine Up Specialties

Be-Be-Co TRADE MARK

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Leather Top Dressing.	Nickel Polish.
Top Lining Dye	Body Polish.
Seat & Slip Cover Cleaner.	Motor Car Soap.
Cushion Dressing.	Tire Paint.
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Branch Factories:
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Branch offices and warerooms in all large cities.



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COMBINATION

WATER — SOAP — TOWEL

INDISPENSABLE TO THE

AUTOMOBILIST

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AT YOUR DEALER'S OR DIRECT **$1.00** Prepaid

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Quality First

Sales of Chalmers cars in New York City during the first five months of 1916 were $737,150 ahead of 1915 sales for the same period.

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MULTIBESTOS

THE GRIP THAT GRIPS



Wise Motorists drive "Safe in the Grip of Multibestos."

Others take a chance with "just brake lining."

Does it pay to gamble with something on which your life depends?

STANDARD WOVEN FABRIC CO.
FACTORIES
Framingham and Walpole,
Mass.

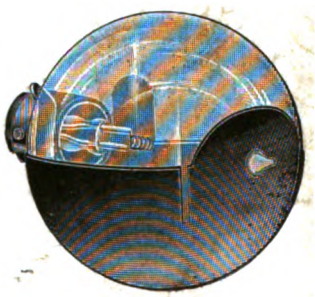
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U. S. Court Says—No Infringement

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The Lennon Light Protector

is a patented device which has been approved in all states where light regulation is required. It enables you to light the road, not the air. Made in two sizes, for 1½" and 2" bulbs. Retail price per pair, $1.00.

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MOTOR WORLD
for DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 4

New York, July 26, 1916

Ten cents a copy
Two dollars a year

SHAFT-DRIVE

Genemotor

Trade Mark

UNIVERSAL STARTING AND LIGHTING FOR THE FORD

In July or in December, at the seashore, in the mountains or on the boulevard, shaft-drive Genemotor adds 50 per cent to the satisfaction of owning and the pleasure of driving a Ford car.

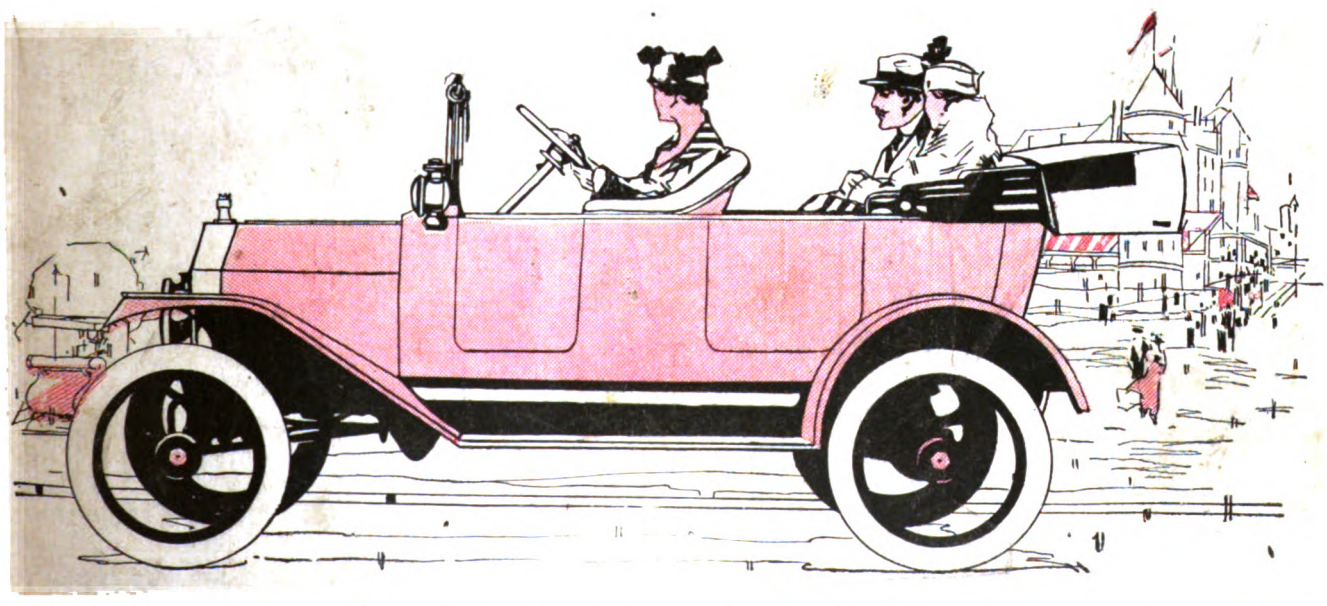
Genemotor is designed expressly for the Universal Car by the world's most noted electric motor specialists. It is a perfect match for the vanadium-built Ford in strength, lightness, and reliability. Simplified shaft-drive design cuts the weight and increases power. "U S L" Battery standard equipment.

Thousands in service. High-class dealers wanted in open territories.

Built by the General Electric Co.
Price $85 f.o.b. Lynn, Mass.
Sold Everywhere.

A. J. PICARD & COMPANY

General Distributors — 1720-1722 Broadway, New York



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Stewart

Motor Driven Tire Pump

Buy a Complete Car

Most good cars are now equipped with the Stewart Tire Pump before they leave the factory.

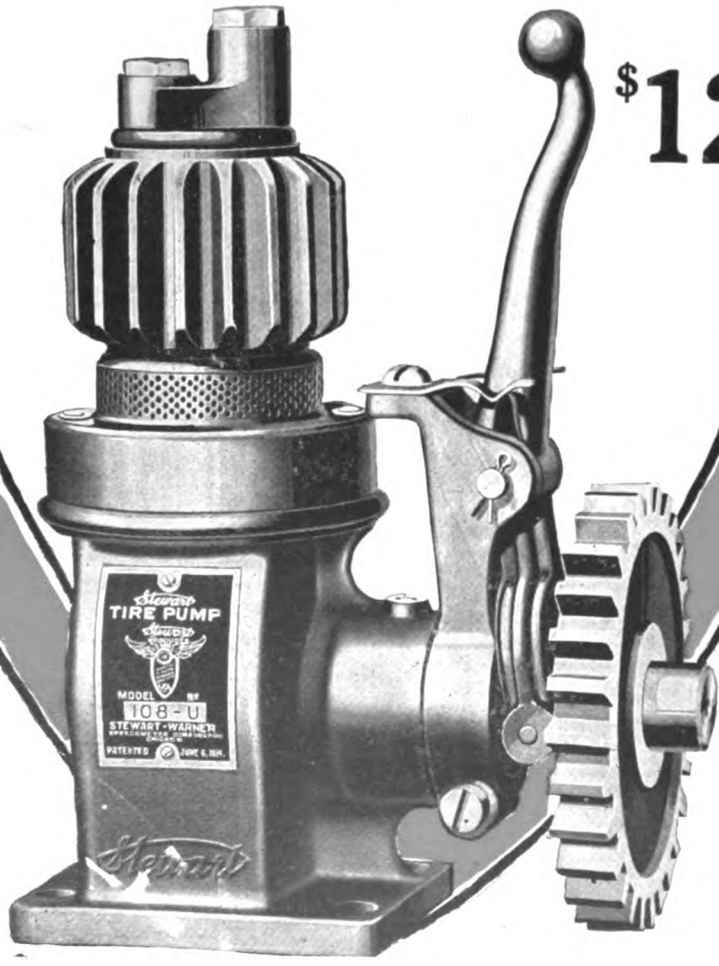
It's only a matter of time before all good cars will be.

A pump is more necessary and a greater advantage than any other accessory.

The Stewart Tire Pump is the best—and the most inexpensive.

"No car is better than its accessories"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

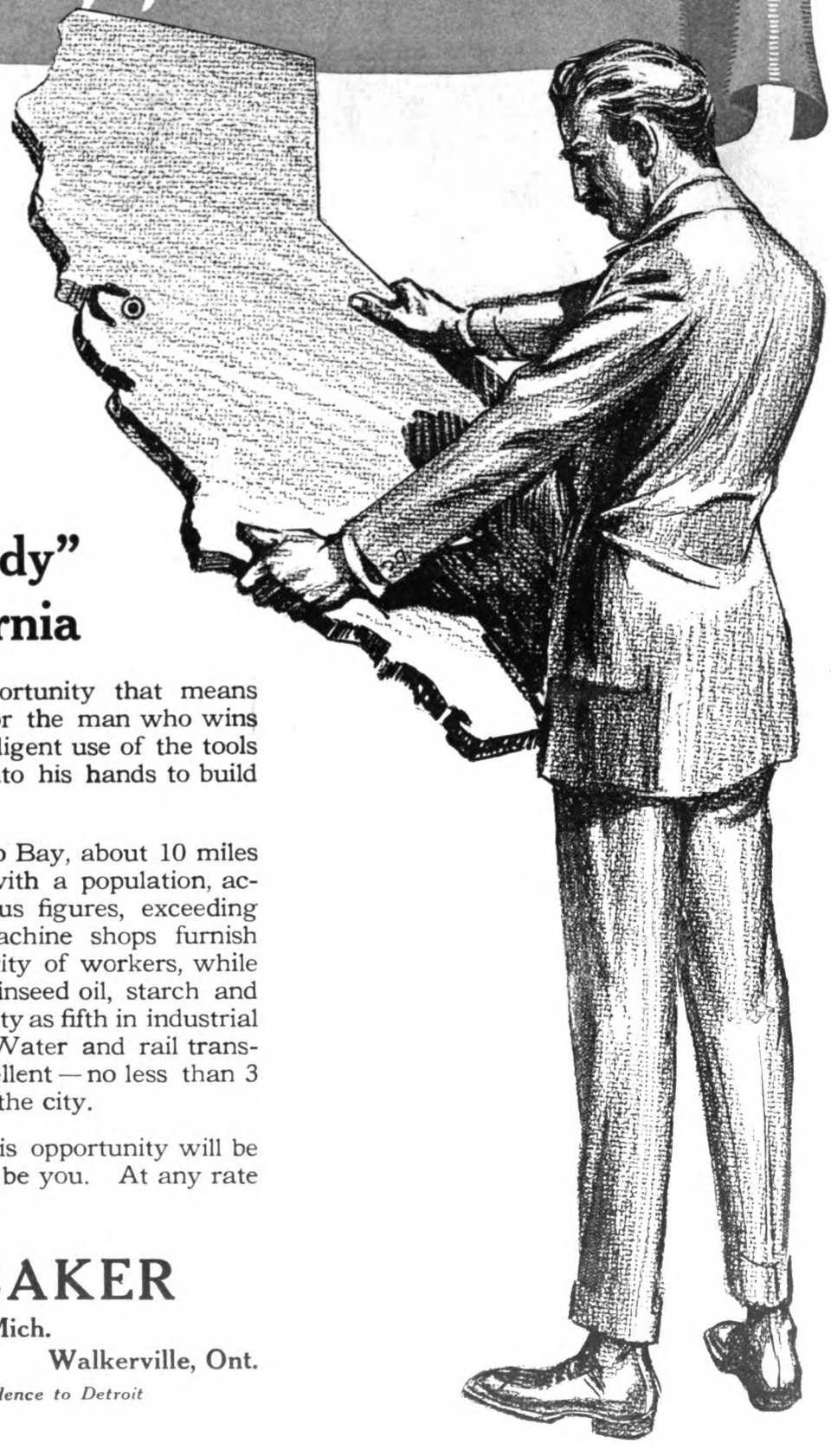


$12

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Studebaker

Opportunities



"I've got a dandy" —says California

IT'S the kind of an opportunity that means a lifetime of success for the man who wins it, and will make intelligent use of the tools that Studebaker will put into his hands to build up a permanent business.

There it is right on Frisco Bay, about 10 miles from the Exposition city, with a population, according to the latest census figures, exceeding 52,000. Foundry and machine shops furnish employment for the majority of workers, while the production of soaps, linseed oil, starch and fertilizers help to rank the city as fifth in industrial importance in the state. Water and rail transportation facilities are excellent — no less than 3 railroads passing through the city.

Before the month is out this opportunity will be awarded. Perhaps it will be you. At any rate write for the facts and see.

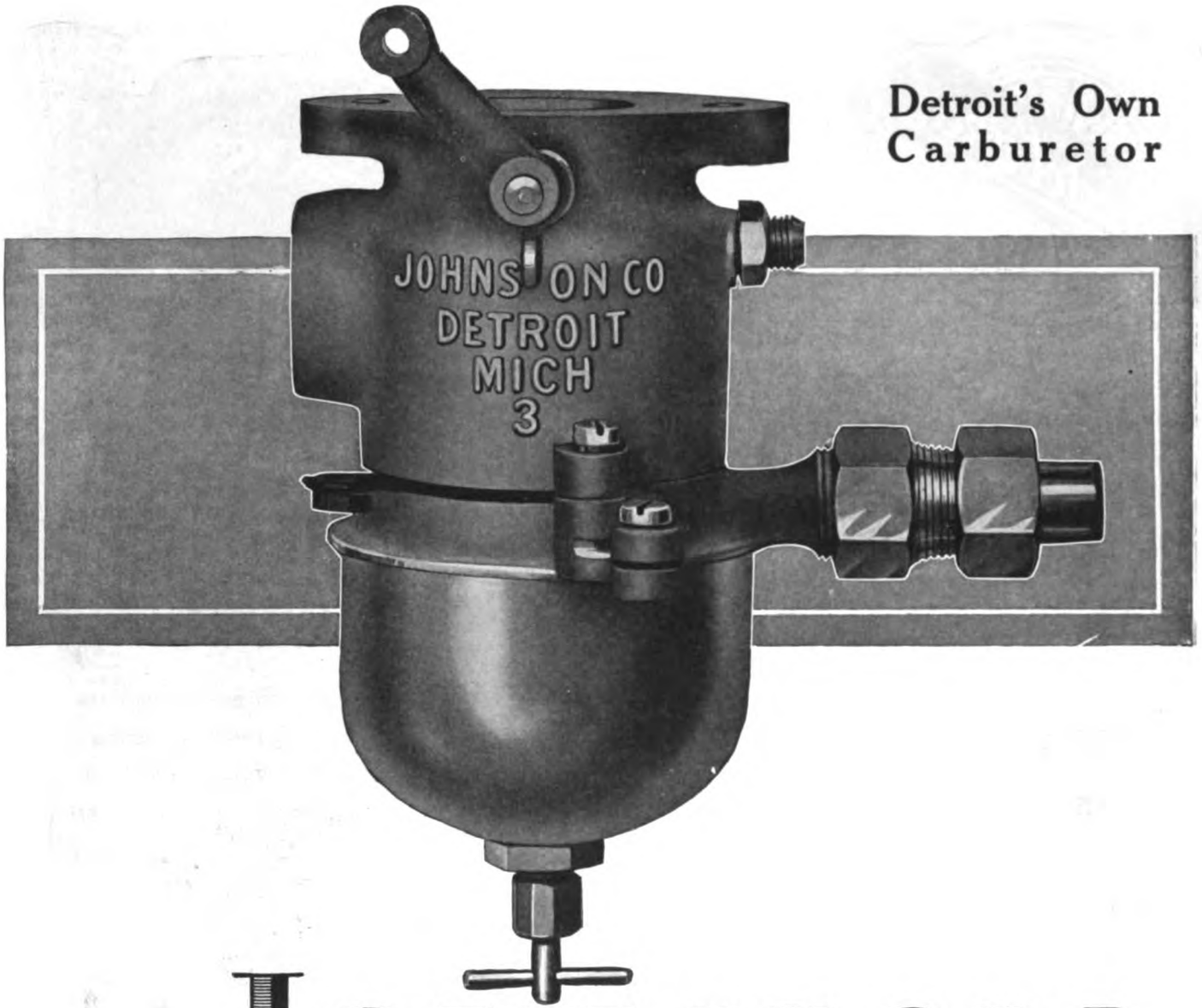
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JOHNSON CARBURETOR

Counts every drop of gasoline—and makes every drop count

JOHNSON COMPANY

Makers of Superfine Instruments of Carburetion

Detroit - - - - Michigan

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

The Tractor and the Dealer..... 6
This is the first of Motor World's stories on the tractor demonstrations that are being held in the West. Stanley P. McMinn of the Motor World staff is covering these events in person, and other stories will appear weekly. These describe the demonstrations, analyze problems and conditions and bring out the points pertinent to the different territories. This week's story tells how the motor car men are taking up with the tractor.

How the Demonstrations Are Conducted..... 7
Why Texas Needs the Farm Tractor..... 9
Hutchinson Demonstration Is On..... 37
To Standardize Tractor Ratings..... 37
New 1917 Cars—
Brown 13
Franklin 10-12
Monroe 34-35
National 14-15
Telling the Customer Why Prices Rise.....26-28
A Detroit garageman raised prices and made his customers understand why by use of a booklet. The booklet is described.
The Discount Pest..... 16
This story and the cartoon on page 5 touch upon a point that is vital in the dealer's business.
Motor World Guide.....42-43
Denver Dealer Opens Office in Detroit..... 38
Botterill does this to insure close contact with the factory without traveling expenses.
Jay Hall Leaves the Oldsmobile..... 38
St. Louis to Entertain Jobbers..... 39
Kelsey Wheel Interests Merged..... 36
News Pages.....36-44
Factory News.....40-41
Association News..... 39
Repairshop Short-Cuts.....18-19
Make the Answer Easy..... 17
Building Construction.....20-21
Query Department.....22-23
Accessories and Supplies.....24-25
Editorial Comment..... 29
Legal Department..... 30

Advertisers' Index on pages 108-109



It Tells You Things

—interesting things—things you would never have known otherwise, things that save money and greatly increase the pleasure of driving; and every statement it makes can be absolutely depended upon, because it tells only the truth. The

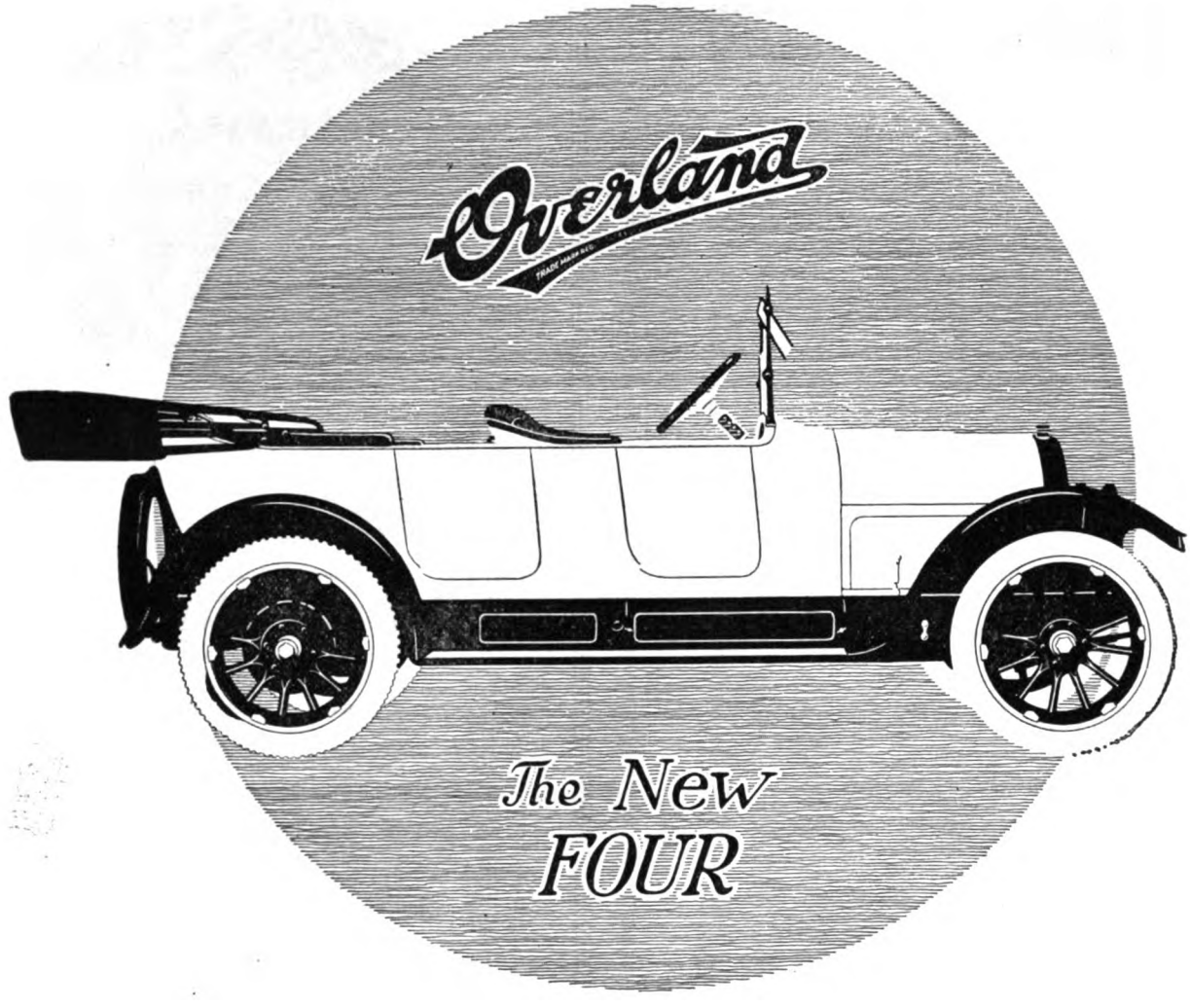
CORBIN-BROWN SPEEDOMETER
"The Speedometer of Absolute Accuracy"

is regarded by experts as a mechanical achievement. By automobilists it is regarded as a practical, valuable, standard part of their equipment. Its reputation is backed by accurate mileage and there are millions of miles behind it to support this reputation.

This is the speedometer for you to specify. Do so at once. It makes automobiling mean more. Catalog upon request.

THE CORBIN SCREW CORPORATION
THE AMERICAN HARDWARE CORPORATION, Successor
NEW BRITAIN, CONN.
BRANCHES: New York Chicago Philadelphia
Makers of Corbin Duplex Coaster Brakes for Bicycles

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What 1,000 Cars a Day Make Possible

This latest Overland development again emphasizes the enormous economy of enormous production.

No one has ever before made 1,000 a day of cars of this size and class—nor half that many.

1,000 cars a day enable us to use materials of a much higher quality and not only permit but actually enforce an accuracy of workmanship impossible with a smaller production of cars.

1,000 cars a day make possible better, larger, much more comfortable cars than have ever before been possible at anywhere near the price.

This newest Overland is the largest Four ever offered for so low a price.

Note the longer wheelbase—112 inches.

The famous Overland enbloc 35 horsepower motor is continued—but perfected even more.

Shock absorbing cantilever type rear springs are a big improvement.

The gasoline tank placed in the rear is another improvement. The vacuum system insuring a steady, even gasoline flow at all times is still another improvement.

The complete Auto-Lite starting and lighting equipment is furnished. Electric control switches are on the steering column—right within reach.

The artistically designed streamline body with one piece cowl makes this car one of America's most attractive models.

Yet the price of this, our greatest four cylinder value, is less than any car of its size ever sold before.

The New Four
$795

f. o. b. Toledo

Model 85-4

35 horsepower en bloc motor
112-inch wheelbase
32 x 4 inch tires, non-skid rear
Cantilever rear springs
Auto-Lite starting and lighting
Vacuum tank fuel feed
Gasoline tank in rear with gauge
Electric control switches on steering column

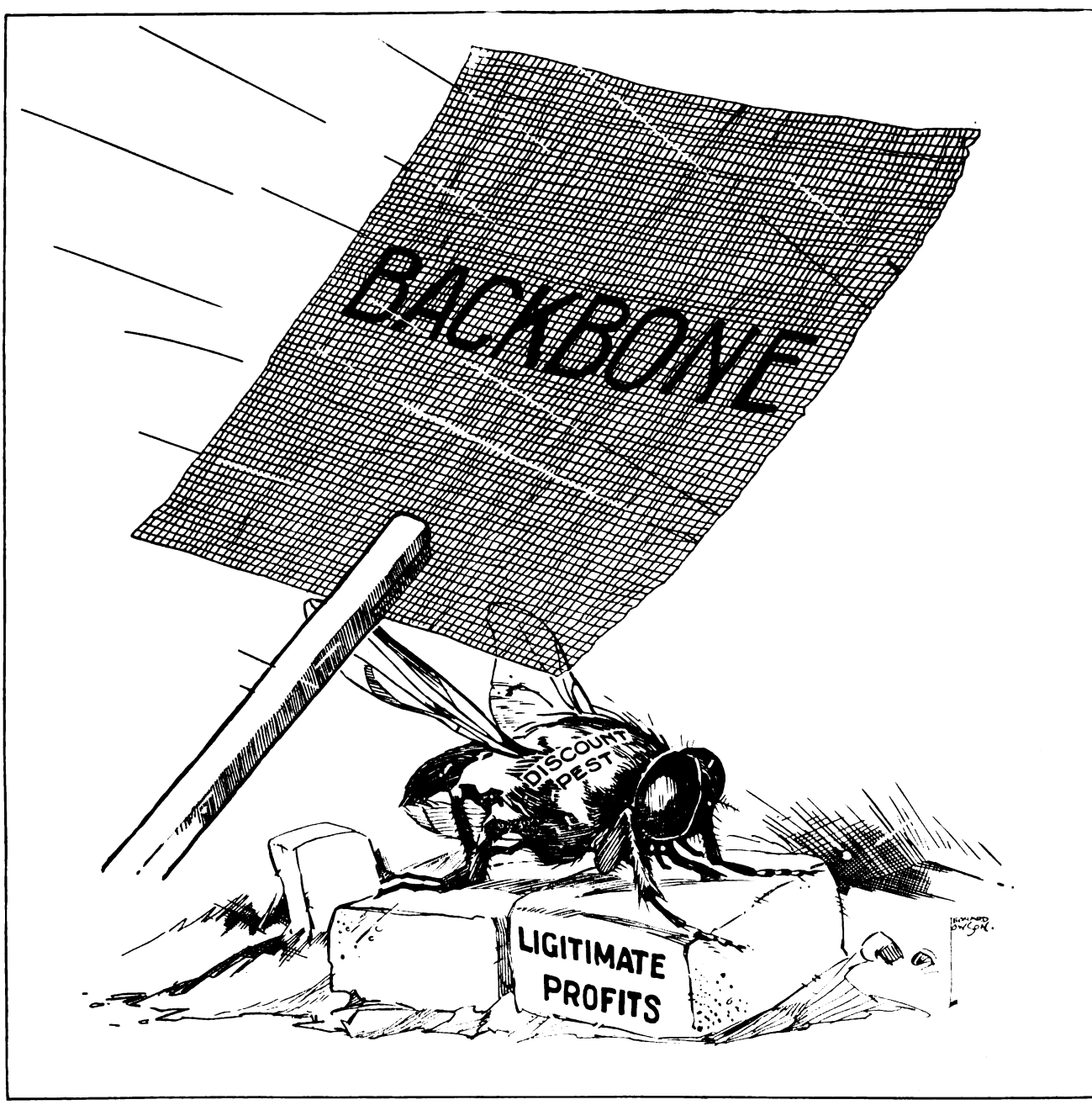
The Willys-Overland Company, Toledo, Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII New York, U. S. A., Wednesday, July 26, 1916 No. 4

Swat the Pest!



(*Read the story on page* 16)

"Give! Give! Give!" cries the discount-seeking prospèct, like the beggar of the Orient. And once he gets a discount he spreads the news to other prospects, like the tramp who puts a chalk mark on the easy farmer's gate-post. Swat him hard!

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The tractor exhibit at Dallas was housed in a long street of tents which

Introducing

Mr. Tractor Dealer

THE motor car dealer in the Great West is becoming the tractor dealer. As MOTOR WORLD *has for a long time pointed out he is the logical avenue for distributing the tractor, and now* MOTOR WORLD'S *special representative at the tractor demonstrations finds that the car dealer and garageman are already entering the tractor field.*

By Stanley P. McMinn

Motor World staff correspondent with the Tractor Circuit

DALLAS, TEX., July 20—Motor car dealers and distributers, as predicted long ago in Motor World, are taking an intense interest in the farm tractor. At the First National Tractor Demonstration here this week, the motor car men are present in great numbers.

Not only are they displaying their interest by their presence, but they are entering into the business itself. Some of them have taken distributing agencies for entire States. In the minds of the dealers themselves there seems little doubt as to who will be the farm tractor merchandiser of the future.

Farmers by Thousands

Farmers are here by thousands and they watch closely while the vapor-eating horses chug their way over the thousand-acre farm that has been set aside for this great Southwestern event. The dealers watch the tractors, too—but they also watch these thousands of farmers.

The great throng of land tillers is one of the most impressive factors in the situation. Each farmer present means an interested man, a possible purchaser of a tractor. And to the dealer in cars the word "possible purchaser" means nothing except sales—and profits.

And while some of the tractor manufacturers seem plainly uneasy as to which way to jump in this matter of distribution—as between car dealer or implement man—it seems certain that when service is considered the manufacturer must of necessity look to the garageman and dealer in cars.

Next Week

Motor World will carry a story on the Second National Farm Tractor Demonstration, at Hutchinson, Kan. A special staff representative, who has made a study of the tractor question, will analyze the conditions and problems that are revealed at this event. The subject will be

Tractor Service

Also there seems no question regarding the method that will be adopted in the distribution of tractors. Every manufacturer with whom I have talked has made plain that he will stick out for a straight automobile proposition, which means, of course, a cash proposition. Some manufacturers will make contracts with distributers on a basis of 25 per cent discount, expecting the distributer to make a deposit on the contract, another deposit on the order, and accept his tractors with a sight draft attached to the bill of lading.

The manner in which the distributer will operate is, perhaps, not quite so settled. One manufacturer will insist that his distributers be fully equipped to give every kind of service that the user may require. Another will have his distributers do business with dealers on a 15 per cent commission where the dealer is equipped to give service and on 10 per cent where the dealer gives no service—and service is where the automobile man excels.

Demand Business Methods

Distributers are frankly admitting that they are not particularly interested in the manner in which the dealer handles his business so long as it is run on a business basis. That is to say, though they naturally prefer that the dealer do a cash business, they have no objection to the dealer taking a down payment for one-third or one-half the price of the tractor and notes for the balance. But the distributers do not expect to extend any assistance to the dealers in the handling of such paper. This is strictly up to the dealer, who is expected to make suitable arrangements with his local banker, or, if he is able, to carry the paper himself to maturity.

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Looked for all the world like a state fair avenue. Note the absence of coats

During the week a large number of contracts have been signed, and though few manufacturers care to make public the names of new dealers and distributers, they have no hesitancy in saying that wherever it is possible *they invariably prefer to do business with the motor car dealer or the garageman.*

An illuminating case in point is that of the Frawley Motor Car Co., Reo distributer in Texas. The Denning company has signed up with the Frawley company for the whole State of Texas and also Oklahoma. The Frawley company immediately turned around and signed up with the Stapleton Motor Sales Co., Oklahoma City, Okla., for the State of Oklahoma. And the Frawley company has let it be understood that in every case where it is possible it will contract with its own Reo sub-dealers to handle the tractors. The Stapleton company will do the same. Those tractor makers who have not yet signed up are figuring on doing so this week.

Some of the Tractor Dealers

The Ford Tractor Sales Co. has closed these dealers: Elliott & Millsap, St. Louis, to handle half of Missouri and half of Illinois; Herron & Cullum, Farmersville, Tex., an automobile dealer; Walker Bros., Salesville, an implement dealer; Hunter & Sons, Cresson, and Ward & Son, Detroit, Tex. The makers of the Waterloo Boy tractor have closed eighteen contracts and many of these are with motor car men. The Standard-Detroit Tractor Co. is ready to close with an implement dealer for the State. The Parrett Tractor Co. has a deal on and the Moline Plow Co. already has closed a number of dealers.

The accessory exhibit is one of the most interesting tents on the grounds. And, incidentally, in the accessory end of the business is one of the most important reasons why the motor car man should be the tractor man.

That there is a market, and a big one, for accessories, there can be no doubt, for, from the engine back to the transmission gear, *there is not a great deal of difference between the tractor and the motor car.*

The tractor will use spark plugs, wire, petcocks, greases and oils, water hose, piston rings, and a hundred and one other things that some one eventually—nay, even right now—must be prepared to sell the tractor user.

Naturally, the tractor user is at present looking to his garageman for such supplies, and it is almost a foregone conclusion that he will continue to do so. At least it will require only very gentle pushing on the part of the accessory dealer to bring this business to himself. And it is going to be a tremendous business.

As an example in point, take piston rings. The McQuay-Norris Mfg. Co., which is exhibiting, has increased its business on tractor size piston rings 500 per cent up to June of this year. And none of this is factory business. Every bit of it is replacement business and in every case every ring is sold through a local dealer.

Every day during the demonstration the McQuay-Norris booth was thronged with really interested farmers. These farmers know what piston rings are. They know that the sand and the grit plays hob with piston rings and that if they are to get the maximum power out of their engines they must have efficient rings. They have had experience. So they come not as mere sightseers or curiosity seekers, but as actual potential buyers of this equipment.

And it is so with the other accessories that are on view. The farmers do not stand around and ask foolish questions about the fire extinguishers. No, indeed! They know how disastrous fires are. They dig right down into their jeans and pull out a roll of bills that would do credit to a Wall Street banker and peel off enough to pay for an extinguisher and take the device away with them.

Not much imagination is required to visualize the possibilities of this field for the sale of accessories. Who is going to get it, the implement dealer or the motor car man?

The answer is not difficult. The motor car man can have it if he wants it. And by the looks of this demonstration, he wants it.

How the Demonstrations are Conducted

Each Tractor Gets a Certain Area of Land and Is Required to Plow It All Without Stopping

By Stanley P. McMinn

DALLAS, July 20—What is undoubtedly the greatest aggregation of gasoline and kerosene farm tractors that has ever been brought together was assembled at the first National Tractor Demonstration, which was formally opened on Tuesday of this week and which will close on Friday night. Accurate figures on the attendance are not available, but estimates place the total at more than 75,000 persons.

Not all these visitors were farmers. A large percentage of them were motor car dealers, garagemen and repairshop men from all over the State of Texas. In fact, in a notable number of instances these men came from Oklahoma and from Arkansas for their first sight of a public demonstration of power farming engines and implements that most of them believe are to play such an important part in their lives in the very near future.

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The farmers of Texas have flocked to the demonstration in numbers that have truly astounded those who expected a big attendance. It was predicted that the first demonstration on the circuit might perhaps equal in attention-compelling value the demonstration at Fremont, Neb., last year, which was the largest held in 1915. But that the attendance already has exceeded Fremont has been established. The traction lines have been hard put to it to accommodate the visitors and the hotels are crowded to overflowing.

The demonstrations this year are being run in an entirely different manner from those of years gone by. The competitive spirit is entirely lacking, and instead the whole affair is a demonstration in the purest sense of the word.

As an exhibition it is not unlike a great motor car show, except that in every instance all the tractors are operating on gasoline and kerosene. Each exhibitor has a big tent; few of them have provided sawdust. And in each tent there is from one tractor to a half dozen.

Start at 8 A. M.

Each day the machines are started running about 8 o'clock in the morning, and few of them are stopped, except occasionally to replenish fuel, until 6 at night. Even during the plowing demonstrations the exhibition machines are permitted to run, often without attendance of any kind.

In this respect it is a tribute to their designers that in spite of the terrific heat, which during the first part of the week was as high as 103 deg., none of the machines evidenced any inclination to steam. Motor cars of all makes were spouting steam all around them.

The public demonstration is started each day promptly at 1 p. m. At 12.15 all of the tractors leave their respective tents, and, towing the implements that will be demonstrated, make a great, noisy procession to the demonstration field, which is perhaps half a mile from the tents.

The demonstration is being held on what is known as the Caruth farm, a great tract of land giving about 1200 to 1500 acres on which to manipulate the tractors. Each tractor manufacturer has allotted to him each day a strip of land, the size of the strip being proportioned by the size of the tractor to be demonstrated and the number of plow bottoms he will pull.

Start on Signal

Every tractor operator must start his machine at a given signal and continue to plow until all his land has been finished. This, of course, promotes some friendly rivalry.

With regard to the fuel that is used: No restriction is placed on the kind. A maker may use gasoline, kerosene or distillate, though up to to-day only one maker has been doing any plowing with the latter. But each maker must procure his fuel from a designated source, so that there may be no doubt of its gravity.

Most of the machines in use have been burning kerosene. On the first day, when there were some forty-four machines on the field at the same time, twenty-seven of them were operating on kerosene as against seventeen operating on gasoline.

The fuel problem does not appear to worry the farmer greatly in Texas. Gasoline is at present selling for 19 cents per gallon, but he can get kerosene from 7 to 10 cents. Even those manufacturers who have been plowing with gasoline, however, are preparing to plow on subsequent days with kerosene, and those that cannot now do so are perfecting kerosene-burning attachments.



The tractor demonstration field looks like a big fair ground with its chugging motors and its busy, coatless men. It was hot!

Following is a complete list of the various tractors that were plowing during the first day of the meet. In most cases these same manufacturers had other machines out the other days, the rules permitting a manufacturer to have only one machine of one size doing the same kind of work at once:

Waterloo Gasoline Engine Co., Waterloo, Ia.—24 hp. kerosene; drawing one 10-ft., 10-disk harrow with one 10-ft. grain drill.

Standard-Detroit Tractor Co., Detroit—10-20hp., gasoline, drawing one 4-gang Sanders disk plow.

Simplex Tractor Co., Minneapolis—10-20, gasoline, drawing one 4-gang La Crosse Plow.

Rock Island Plow Co., Rock Island—10-20, gasoline, drawing one 4-gang Sanders disk plow.

Peoria Tractor Co., Peoria—8-20, kerosene, drawing one 4-gang Sanders disk plow.

Parrett Tractor Co., Chicago—12-25, gasoline, drawing one 4-gang Sanders disk plow.

Nilson Farm Machinery Co., Minneapolis—24-35, gasoline, drawing one 4-gang La Crosse plow.

Moline Plow Co., Moline—6-12, gasoline, drawing two 14-in. moldboard and two disk plows.

Twin City Tractor Co., Dallas—15-30, kerosene, drawing 6-gang Sanders disk, 40-60, kerosene, drawing 18-gang Sanders disk; 15-30, sub-soiler, drawing 32 12-in. spades and 3-gang Sanders disk plow.

Bates Tractor Co., Lansing—13-30, kerosene, drawing 4-gang Sanders disk plow.

International Harvester Co., Chicago—15-30, Titan, kerosene, drawing 6-gang Sanders disk; 12-25, Mogul, kerosene, drawing 5-gang Sanders disk plow; 1020, Titan, kerosene, drawing 4-gang Sanders disk plow; 8-16, Mogul, kerosene, drawing 3-gang Sanders disk plow; 8-16, Mogul, kerosene, drawing an Osborne disk harrow with tandem attachment; 10-20, Titan, kerosene, drawing two Kentucky 10 x 7 grain drills; 12-25, Mogul, kerosene, drawing 3 Webber wagons.

Holt Mfg. Co., Peoria, Ill.—25-45, gasoline, drawing 12-gang Sanders disk plow.

Happy Farmer Co., Minneapolis—8-16, gasoline, drawing 3-gang Sanders disk plow.

Hart-Parr Co., Charles City, Ia.—15-30, kerosene, drawing 3-gang La Crosse disk plow; 18-35, kerosene, drawing 8-gang La Crosse disk plow; 30-60, kerosene, drawing 10-gang La Crosse disk plow.

Emerson-Brantingham Co., Rockford, Ill.—12-20, Model L, kerosene, drawing 4-gang disk plow; 12-20, Model Q, drawing 4-gang disk plow; Big Four, 20, distillate, drawing 7-gang disk plow.

Denning Tractor Co., Cedar Rapids, Ia.—10-18, kerosene, drawing 3-gang Sanders disk plow; 10-18, kerosene, drawing John Deere pulverizer and harrow.

Sandusky Tractor Co., Dallas—15-35, kerosene, drawing 6-gang La Crosse disk plow.

J. I. Case T. M. Co., Racine—9-18, gasoline, drawing 3-gang Grand Detour disk plow; 10-20, kerosene, drawing 4-gang disk plow; 1225, kerosene, drawing 6-gang disk plow; 20-40, kerosene, drawing 10-gang disk plow.

Wallis Tractor Co., Racine—26-44, gasoline, drawing 8-gang Case disk plow.

Bull Tractor Co., Minneapolis—7-20, gasoline, drawing 3-gang Sanders disk plow.

Avery Co., Peoria—510, kerosene, drawing 2-gang Grand Detour disk plow; 8-16, kerosene, drawing 4-gang John Deere disk plow; 12-25, kerosene, drawing 6-gang Rock Island plow; 18-36, kerosene, drawing 8-gang Rock Island disk plow; 25-50, kerosene, drawing 12-gang Rock Island plow.

Avery & Sons, B. F., Louisville—10-20, gasoline, drawing 2-gang Avery disk plow.

Allis-Chalmers Mfg. Co., Milwaukee—10-18, gasoline, drawing 3-gang John Deere plow.

Advance Rumely Thresher Co., La Porte—30-60, kerosene, drawing 14-gang Sanders disk plow; 15-30, kerosene, drawing 8-gang Sanders disk plow; 12-24, gasoline, drawing 3-gang moldboard plow.

Ford Tractor Sales Co., Minneapolis—8-16, gasoline, drawing 3-gang Sanders disk plow.

Standard Tractor Co.—22-24, gasoline, drawing 6-gang P. & O. disk plow.

Western Tractor Co., Dallas—8-15, gasoline, drawing 3-gang P. & O. disk plow.

The following accessory exhibitors were not included in the list of entries that appeared last week in Motor World. They are late entrants:

Avisco Oil Co.; L. Sonneborne & Sons; McQuay-Norris Mfg. Co.; Pyrene Mfg. Co. of Texas; Gulf Refining Co.; Eisemann Magneto Co.; Hyatt Roller Bearing Co.; Domestic Engineering Co.; Sumter Electric Co.; Kingston Electric Co.; Byrne-Kingston Co.

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Why Texas Needs the Tractor

The Gas Horse Can Work Wonderful Benefits to the Lone Star Farmer

By Stanley P. McMinn

IT is easy to figure out why Texas needs the farm tractor—nay, why Texas must have the farm tractor if her agricultural development is to progress, or even to keep pace with the demand now being made for Texas products.

The farm tractor has made Texas what she is to-day. Here are great areas, almost totally devoid of any impediment to power farming, and already the tractor has made a showing that is making farmers in other States sit up and take notice. Great credit is due those Texas farmers who have pioneered this land with animal power. But the pioneering has been done at a tremendous sacrifice. What with climatic conditions and insect life, which during the summer months is a serious trouble, the success that has been won by those farmers who are really successful has been won only at the cost of horseflesh.

Texas Now Has 8300 Tractors

And it is right here that the tractor will come into its own. During the past year some 1700 farm tractors were put in the Texas territory. During the past three seasons, some 3300 tractors were put in. And for 1916, conservative estimates place the total sales at at least 5000 machines.

This will give a total of only 8300 machines, distributed among 417,770 farms, according to the 1910 census, which is the latest figure available. But, of these farms, 123,698 are of less than 90 acres. In other words, there are 294,072 farms in Texas large enough to be worked efficiently with the farm tractor. Dividing this total by 8300 gives us only one tractor to about every 35½ farms.

As nearly as can be ascertained, 52 per cent of these farms are occupied by tenants, though this figure is being reduced quite rapidly.

Unexcelled Power Possibilities

With exceedingly few exceptions, Texas land is the finest land in the United States to farm with power; this because of the great areas where there is neither stick nor stone to hamper plowing or cultivation or bother the farmer. Take the great Panhandle country, which is known as the Llano Estacado, or Staked Plain, for example. Here is undoubtedly one of the biggest unobstructed areas of farm land in the country. Wheat and alfalfa are grown here, and as an indication of the size of the tract it may be pointed out that fully 60 per cent of the Texas crop of 17,000,000 bushels of wheat comes off this land.

Again, there is a great belt of land stretching from Brownsville to Orange, a distance of upward of 600 miles and 120 miles in width. This plain is absolutely devoid of any obstruction to power farming. This is probably the richest land in Texas. It embraces the three principal varieties of soil—Victoria clay, Victoria loam and Victoria silt. On it are grown corn, rice, melons and cotton.

The Vastness of the State

Few persons realize or can imagine the true vastness of the State. From Point Isabel on the Gulf Coast to Texline is approximately 1100 miles—200 miles less than the distance between New York and Chicago. The man in El Paso is nearer to Los Angeles, Cal., than he is to the eastern line of his own State. And it is farther from Texarkana to El Paso than it is from Texarkana to Chicago.

Truly, the Lone Star State is the garden spot of the world, for here we have every range of climate from tropical to extremely temperate. Texas soil will grow almost any crop. Is it any wonder then that the farm tractor is coming into its own here?

PROPER Farming the Big Need

If you talk with farmers from every corner of Texas, as I have done, they will tell you, almost without exception, that what Texas needs most is PROPER farming; they will tell you that almost without exception the ground is improperly tilled; they will tell you that the ground never will be properly tilled—and here I am leaving out of consideration those isolated cases where farmers have adopted what may be styled heroic methods and plowed properly without regard to sacrifice of animals—until it is tilled with power.

What Texas needs most is farm power. She has the land; her farmers are among the best in the world, in spite of the handicap of climate under which they work. But horseflesh cannot stand the strain.

In Central Texas there is a belt of land 175 miles wide and running clear to the Gulf that is probably the most fertile in the State. It will grow any crop from corn and oats and wheat to peanuts and cotton. *But the farmers are not more than scratching the surface.* This belt is known as "black land" and is the hardest there is to work.

The Farmer Wants To Improve

The Texas farmer knows that he is not farming his land in the way it should be farmed. He realizes fully the limitations imposed on his work stock by climatic conditions. He wants to break his land when it ought to be broken and to break it as deeply as it should be broken.

But he cannot do it with horses or mules. The farm tractor is his only salvation. For cotton, the Texas farmer uses what is styled a "middle buster," or a lister. This is a sort of double plow that throws the earth both ways. But he can plow with this only about 3½ to 4 in. deep. And for other crops there are few farmers who are plowing more than 6 or 7 in. deep. Agricultural experts will tell you that *they ought to plow* 11 *or* 12. *in. deep.* ONLY THE TRACTOR WILL DO THIS.

Two Crops a Year

Again, on most Texas land two crops can be raised without any difficulty—provided the land can be broken at the proper time. If the land is broken in the spring, it does not soak up sufficient moisture to raise a good crop. If the land is broken in the fall, it still does not soak up enough moisture unless the plows sink in deep. The way they get two crops off the land is this: They first sow wheat, which is harvested early in June. Then the land must be plowed, disked and harrowed, and either corn or peanuts can be put in. Then when these are harvested, the land should be deep plowed again and left for the winter rains to soak in and break up the soil for spring planting.

This virtually means that the heaviest plowing must be done during the hottest weather. But the work stock cannot stand the strain. The farmer must fall back on the tractor.

The farmer wants the tractor, all right. For 20 years some Texas farmers have been using steam tractors, and the gasoline tractor has been in use for 6 years. Everywhere the tractor is used the farm-

(*Continued on page* 37)

What Tractor Will Do

1—*It will permit the soil to be broken deeper.*
2—*It will permit the soil to be broken at exactly the proper time.*
3—*It will furnish a means of activity irrespective of climatic conditions and insect annoyances.*
4—*It will facilitate harvesting, which is impossible without the speed the tractor gives, and thus promote the practice of growing two crops a year.*
5—*It will increase the quality and the quantity of the yield.*
6—*It will give the farmer confidence and thus promote industry.*

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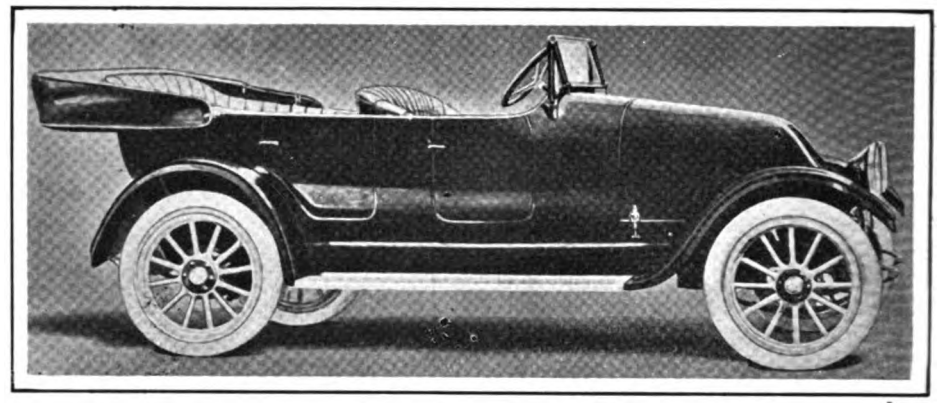
New Franklin Better Looking—More Economical

Weight Cut 400 Lbs.—Motor Smaller—Car More Comfortable and Easier to Control

THE announcement of the new series Franklin is of unusual interest. It is 400 lb. lighter than its predecessor; it has a completely redesigned body, with unbroken lines from front to rear; it has a smaller but more powerful motor, and the new car is more comfortable, easier to control and easier riding than the previous model, good as the latter was.

The new Franklin has been generally accepted as the lightest comfortable touring of its capacity in the world, this low weight being obtained by scientific design, careful choice of material and elimination of every superfluous pound of metal. That as much as 400 lb. could be trimmed off it without depreciating performance or comfort was a surprise even to the Franklin engineers, but this has been done and both performance and comfort are improved thereby. This large amount of weight has been saved without making the car smaller. The new engine is lighter, being a trifle smaller in the bore; the gearset has had several pounds cut out, and both axles are lighter. All the petty details have been examined with a microscope, so to speak, and ounces cut here and there, more forgings and fewer castings are used, and aluminum takes a bigger part than ever.

The general lines of the chassis remain almost unchanged. The air-cooled engine, now 3¼ x 4 in., is externally similar to the old 3⅝ x 4 in.; the wood frame, full elliptic springs front and rear, and the amidships gearset are all retained; in fact, it needs a close examination of the chassis to find the changes.



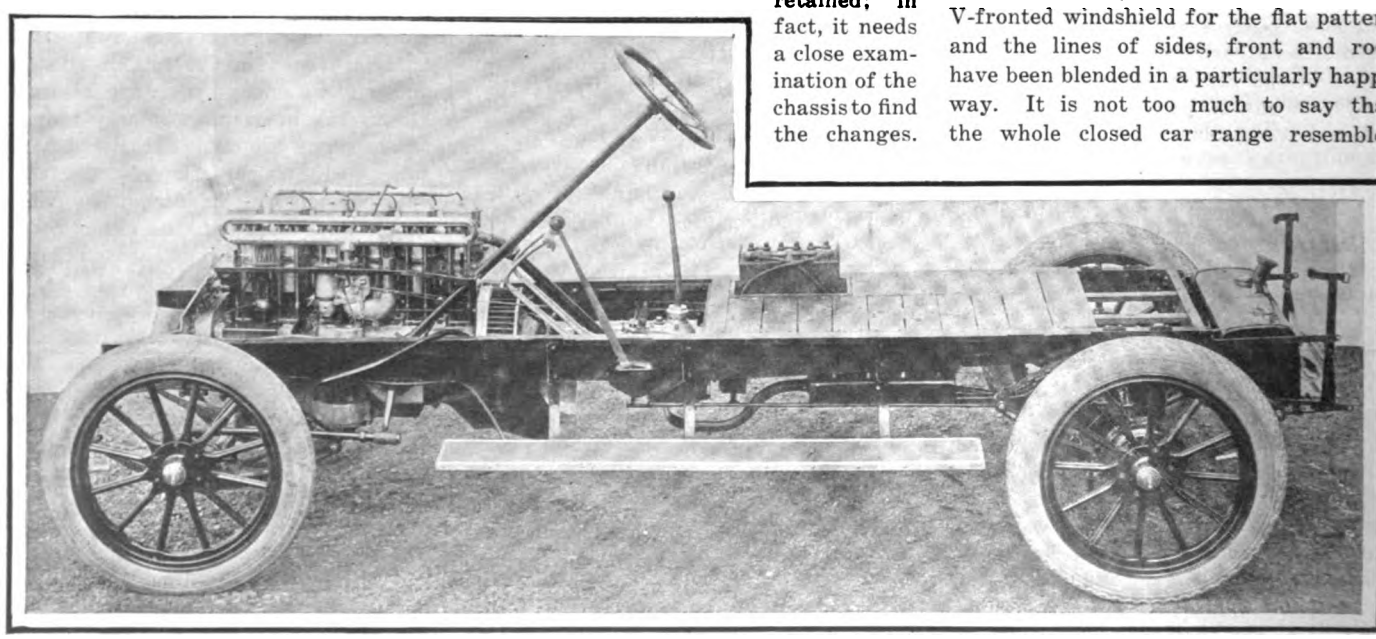
The new body is an entirely new design with unbroken lines from front to rear

SPECIFICATIONS OF THE 1917 FRANKLIN SIX

Price—	
Touring	$1,850
Roadster	$1,800-$1,850
Limousine	$3,000
Brougham	$2,700
Sedan	$2,750
Cabriolet	$2,650
Color	Brewster Green
Make of Motor	Own
Number of cylinder	Six
Shape	I-head
How Cast	Singly
Bore	3¼
Stroke	4
S. A. E. horsepower	25.3
Ignition	Atwater Kent
Carbureter	Own
Engine Starter and Lighting System	Dyneto
Clutch	Disk
Gearset	three-speed
Wheelbase	115 in.
Tires	32
Type rear axle	Semi-floating

Externally the finished car has been improved in appearance very greatly. The sloping hood has had rounded corners substituted for the square ones, and it is wider, making a flush joint with the cowl all the way around. The bodies have also been rendered smoother and every one in the whole range of types is as good-looking as another, the closed styles being, perhaps, especially distinctive. Also a new design of four-passenger roadster, which is not a clover-leaf, is likely to prove popular, as it has all the close-coupled effect and is much easier to enter. There are divided front seats and a back seat in just the same relationship as in a clover-leaf, but the doors are almost double as wide as usual. Thus opening the door allows entrance to be made to either front or rear seat. Still easier entrance to the rear seat can be had if desired by tipping the front seats, both of which are hinged so as to fold forward.

The sedan and brougham bodies have been altered by the substitution of a V-fronted windshield for the flat pattern and the lines of sides, front and roof have been blended in a particularly happy way. It is not too much to say that the whole closed car range resembles



The characteristic motor and wood frame, as well as other Franklin features are retained. The emergency brake is now on the left

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the best class of custom bodywork. Great care is taken with the detail finish of all the bodies and one noticeable point is the solid way the doors close; in fact, the bodies all give the impression of weight and massiveness; it needs an examination of the unfinished shell to realize how very opposed to the truth this impression is actually.

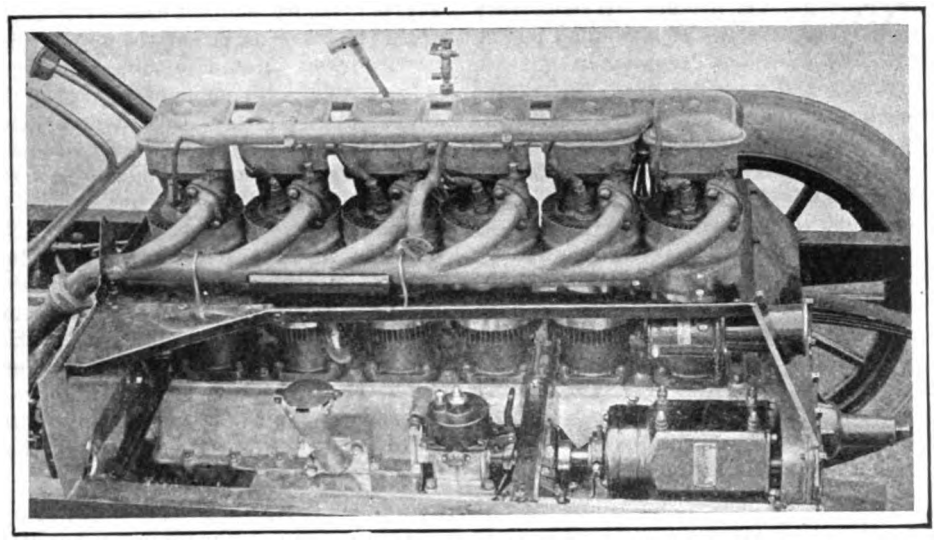
Eight Different Cars

The principal car of the Franklin series is, of course, the five-passenger touring, which sells for $1,850. The four-passenger roadster costs $1,850 also, and there is a two-passenger roadster at $1,800, this car having a very big boot under the rear deck which would hold enough baggage for a 3-months tour. The sedan costs $2,750 and the brougham, which is merely a smaller sedan, $2,700. In addition to these cars there is a limousine for $3,000 and a very smart town car at the same price, and the eighth model is a cabriolet, selling at $2,650.

Franklin expects to make 10,000 cars in the next 12 months, of which about 7000 will be the touring car and 1400 roadsters for two or four. Of the sedan 1000 will be made, and the other closed types will complete the schedule. It is thought probable, however, that the demand for the four-passenger roadster will exceed this estimate, judging by the orders now being placed by dealers.

Engine Not High-Speed Type

Although it produces its maximum of 31 hp. at a higher speed than the maximum of the older motor, the new engine is hardly a high-speed design, the peak of the power curve coming at about 1700 r.p.m. The maximum torque is 112 lb. and occurs at a little over 1000 r.p.m. It is a small engine, the 3¼ x 4-in. dimensions for the six cylinders making the total piston displacement 199 cu. in., and the formula horsepower is 25.3. On high the gearing is 3.9 to 1, the wheels being 32 in., which means 1950 revolutions of the engine per mile, or a total displacement of just under 390,000 cu. in. per mile. Since the weight is under 2300 lb., this gives a large ability, which



Motor showing cooling arrangements, motor-generator and tire pump

is evidenced on the road by rapid acceleration on high. The maximum speed of the car is 50 m.p.h. or over. That is to say, 50 m.p.h. is reached easily and more under favorable conditions.

The engine is 150 lb. lighter than the old power plant, but apart from the reduction in bore it is little changed. The air-cooling system is exactly as before save that the flywheel, with its multiple blade blower construction, is now an iron casting instead of being built up. Vertical steel fins are made integral with the individual cylinder castings by having the iron poured around the strips of steel and very light aluminum jackets guide the air draught downward from the heads of the cylinders.

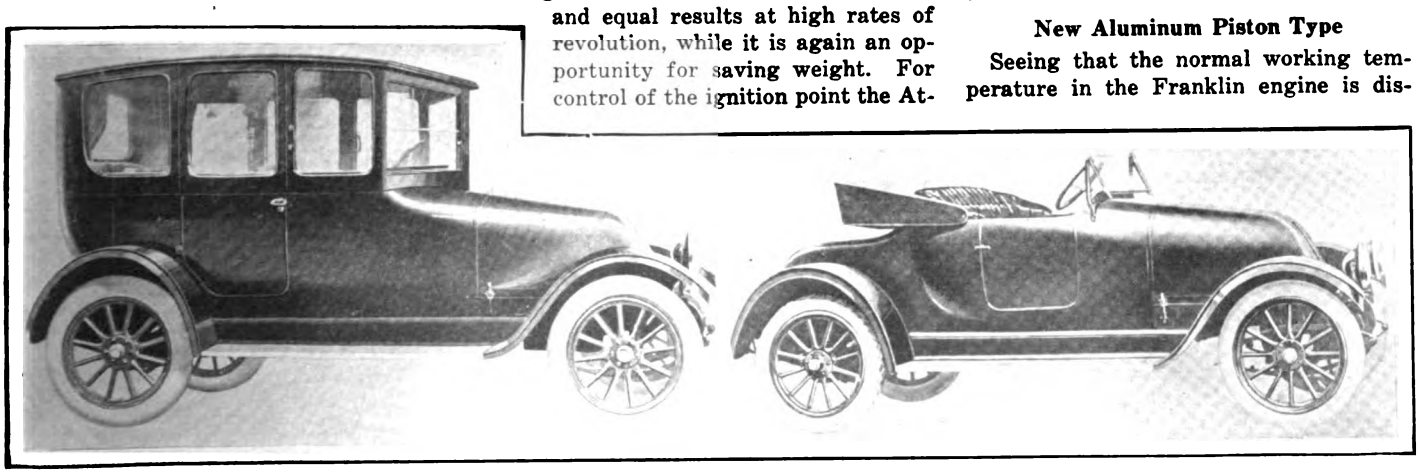
The overhead valve mechanism has been lightened in detail, so that there is less inertia in the operating parts, and the point of contact with the rocker on the valve is so shaped that the action of the rocker cannot put any side stress on the valve stem, so causing wear on the guide.

The most marked change in the engine is the substitution of Atwater Kent ignition for the magneto. The Franklin engineers consider that the battery system gives better results at low speeds and equal results at high rates of revolution, while it is again an opportunity for saving weight. For control of the ignition point the Atwater Kent automatic advance is used, there being no spark lever on the steering wheel. Lighting and starting are performed by a Dyneto single unit machine, driven by silent chain, and located at the front right end of the engine; it is very accessible, and the wiring is also simplified to the last degree. All the important junctions, fuses, etc., are carried on a panel in the cowl board, and the spare bulbs for the lamps are also held in sockets on the same panel, so that they are perfectly protected and always accessible in a hurry.

The carbureter is the standard Franklin design, with which the various economy runs have been made. It has been raised considerably and now has a Stewart vacuum feed from a rear tank. Incidentally, it is stated by the manufacturers that the new model with its reduced weight will be able easily to break all previous economy records and that the average man using the car in the average way, without taking any special care for economy, ought to get well over 20 miles per gallon. This, of course, being a minimum and not a maximum. In other words, the economy is improved in the same proportion as the weight is decreased.

New Aluminum Piston Type

Seeing that the normal working temperature in the Franklin engine is dis-



Left—The feature of the sedan is the pointed front glass. Right—This runabout model seats two; there is also a four-passenger

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tinctly high, the makers were not very ready to believe in the aluminum piston, but they have now adopted it as stock practice and consider that the better mean effective pressure of the new engine is largely due to the improved piston cooling obtained. At first there was a little trouble from wear on the skirt; it was difficult to get a close enough fit to insure absence of slap without abrasion. The trouble was overcome completely by turning a shallow, square groove of screw thread form from the bottom of the skirt to just beneath the lower ring. This holds oil securely and allows a smalltr clearance than is possible with a plain piston.

There is an interesting lubrication system employed, individual oil supply being sent to every point. The oil pump, which is a conventional gear pattern, is mounted on a large plate and the delivery from the pump is distributed to a number of oil leads by means of passages in the plate. The plate is die-cast aluminum, with distributing grooves, and these grooves are made into closed passages by putting a piece of thin sheet copper over the face. This gives direct pressure feed to all bearings on the crankshaft and to various other points. Bearings and details on the under part of the engine are now more accessible, because the boot or under cover has been abandoned, the sides of the crankcase being now joined to the frame sills by sheet aluminum guards, leaving the bottom of the crankcase exposed.

Gear Shaft Location Changed

The previous Franklin gearset appeared remarkably light, but the new design is still lighter. Instead of being side by side, the shafts are one above the other, and the square shaft has been replaced by a splined one. Three speeds are provided and it is noteworthy that the second gear is very quiet in operation, probably owing to the stiffness caused by the short shafts and very compact case. The gearshift lever is housed on the top of the case, working in an adjustable ball joint; it is a tube with solid ends brazed in, thus being very light though stiff The emergency brake lever has been removed from its central position and is now on the frame at the driver's left, where it lies well forward and out of the way. It does not obstruct the entrance from the driver's side, and its absence from the middle position makes more foot room. There is no intermediate linkage for this brake, as the pull rod goes direct from the lever to the rear axle. The clutch is unchanged, and the foot brake is still on the back of the gearbox, operating with great power and smoothness.

Unsprung Weight Much Smaller

Despite the smaller weight, and also despite the fact that the springs are shorter, the new car rides much better than the last series. A really rough railroad crossing can be taken at 20 m.p.h. without shaking a passenger off the seat. The explanation of this is in the axles, whence a large amount of weight has been taken. From the rear axle 25 per cent of its original weight has been removed, and from the front axle 30 per cent. This is due to the use of finer forgings and the elimination of some redundant parts.

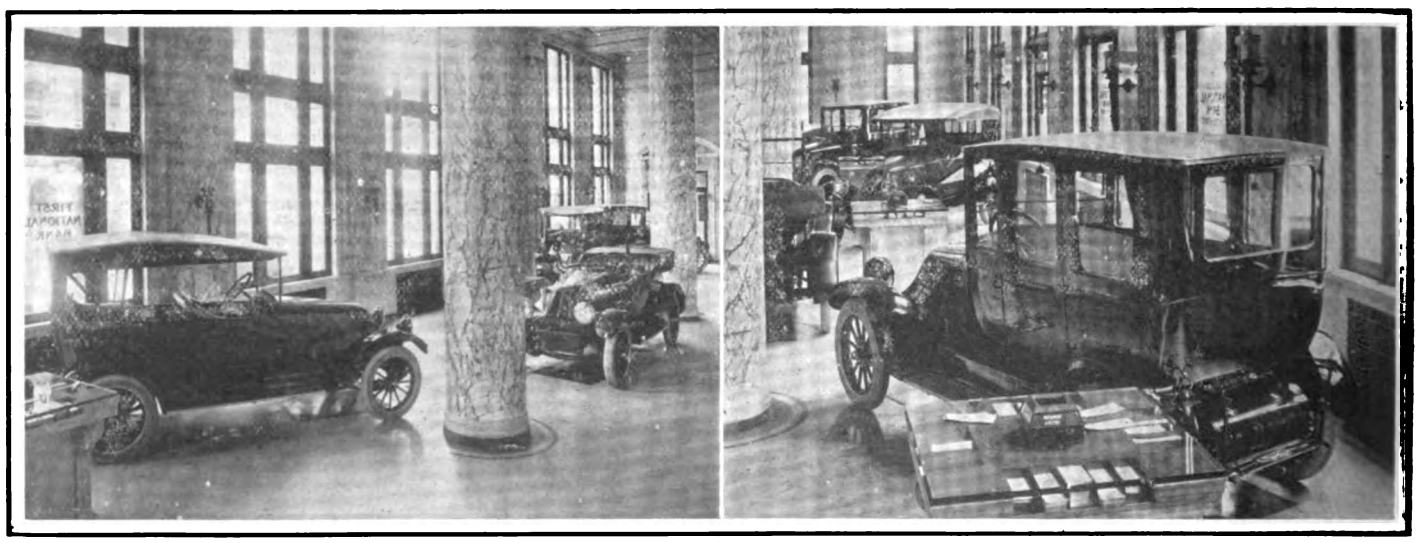
Another effect of the small weight is to make the car so easy to steer that the first impression on taking the wheel is that something has come undone. The effort required to move the wheel is so slight that a child could steer the car easily and a woman could drive all day without any arm tiring. There are no cars made anywhere in the world that steer more easily and extremely few that are as light to handle. The facility of control extends to the clutch, brakes and gearshift, all of which move without effort.

Dealers at Franklin Factory See New Models in Marble Display Room

SYRACUSE, N. Y., July 22—In many factories there is little opportunity for displaying a range of new cars to advantage, and it is unquestionable that a well-arranged show is of assistance to the visitors at a dealers' convention. Realizing this, the H. H. Franklin Co. has inaugurated something new by taking the floor of the spacious National Bank, where there is floor area enough to display a dozen cars in the surroundings of a splendid salesroom. The white marble pillars and the massive furniture of the bank make a splendid setting for a range of finely-finished cars.

From July 17 to to-day, about 200 dealers from all parts of the country have seen this display of the finished product, and have also seen a show at the factory at least as original. In the office a big floor space was available, and this has been utilized to lay out every part of the car to the last detail. Along the walls are dozens of weighing machines, each loaded with some part which is a result of the Franklin scientific lightweight construction, and on the next scale, in each case, is the corresponding part from either an earlier Franklin model or from some other car of similar size. The visitors are asked to weigh the parts themselves and see where Franklin trims 50 lb. or 100 lb., as the case may be.

The company has found the dealers very pleased by the improved appearance and the better performance with a smaller engine.



Handsome surroundings of new Franklin models ready for inspection of dealers, both old and prospective

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Brown Five-passenger and Delivery Bodies on Same Chassis

Four-cylinder—Standard Parts Used—Three Delivery Bodies—1,000 lbs. Capacity—Price $670 to $735

A LINE of passenger and business cars has just been brought out by the Brown Carriage Co., Cincinnati. This is an assembled product, incorporating parts made by specialists, among which may be mentioned the Le Roi engine, Walker-Weiss axles, Allis-Chalmers starting and lighting, Atwater Kent ignition, Kingston carbureter, U. S. L. storage battery, etc.

There is a five-passenger touring car at $735, a delivery car with 1000-lb. capacity at $675, a rear door delivery at the same price, and a general delivery open body at $670, including canopy.

The LeRoi power plant is a unit construction, incorporating motor, gearbox and clutch in a single housing. All four cylinders are cast in a block and are of L-head shape with a bore and stroke of 3⅛ x 4½.

Lubrication is by combined pressure and splash system, with the oil delivered at either end of the motor by an oil pump and with the bearings taken care of by splash. Ignition is by the Atwater Kent system, with automatic spark advance and in connection with the U. S. L. storage battery.

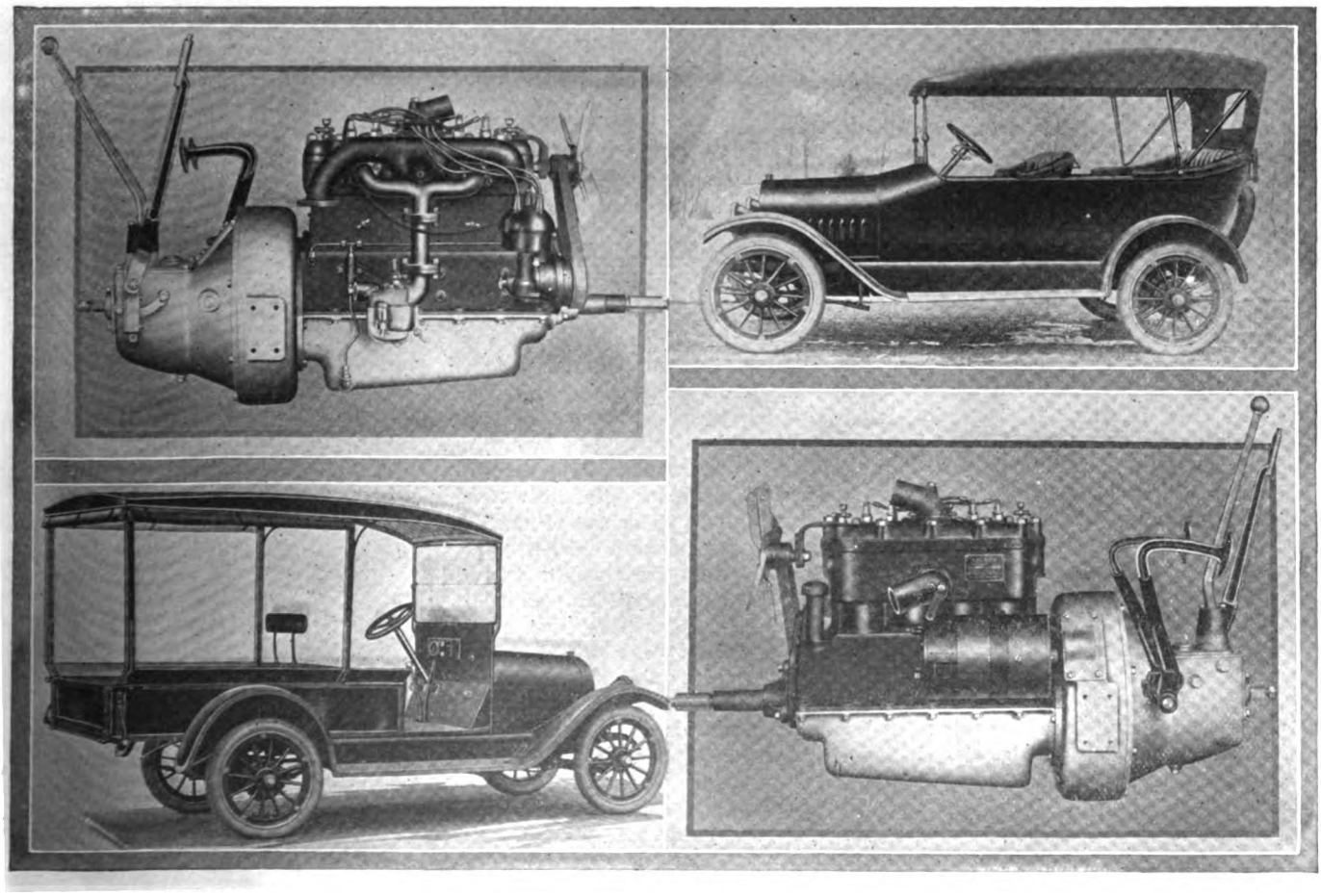
THE BROWN FOUR

Price—	
Touring	$735
Delivery	$670-$675
Make of motor	Le Roi
Number of cylinders	Four
Shape	L
How cast	Block
Bore	3⅛
Stroke	4½
S. A. E. horsepower	15.6
Magneto	Atwater Kent
Carbureter	Kingston
Motor-generator	Allis-Chalmers
Clutch	Disk
Gearset	3-speed
Wheelbase	105
Tires	30 x 3½
Wheels	Wood
Type rear axle	¾ floating
Equipment: Demountable rims and one-man top, etc.	

The Allis-Chalmers motor-generator is used. With this system the instrument becomes a generator when the motor is running at speeds sufficient to charge the battery and becomes a starting motor when the gasoline engine is stopped and the starting switch closed. The characteristics of the engine are such that under ordinary conditions the motor is cranked at more than 130 r.p.m.

A multiple-disk clutch is used, lined with Raybestos. It is provided with six coil springs, which insure perfect contact. A selective type gearbox has three speeds and transmits the drive to a three-quarter floating Walker-Weiss rear axle. This is geared 4.25 to 1 on direct. The gears are of nickel steel with chrome-nickel driveshafts carried on Hyatt high-duty roller bearings. The springs are of chrome steel with full-elliptic rears. The front springs are conventional semi-elliptic. The wheelbase is 105 in. and the tire size is 30 x 3½, with non-skids front and rear. Demountable rims are used and one extra is provided on the touring car. Both Batavia and U. S. rubber tires are used.

Full equipment is provided with the car, the top being a one-man mohair. The fenders are crowned and the running boards are covered with linoleum and are bound with aluminum.



Upper—Unit power plant. The engine is a Le Roi
Lower—Open express body selling for $670

Upper—The touring car seats five comfortably
Lower—Left side of power plant showing motor-generator

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Better National Twelve at Higher Price

Seven-passenger Touring and Four-passenger Clover-leaf—Bodies Roomier—Chassis Unaltered

A NEW series of National Highway twelve-cylinder car is just going through production in the Indianapolis factory, and incorporates several changes over the model marketed last season. This is a companion car to the National Highway six, which is being continued.

Following the general trend, prices are higher this year on the twelve-cylinder model than last, the increase being $130 per car, making the price now $2,150. This includes extra seats, however, while last year they were sold at $30 extra.

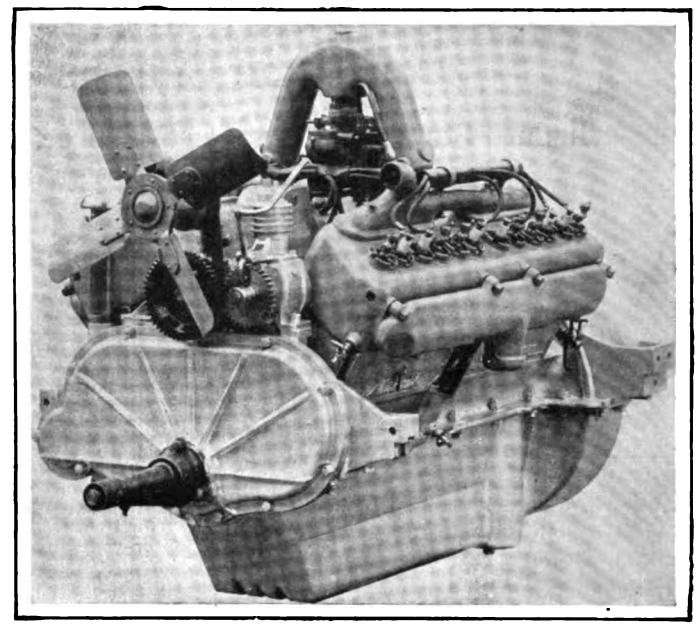
A number of detail improvements have been made throughout the entire car. In the first place, the touring body has been increased in size and now, instead of being a six-passenger job, it has a full seven-passenger capacity. Although the improvements throughout are quite numerous, the same general chassis layout on the 128-in. wheelbase will be adhered to. Instead of an option of 34 x 4½ or 36 x 4½ tire, the regular equipment will be 34 x 4½, which was the choice of the majority of buyers during the last season.

Probably the most notable change on the new National Highway twelve is in the seven-passenger touring body design. Although the chassis is the same length, the new body is 3 in. longer. It has a center cowl and there is an aisle between the two front seats. In the tonneau under the center cowl are two locked package compartments. The front seats are larger in every dimension and there is also more room in the driver's compartment. The body is wider than in the former series, and there is more carrying capacity under each of the three seats. In addition, there is a tool compartment in the left front door, as on the former models.

The new Highway twelve cars are furnished with five different body styles. In addition to the seven-passenger touring car, there are a four-passenger touring car, a four-passenger roadster, a five-passenger all-weather sedan of the Springfield type and a three-passenger coupe. In the open models there is a new design of side curtains opening with the doors.

The arrangement of the extra seats has been carefully worked out so that the tonneau floor is smooth and the folding seats and their supports are fitted flush with the floor when the seats are folded.

A new and specially designed tire-holder in the rear has the advantageous feature of requiring but one strap, and provision is also made so that the spare tires can be locked if desired. Another feature of convenience is that the gasoline tank filler has been moved over to the right side near the fender. It is now provided with a hinged cover, which is held in place with a wing nut. This gasoline tank cover cap is easier to open than the old one, and by being hinged it is impossible to lose it. A change which alters the appearance of the car somewhat from the older model is that the radiator has been altered so that it is now 2 in. narrower and 2 in. higher than before.



The feature of the motor is the location of the valves on the outside for accessibility

SPECIFICATIONS OF NATIONAL TWELVE

Price—	
Touring	$2,150
Roadster	2,150
Make of motor	National
Number of cylinders	Twelve
Shape	L-head
How cast	Six en bloc
Bore	2¾
Stroke	4¾
S. A. E. horsepower	36.3
Magneto	Splitdorf
Carbureter	Rayfield
Engine starter	Westinghouse
Lighting System	Westinghouse
Clutch	Cone
Gearset	3-speed
Wheelbase	128
Tires	34 x 4½
Type rear axle	Floating

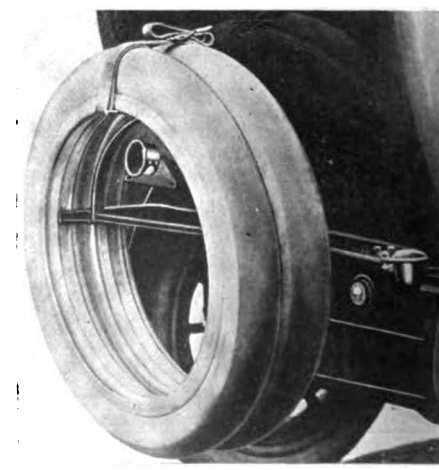
A study of the exterior of the car will reveal some other minor differences. The fenders are an inch wider and of new design in the rear; the windshield is slanting; the body sides are straight instead of tumble-in, as formerly. In equipment also a few alterations have been made, particularly on the dash, where a new oil-pressure gage with a unique dial design has been installed and also a new combination ignition and light switch which is locked by a special key. The keys are not interchangeable.

The clover-leaf design, marketed last year as a three-passenger, has now been made into a full four-passenger job. This has been accomplished by increasing the body all around and by moving the rear seat back 4 in. The back of the rear seat is higher, making it fully as comfortable as the front seats.

The motor is a product of the company's own shop. It has a piston displacement of 338½ cu. in. and a bore and stroke of 2¾ x 4¾. It is a high-speed type throughout, and is particularly distinguished by the use of outside valves. The electrical apparatus and other motor accessories are located between the arms of the V, where they can be easily reached.

Two separate blocks of six cylinders each are used, both L-head type and with two independent camshafts. No effort has been necessary to install synchronizing means for the two valve actions, as they are altogether independent. The timing gearset is quite similar to that used on the ordinary T-head motor, and the drive for the auxiliary apparatus in the center of the V is taken off the right camshaft by a silent chain.

In the lubricating system the feed is practically all under pressure and is sup-



New tire holder which requires only one strap

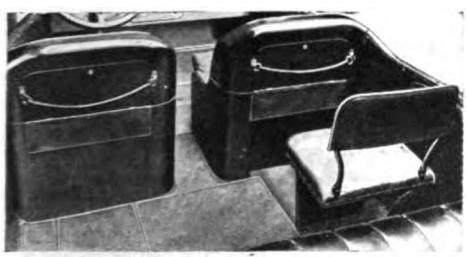
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plied by a gear pump. There are no dip troughs, as the crankshaft is fully drilled and the oil from the main bearings finds its way to the connecting-rod lower ends.

Separate pipes lead to the timing gears and to each of the camshaft bearings, while the piston pins are oiled by an inversion of the usual method of fully forced lubrication systems. As a rule the connecting-rod serves to carry the oil to the wristpins and then to the cylinders, but here the oil feeds to each cylinder at a point about 1½ in. from the bottom and reaches the wristpins through tiny holes drilled in the aluminum pistons. The latter have a V-groove cut near the bottom, which is used to lift oil into the cylinder, as the absence of splash troughs in the body of the crankcase cuts down the amount of spray present. As to the oil pressure, this is not very high; the relief valve blows off at 25 lb. per square inch. When the engine is idling the pressure is about 10 lb., and it rises gradually with the speed till the limit is reached.

There is only one water pump, but this is duplex internally, the rotating member carrying two sets of vanes. One set feeds directly upward into the block of cylinders on the right, and the other half of the pump delivers through a passage cast in the aluminum of the crankcase to the left block. This cuts down the piping material and makes for efficiency and simplicity.

A few other facts about the engine that are interesting may be given, as, for instance, the weight of the piston, which is 8 oz. without rings. The valves are 1 5/16 in. in diameter and the lift is ⅜ in., giving quite a large opening, while the mushroom tappet provides a quick lift and descent, giving a slightly better valve diagram than the roller type. It is probable that the fan has some effect as a damper to the crankshaft, though it is doubtful whether any such aid to elimination of vibration is needed.



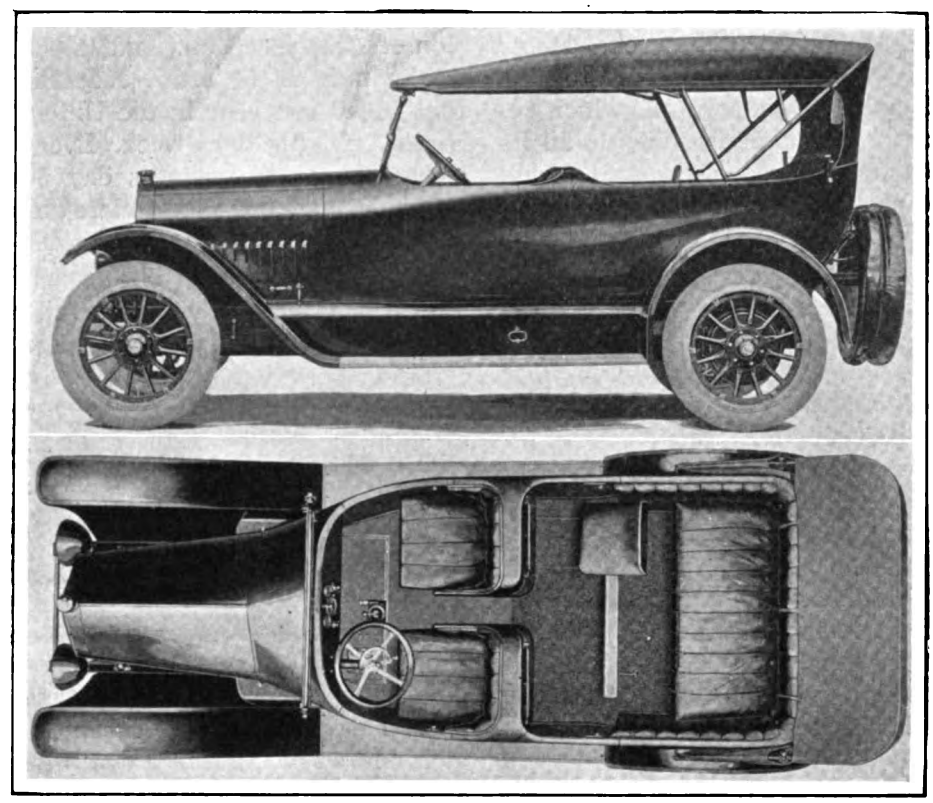
Close-up of seven-passenger showing aisle and fold seats



Unique tool compartment in left front door

The clutch is an aluminum cone with leather face, and the unit gearset provides three forward speeds, all shafts therein running on annular ball bearings. The propeller shaft is tubular and bears two universals, and the rear axle is floating. A flat cantilever rear suspension is employed. The center bracket has the swivel pin located beneath the springs instead of above it, as is more usual. The springs are 51 in. long and 2½ in. wide, with eight leaves each, and their action is extremely satisfactory. The front springs are 38 in. long by 2 in. wide. Special precautions have been taken in laying out the steering, and the use of large ball thrust bearings for the front axle swivels makes the control very ready.

Throughout the rear axle taper roller bearings are used; and the type is floating, very strong steels being used so as to cut the weight as much as possible.

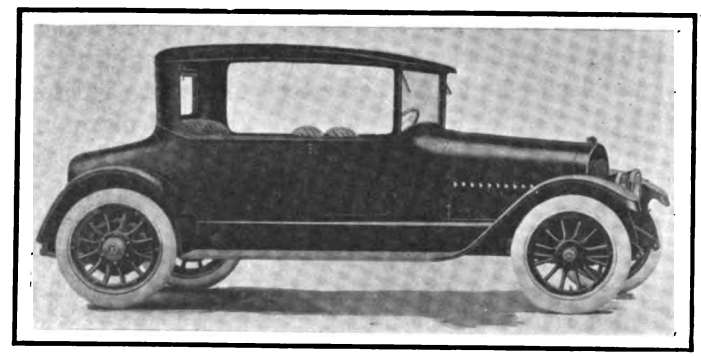


Two views of new seven-passenger car with roomier body than formerly

Elgin Off; Chicago Wants Date

CHICAGO, July 24—Now that the Elgin road races for this year have been called off it is practically certain that racing fans of the Central West will have an opportunity to experience the thrills of speed on the date set for the Elgin road races, Aug. 19. David F. Reid, president of the Speedway Park Association, has asked the American Automobile Association contest board for the Elgin date, when the local speedway will stage the American Speedway Grand Prize, and it is practically certain that the request will be granted, as such a promise is said to have been made by the contest board in case the Elgin races did not materialize.

COLE NOW HAS A TOURSEDAN



The Cole Motor Car Co., Indianapolis, has just added this new type of body, which is styled a Toursedan, and sells for $2,195. In addition there is a Tourcoupe at $2,195 and a Towncar at $2,495. The body is a Cole-Springfield and the roof is permanent. Removable glass windows, housed in padded compartments, permit the car to be entirely closed in

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THIS STORY IS ABOUT YOUR

Backbone

FOR the idea in the cartoon on page 5 this week, Motor World is indebted to the Thomas B. Jeffery Co., which recently sent a similar idea to all its dealers. It is so good that it should be passed on to EVERY dealer.

The idea is that the discount-seeking prospect is a PEST. The biggest pest in everyday life is the fly, so Motor World has used the fly to represent this pest, and the swatter is BACKBONE, the only thing that can exterminate the discount pest.

And backbone CAN exterminate him. And let it be added that BACKBONE is the only thing that can exterminate the pest.

HAVE you ever seen a fly crawling in a refuse heap, in a barnyard or over the maggotty contents of a garbage pail? And haven't you seen the fly—one of these same flies from the refuse heap—crawling over the dining table, over the sleeping baby's face and lips and strewing disease and death in his wake?

Would it mean anything to you to see each day at nightfall thirty innocent little babies laid out in a row on slabs in a death-house? Would it mean anything to you to see this done day after day, as regularly as the days come around?

That, readers, is what has been happening in the great city of New York, with its thousands of cases of infantile paralysis. Do you wonder that the ten millions of people in and near New York are working and trembling—and SWATTING THE FLY? And the fly is no more deadly than the discount pest.

WOULD it mean anything to you to see a man sitting with his head in his hands, his back bowed in sorrow and his business a failure? Would it mean anything to you to see 16,000 such men, their hopes of the future blighted, cleaned out?

Sixteen thousand is the population of Atchison, Kan., and 16,000 is the number of retail concerns that failed last year in the United States. That is 300 a week. Every week 300, every business day 50 every business hour six dealers and other small business men going down to failure.

And why did all these men fail? Why do motor car agencies change hands so often? Why are there so many new faces bobbing up on the Motor Rows of thousands of towns and cities? Why do the old faces—here yesterday, gone to-morrow—stay so short a time? Why is the death rate in business so high?

IN the motor car trade the reason for the business death rate is that those who failed didn't make money. One great big reason why many didn't make money is that they GAVE IT AWAY.

To whom?

To the discount pest.

Why did they do it?

Because they didn't have the backbone to stand on their own feet LIKE MEN and get a legitimate profit on the goods they sold.

The prospect pleads, argues or fights for a discount, a cut price. The spineless dealer gives it to him and imagines it won't make much difference with the gross business. But the discount pest spreads the news to all his friends and they all have to have discounts because the first man got one.

And soon there is a swarm of discount pests—like death-spreading flies—feasting upon the legitimate profits of the business and dragging it down to business death. And the dealer becomes one of the 16,000 failures.

PROBABLY all of us at some time have worked for, say, $2 a day. But did any of us ever go back to the boss at night and hand him back 25 cents out of the $2 so he wouldn't fire us? Foolish question, isn't it? We probably quit him because he wouldn't give us any more. And rather than give us any more he let us quit. That's backbone!

Yet what is the difference between this case and that of the dealer who is entitled to a fair profit on his Buick or his Overland or his Studebaker or some other car and who hands to the prospect part of what is absolutely needed in the dealer's business?

WOULD you snatch $100 out of your wife's hands and say: "You can't have this! I'm going to give it to Mr. Prospect. You may need new clothes or new furniture or a vacation, but you can't have the hundred!"

Maybe you wouldn't do it just that way, but that it what is being done in reality by every dealer who hasn't the backbone to get what belongs to him.

Maybe your family has all the luxuries it needs. Maybe you live in plenty. Perhaps you have money enough to give discounts with abandon. If so you are merely contributing to the existence of the pest. You are taking bread and butter from other dealers who try to meet you, or who imitate you, and who can't afford it.

And the odd part of it is that, while the dealer may think he is a good fellow when he cuts prices, the prospect, as soon as he is outside the door, LAUGHS AT THE DEALER. He talks with BUSINESS men and they smile and consider the dealer a JOKE.

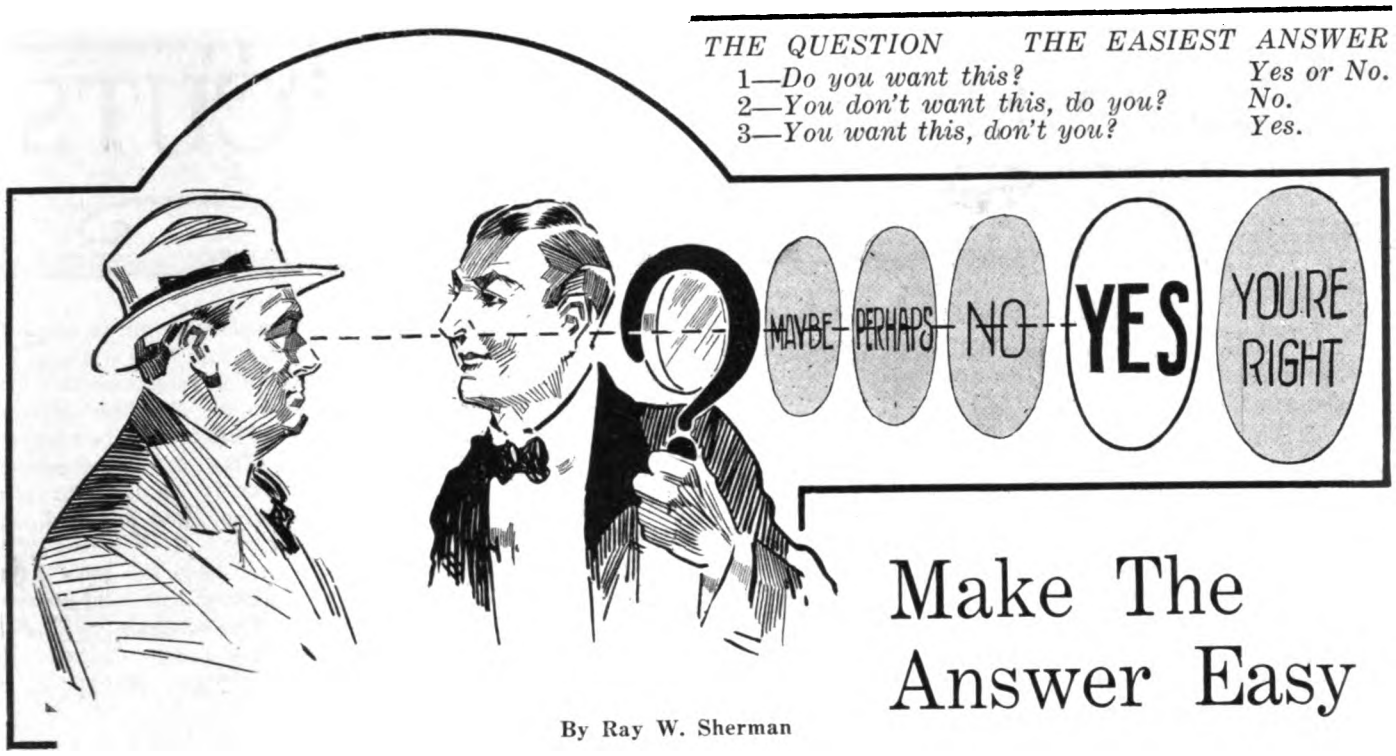
Why?

Because he is such an *easy mark*.

Have backbone.

Be a MAN.

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Make The Answer Easy

By Ray W. Sherman

REILLY and Tommy Trumbull, the junior salesman with C. J. Reilly, Inc., were making a periodic call on Chester Bement, the Sennett dealer in Hill Valley. Bement had to be called on every so often to be reminded that he was selling cars and not running a repairshop.

"I have worked pretty hard on sales, Reilly," asserted Bement, "but, somehow or other, selling seems to be hard work for me. I'd rather work in the shop."

"I know you would," shot back Reilly, "and that's just the reason you ought to work harder on sales. You can make a salesman out of yourself—and a good one, too—but you've got to work at it, just the same as you have to work at anything else."

"Probably true! Probably true!" challenged Bement. "But I don't seem to be able to get the fine points. I ask a man a question and he gets away from me. I try to lead him and he leads me. I want him to say 'Yes' and he says 'No'; or I want him to say 'No' and he says 'Yes.' I ask him——"

"You don't hold your mouth right when you ask him," laughed the distributer.

"Now you're kidding me."

"Yes, true I was. But just the same, Chester, there's a lot in the way you ask these questions. You ought always to ask a question so that the easiest way for the prospect to answer it is in the way you want him to. There is a certain class of questions which suggest their own answers, and the easiest answer is the answer that is indicated by the question. There——"

"Now you're beginning to say something."

"If I ask you this, 'Do you want to go for a ride, Chester?' what will you say? The easiest answer is 'Yes,' isn't it?"

"Yes."

"And if I say, 'You don't want to go for a ride, do you, Chester?' you are likely to say 'No,' no matter how badly you want to ride, aren't you?"

"Yes."

"Well, that's what I mean by asking questions so that the answer you want is the easiest answer for the prospect to give.

"If you say to a prospect, 'You haven't ever found that your present model wouldn't give you all the speed you needed, have you?' the prospect is more likely to say 'Yes' than if you ask him, 'Have you ever found that your present model wouldn't give you all the speed you needed?' This last question leaves an opening for him to say either 'Yes' or 'No.' And if you ask, 'Haven't you found that at times you needed more speed than this model would give you?' the easiest answer is 'Yes.'

"There you have the same question put in three different ways. The first one makes 'No' the easiest answer, and 'No' is the answer you want.

"The second form of the same question leaves the choice of answers to the prospect. He can say 'Yes' or 'No.'

"The third form makes 'Yes' the easiest answer, and that is the answer you do NOT want.

"In the form that suits your case you have almost put the words into the prospect's mouth and he's got to be somewhat stubborn or set in his views if he won't say what you want him to say. Little things like this, Chester, make your own way easier and actually will make more money for you.

"Supposing a man wants you to take a car in trade. Supposing you don't want to accept his terms. If you ask him a question such as, 'Do you think anyone will pay as much for your car as you want me to give for it?' he may say 'Yes.' But if you ask, 'Don't you think that price is more than anyone would pay for that car if I took it in?' he is more likely to say you are right.

"And if he says you are right he is then on the defensive and you can push him back a trench or two. If he still insists his car will bring what he asks, you could say, 'Don't you think, then, that it ought to sell in a very few days?' He should say 'Yes.' Then tell him you will be only too glad to take it into your place and sell it for him, and that if by chance it should bring less than what he asks he should pay the difference.

"Say to a man, 'Don't you think this or that?' or 'Isn't it true, Mr. Smith, that so and so is the case?' or 'Wouldn't you prefer it this way, Mr. Smith?' If you put the question any other way you are likely to get an answer you don't want, and if you get an answer you don't want your way to the sale is harder. It is a fight of mind against mind, and you must make his mind work your way.

"In every sale you must lead the prospect. If he takes each step you want him to take the succeeding step is easy; but if he is permitted to ramble all over the lot and gets to leading the way himself, it becomes difficult for you to get him back into the beaten path to the sale."

"I'll try it," said Bement, "and see if it won't work."

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 776) STEERING WHEEL PULLER

A simple form of steering wheel puller is shown herewith. It differs from most of those seen in that it is merely a large jaw which fits around the rim of the wheel. It is cheap and easy to make.—Herbert Johnson, Beacon Motor Car Co. (Peerless), Boston.

(No. 777) GENERATOR TESTING BOARD

When a generator gives trouble it is often necessary to remove it from the car and run it at various speeds, using voltmeter, ammeter and cut-out to determine where the trouble is. It is essential to have an apparatus which may be mounted quickly and on which the driving mechanism may be connected with little trouble. The generator is bolted to a board which is hinged to the bench. A pulley is clamped to the generator shaft and a belt is connected between it and the pulley on the motor. The tension of the belt is secured by the adjustment of a roller between the board and the top of the table. The roller is merely a piece of 2½-in. pipe.—Herbert Johnson, Beacon Motor Car Co. (Peerless), Boston.

(No. 778) CONNECTING-ROD MANDREL

A quick way to lap in connecting-rod bearings is to use a mandrel, which is merely a bar the same diameter as the crank-pin and flattened for a distance at the center so that it may readily be placed in a vise. The mandrel is not only more convenient to work on, but has the advantage that the connecting-rod may be removed for inspection without unbolting the bearing cap. If the mandrel is perfectly straight, it may also be used to determine whether the connecting-rod is bent or not by testing it with a try-square.—J. M. MacAlman (Stearns), Boston.

(No. 779) HUB WHEEL PULLER

The difficulty with the ordinary hub type of wheel puller, for removing wheels from semi-floating axles particularly, is that when the wheel is badly rusted to the axle it is not powerful enough to work and some other type of puller must be employed. By a slight modification of the design of this puller, however, the ordinary hub design may be made to meet all requirements. The pulling screw on the device illustrated is drilled through its full length and a hardened steel rod is placed inside of it. The hub of the puller is first screwed into place and then the screw is turned tight. So far, the operation is not different from the ordinary. The next step is to strike the rod inside the screw several sharp blows and this force, added to the pull already exerted by the screw of the puller, is sufficient to loosen the most refractory wheel.—C. E. Bradish, Connell & McKone (Overland), Boston.

(No. 780) WRENCH FOR CLOSE QUARTERS

Occasionally a nut on a car will be so placed that it will be impossible to put an ordinary wrench in place to move it. The space is so cramped that the wrench handle can only be moved a few degrees before a new hold is necessary and this is not far enough for even an S wrench to obtain a new grip. The wrench shown will be valuable under such circumstances. It is designed especially for turning up the packing gland nuts on the water pump on a certain car but there are many other places where it might be employed to advantage.—Herbert Johnson, Beacon Motor Car Co. (Peerless), Boston.

(No. 781) TIMING GEAR PULLER

A special puller for timing gears, that is strong and simple, is illustrated herewith. It is designed to go through the holes in the web of the gear and is then turned to the left as far as possible, so that the three feet of the puller bear against the web and thus draw the gear off when pressure is applied by timing the central screw.

(No. 782) HEADLIGHT FROSTING

Recently there has been a great demand for frosted headlight glasses, and particularly for glasses in which only the upper half is frosted. This offers a good opportunity for making money, as it is the work of only a few moments to frost a pair of glasses, and the apparatus required is exceedingly simple. Sand and compressed air are the principal things required. In other words, the frosting is accomplished by the use of a sand blast. A box is constructed, as shown, with half of the top of glass and the rest of cloth and the upper half of the front, also of cloth. The sand reservoir is suspended from the ceiling, and from it a pipe runs down to join the compressed-air pipe, which is horizontal. The headlight glass is placed in the back of the box and then all is ready. The sand and compressed air are turned on until a powerful stream of sand is obtained, and this is directed against the glass. If only half of the glass is to be frosted the other half is protected by pasting a piece of heavy paper over it. More intricate designs may be produced by the same method.—Herbert Johnson, Beacon Motor Car Co. (Peerless), Boston.

(No. 783) CYLINDER CALIPER

A device for determining the irregularities in the cylinder surface consists of a short strip of angle iron which bears on one side of the cylinder and supports an adjustable member perpendicular to it which carries the indicating member of the caliper. This is held in contact with the cylinder wall by a spring, and as the device is moved over the surface, the needle magnifies the movement, which may be read on the scale at the end of the instrument.—Herbert Johnson, Beacon Motor Car Co. (Peerless), Boston.

(No. 784) ELECTRIC DRILL PRESS

In a small shop it is not always advisable to buy a drill press; even a small one is a greater outlay than is warranted by the volume of work. A solution of this difficulty is a portable electric drill, together with the device shown, in which it is mounted. This peculiar drill press may be used for all ordinary work, and in addition the electric drill may be used separately.—E. T. Linehan, Cole Motor Co. of Boston (Cole), Boston.

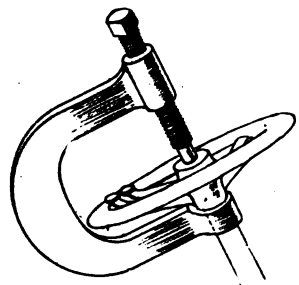
(No. 785) LAPPING TOOL

The accompanying illustration shows a simple lapping tool consisting of a single piece of ¾-in. stock. It may be made in a few minutes by any blacksmith.

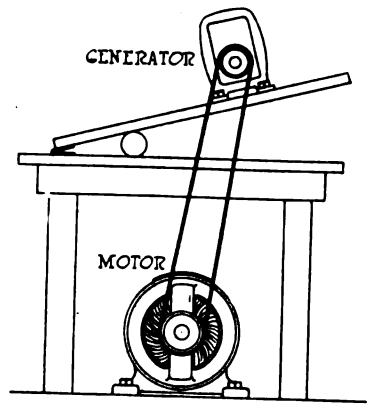
(No. 786) OPEN STOCK BIN

The large pans shown herewith and arranged in a suitable metal rack are excellent for storing parts, either carried in stock or from a car being overhauled. Since they are open, the material in them is readily seen and easy to remove. When desired the whole pan may be taken out and carried to the work, which is an added advantage.—C. E. Bradish, Connell-McKone (Overland), Boston.

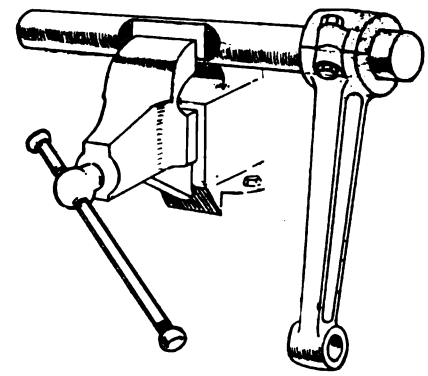
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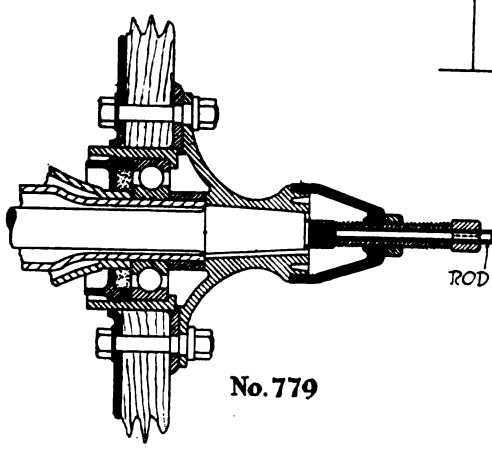
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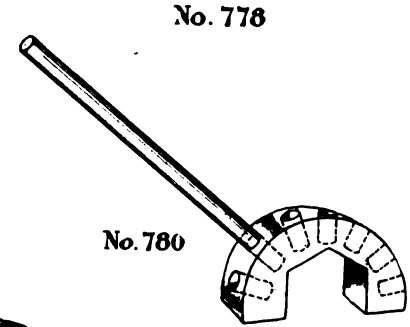
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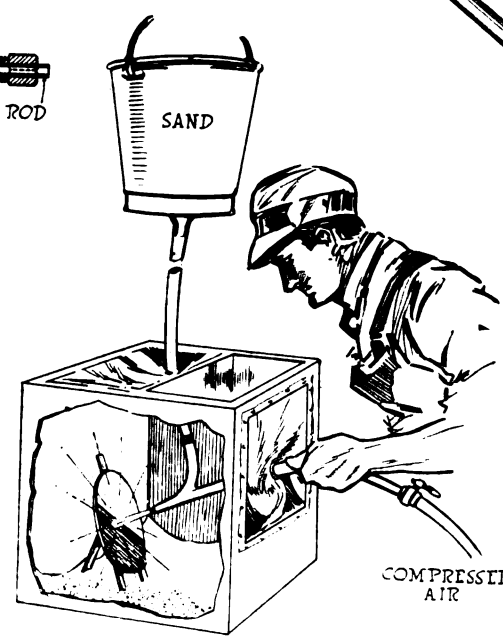
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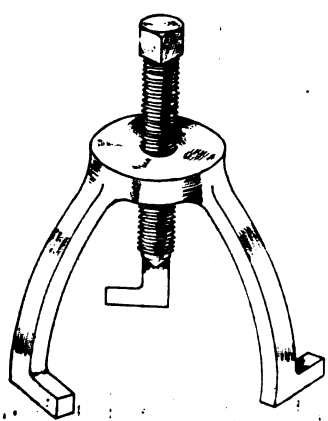
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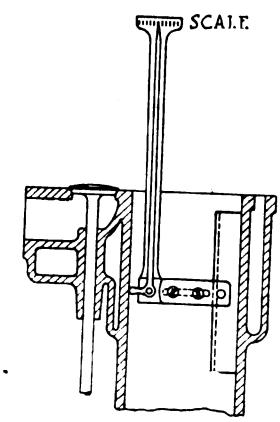
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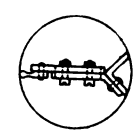
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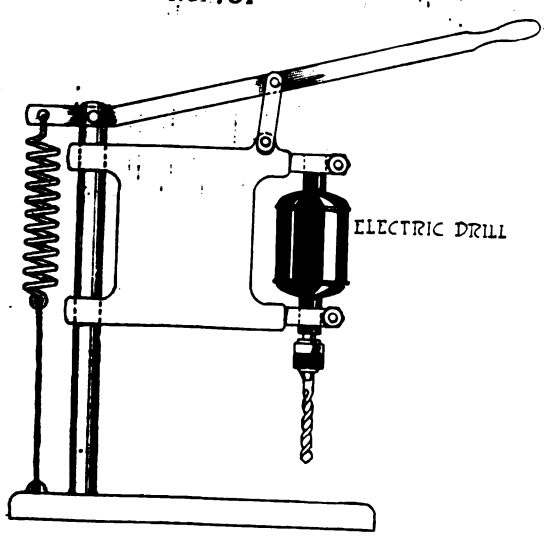


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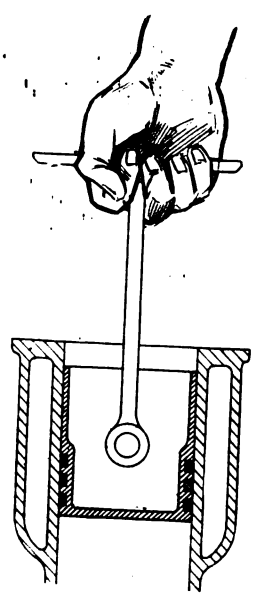


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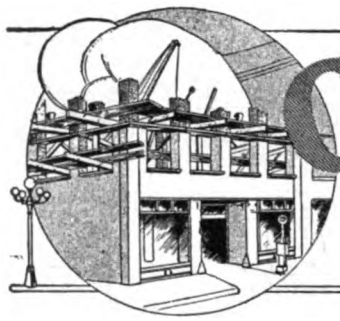


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Scientific Construction

GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

LATTIS-TRUSS ROOF

Fig. 1

McKeown Bros., 4617 Cottage Grove Avenue, Chicago.

A wooden roof truss, Fig. 1, which is said to cost much less than other wood trusses and is lighter. It is claimed that it costs less than a steel truss of inferior strength.

No posts are required even for spans up to 100 ft. or more.

These roofs are built in any part of the United States. One man is sent from the home office and purchases the material, hires any labor, and constructs the roof right at the site of the building. The cost of the work depends on the charge for lumber in the locality.

COMPARATIVE ADVANTAGES OF TWO PLOTS

Figs. 2 *and* 7

Editor Motor World:

We note you publish plans of garages and would like to have you furnish us with plans best adapted to the following plots: We have one that measures 56 x 140, on which we are considering installing a three-story building, with basement. This building would include salesroom large enough for at least four show cars, accessory salesroom and stockroom, office, wash rack, and storage accommodations for from 100 to 150 cars. The repairshop and paint shop would occupy the top floor. This plot of ground is on a corner.

The other plot is an outside lot running from street to street and measures 60 x 200. We figure with this building we would only need basement enough for heating plant and tire stockroom. The shop would be on the record floor and a ramp could be used instead of an elevator.—James R. Cochran, Story Motor Supply, Bozeman, Mont.

Fig. 2 and 7 show plans which may be used on the two plots you have in mind. Which should be used can only be determined after carefully considering the relative advantages of these two locations, as well as their advantages from a space economy standpoint.

It is difficult to compare the two plans just as they stand, for the reason that one has a ramp and the other has not, and this naturally makes a great difference in the number of cars that can be stored. The total floor area of the 55 x 140-ft. building is over 31,000 sq. ft., but subtracting the showroom, accessory store, office and repairshop area, it leaves a net amount of about 26,000. The net garage area of the 60 x 200 building is 30,000, inclusive of heating plant and tire stockroom in the basement. Both designs will accommodate 174 cars, so it is readily seen that the smaller building is more economical, but this is partly due to the fact that elevators are used instead of ramps.

ONE-STORY AND BASEMENT GARAGE AND SHOWROOM

Figs. 3, 4, 5 *and* 6

Editor Motor World:

We are planning to build a garage and showroom on a plot 92 x 102. There will be a salesroom and shop, as well as space for storing cars. The ground slopes back, and we will have a basement.—Reader.

Figs. 3, 4, 5 and 6 show the plans for this building. Fig. 4 has an elevator,

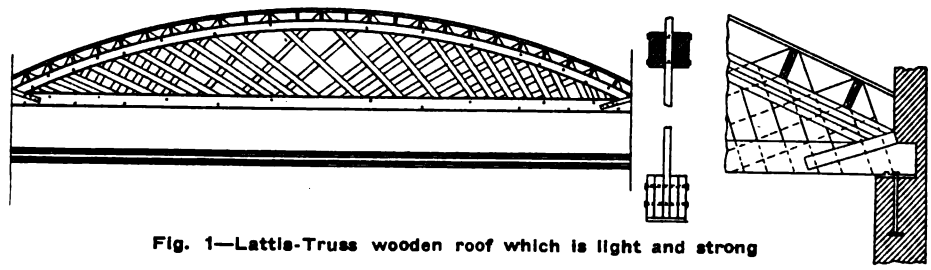


Fig. 1—Lattis-Truss wooden roof which is light and strong

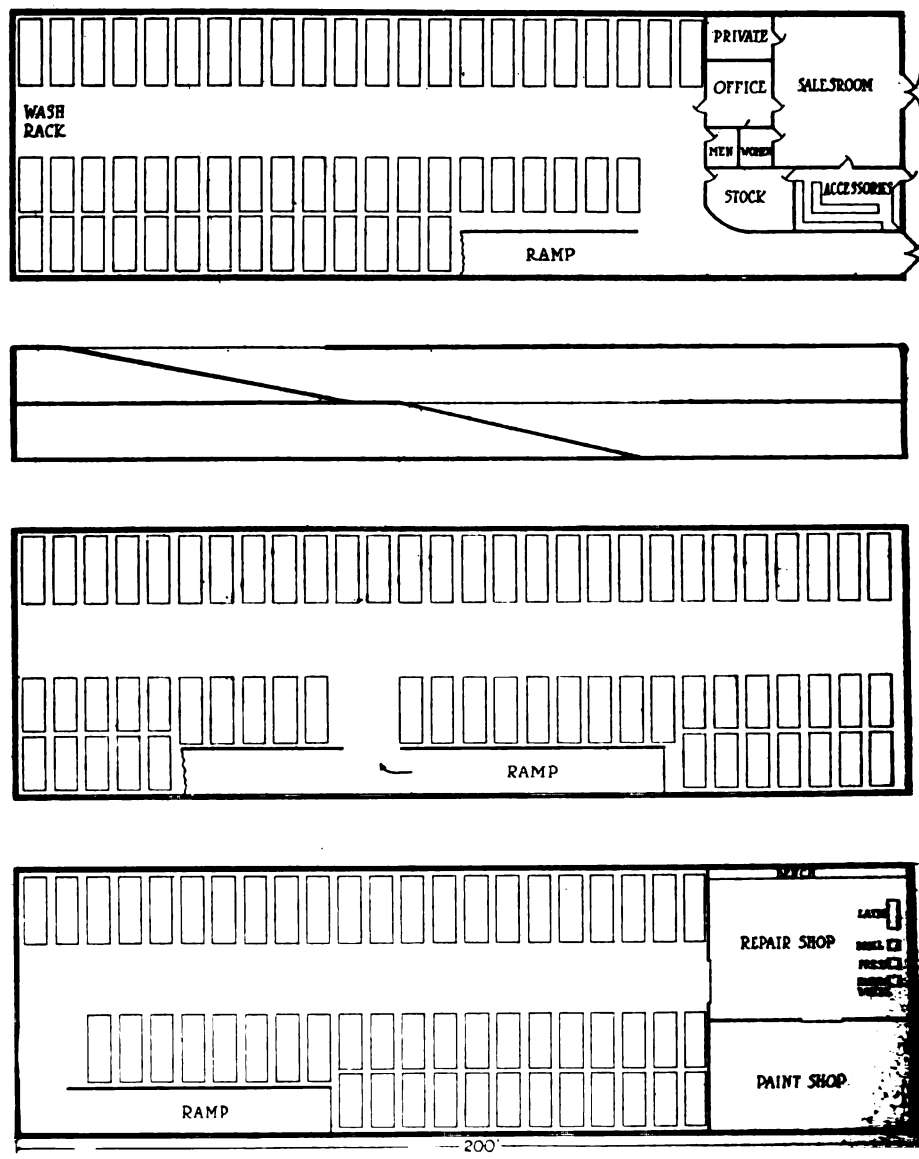


Fig. 2—Three-story building 60 x 200 provided with ramp. Shop on top floor

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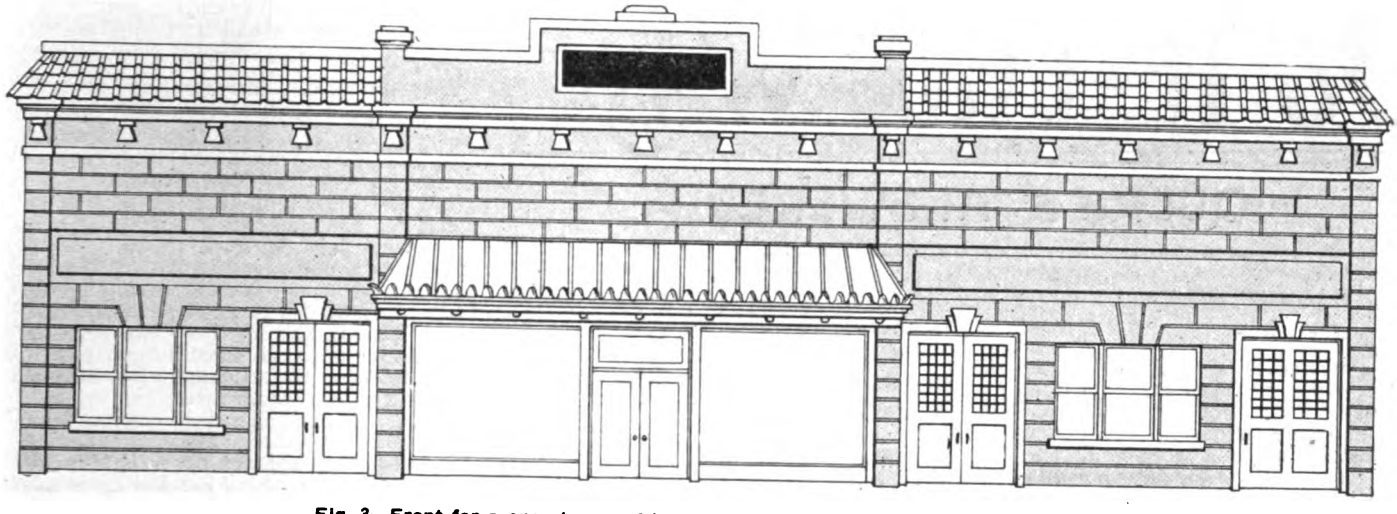


Fig. 3—Front for a one-story and basement building provided with a ramp

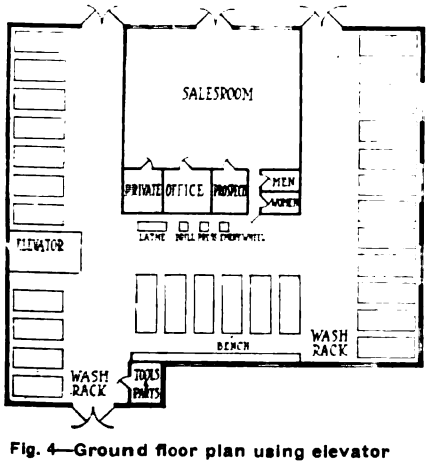


Fig. 4—Ground floor plan using elevator

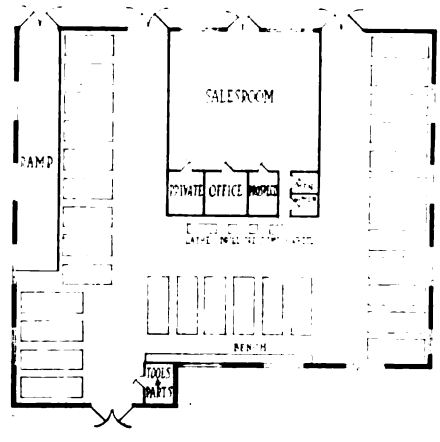


Fig. 5—Ground floor plan using ramp

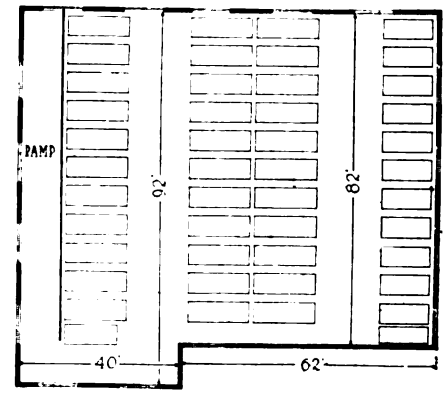


Fig. 6—Basement plan showing ramp

Fig. 5 is similar except that it has a ramp, and Fig. 6 shows the basement when equipped with a ramp. Salesroom, offices and shop are concentrated in the space in the center, leaving the remainder for the storage of cars exclusively.

In many ways a ramp is advisable. It is cheaper to build, costs nothing to operate, and is more satisfactory and convenient than an elevator. However, its presence crowds the layout slightly and unless very short cars, such as Fords, can be stored in the front part of the first floor, difficulty will be encountered on account of the close quarters. The ramp construction also reduces the aisle space in the basement. The construction would be ideal if a few feet more frontage could be obtained.

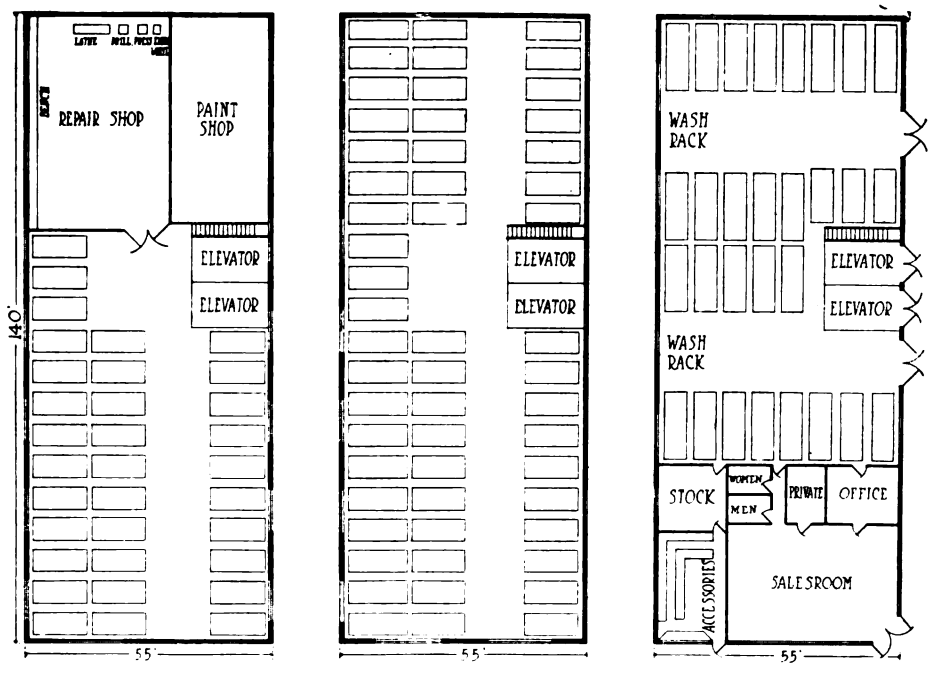


Fig. 7—Three-story garage, showroom and shop with two elevators connecting floors

Big Drive For Safety

BOSON, MASS., July 24—A Statewide movement by the Highway Commission on one hand and the motor clubs through the Massachusetts State A. A. and the railroads on the other, will be inaugurated this coming week to reduce the number of motor accidents on the Bay State highways. For some time the Highway Commission has been at work on the matter of increasing its force of investigators.

F. L. Austin, who has had charge of the examining and investigating department since it was established in 1907, has spent a great deal of time working out the plans. He has now subdivided the State into fourteen districts and investigators will be placed in each one. Last year there were eight such districts. These investigators furnish information which is used to establish preventive measures and which may be used in the construction of safety devices.

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Do It This Way

···QUERIES ANSWERED···

MAGNET RECHARGERS

Editor Motor World:

The writer is a constant reader of Motor World, a traveling man, calling on the trade throughout the Pacific Coast. I have had many requests from customers for instructions for making an efficient coil or helix for recharging the magnets of various types of magnetos. I have, in many cases, given my idea of such an instrument and have in some cases constructed a coil for my customer. I wonder if you have in your files anything bearing on this subject and whether you can give specific working plans for constructing a real practical and efficient instrument which will not be dependent on a storage battery or other D. C. current, but which has incorporated in itself a rectifier which will allow the use of the ordinary 110-A. C. lighting circuit?—Truman Northup, Preer Tool & Supply Co., Portland, Ore.

It is impossible to use such a device on alternating current without a rectifier, but this is not as great an objection as you think. Where a direct-current supply is not available a storage battery, or even dry cells, may be used with fair economy. While the capacity of a dry cell is small, very little energy is required for recharging the magnets. The switch is closed only for a short time; it is not the same as charging a storage battery, when the energy must be left on for hours.

How to Make

In Fig. 4 is shown the electromagnet employed in the repairshop of a large taxicab company for the purpose of recharging magnets. It comprises two heavy coils of insulated 20-gage wire, wound so as to give 10,000 amp. turns to the square inch. The windings are around soft cores 1 3/16 in. in diameter. The bottom ends of these cores are secured or embedded in a heavy soft cast-iron base-plate, while rectangular cast-steel pole pieces, countersunk to fit over the top ends of the cores, are provided. These pole pieces are held parallel by two non-magnetic brass strips. This electromagnet is mounted substantially on a wooden stand. The two cores are wound in opposite directions to form a north and a south pole, and the proper magnetizing strength is obtained when a current of 40 volts at 3 amp. is passed through the windings.

The operation of recharging a magnet simply consists in wiping and rocking the poles of the magnet over the pole pieces of the electromagnet, having due regard for the relative polarity of the magnets.

The north pole of the magnet to be recharged should be placed in contact with the south pole of the electromagnet. Ascertain the polarity as follows: Place one end of the magnet to be recharged about ⅛ in. from one end of the electromagnet. If the latter seems to pull the magnet, then unlike poles are facing, for unlike poles attract and like poles repel each other, and consequently the magnet should be reversed.

After the proper polarity has been found, grasp the magnet, as shown in Fig. 2, and brush it back and forth across the electromagnet. After this has been done about twenty-five times lay the magnet on one side, as shown in Fig. 3. Then draw the magnet backward until the ends almost are off the electromagnet, and while still in contact with the electromagnet it should be carried around, as shown by the dotted lines. The operation should not be rapid, but, on the contrary, sliding the magnet over the electromagnet should be done slowly.

A piece of metal cannot be charged too much, for it will hold only a certain amount of magnetism and no matter how long the operation continues after the saturation point has been reached the metal will hold no more. It is safe, then, to get the proper saturation point by sliding the magnet over the electromagnet until the pull is quite intense.

While this coil is designed for 40 volts, it should work on voltages considerably larger and smaller than this. In fact, if care is taken not to leave the switch closed for an unnecessarily long time there is no reason why 110 volts should injure it.

Short-cut No. 75 describes another:

A magnet recharger which will quickly energize any type of magnet and which operates with four 6-volt storage batteries in series is readily made. The cores are 1¾ in. in diameter and 5 in. long, and are made up of bundles of soft iron wire 3/16 in. in diameter. Each bundle is bound together with fine wire and the whole is soldered. Around each core is wound 500 ft. of No. 16 gage copper wire. In setting these two coils up be careful to have them properly connected. With the windings of both coils running in the same direction, the bottom wire of one coil should connect with the top of the other. The magnets may be charged by contact by using the instrument just as it is, but the cores are removable so that the magnet may be placed right in the coils. To charge the magnets the switch is closed three times for 5 sec. each, and the magnets are gently tapped during this period. A keeper should be placed on the magnets as soon as they are removed.—M. R. Potter, Foreman, Wm. Petry, Inc., Hudson, N. Y.

DETERMINING BATTERY POLARITY

Editor Motor World:

Will you please explain how to determine the polarity of a generator? I have instructions that say to send the battery current through the field windings while the generator is idle, but I do not exactly understand how it is to be done. Can the polarity be changed at will? I want to put a new battery on a car and I know what the result will be if it is connected to the wrong terminals.—A Constant Reader of Motor World.

There are several methods of making this test, but the most direct is as follows:

With the engine running, note in which direction the generator is rotated; stop engine and disconnect the generator drive, leaving the generator free to rotate at will. Next connect the storage battery to the terminals of the generator. The generator will run as a motor. The battery connection is correct when the generator runs as a motor in the same direction as it is driven by the engine.

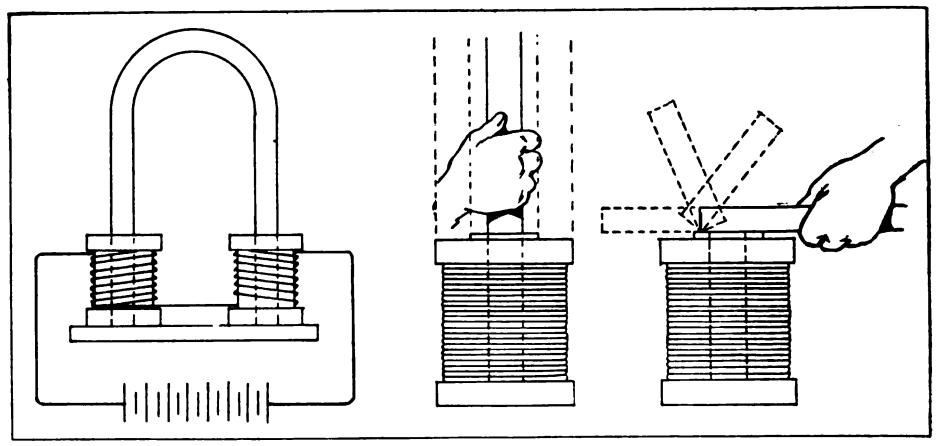


Fig. 1—Left—Diagram showing wiring and method of charging magnets by placing them inside the coils. Fig. 2—Center—First step in charging magnet by direct contact. Fig. 3—Right—Second step. Although a bar magnet is shown the procedure would be the same for any other type

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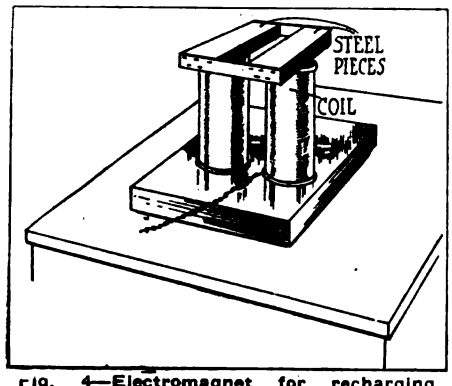


Fig. 4—Electromagnet for recharging magneto magnets

The polarity may also be determined with a voltmeter of the proper voltage. With the generator being driven by the engine, connect the voltmeter to the generator mains. If the needle does not move over the scale but shows a tendency to butt against the stop-pin at the left, reverse the connections. The needle will then give the proper reading and this connection of the generator must be used for the positive side of the battery.

If either of these methods is undesirable a potato may be used. Two copper wire leads should be taken from the terminals of the generator. After polishing the tips of these wires stick them into a potato, with the points parallel 1 in. apart. Start the generator and after a short run the positive terminal wire will have turned brown.

A glass of water may also be used. Place the two terminals of the generator into the water, one on each side of the glass. With the generator running, the greater number of bubbles will be found on the negative pole.

Great care must be taken not to short-circuit the wires while the motor is running.

WHY RADIATORS LEAK

Editor Motor World:

With the exceptions of breaks, what causes leaks in automobile radiators?

What care, other than keeping filled with water, should be given to the radiator and cooling system of an automobile?—B. F. Graves, 501 Spencer Avenue, San Jose, Cal.

Your question is not quite clear, but evidently by breaks you mean actual mechanical injury to the radiator which would be the result of a collision of some sort. The most usual cause of a leak is the result of the vibration of the car and the twisting and weaving of the frame. Unless the radiator is properly supported it is possible that some of the distortion of the frame will be transmitted to the radiator, with the result that some of the joints will eventually loosen up. If the radiator is well made and well mounted a difficulty of this sort should be exceedingly rare.

Occasionally radiator leaks will be caused by corrosion, but not often.

Another frequent cause of leaks is due to allowing the water to freeze, and the remedy, of course, is to use an anti-freezing mixture.

A radiator requires very little care. Every once in a while it should be thoroughly cleaned by flushing it with a hose, and if this is not sufficient it should be filled with a saturated solution of boiling washing soda, which will loosen up all dirt and cut the grease and oil.

APLCO STARTER INFORMATION

Editor Motor World:

The Motor World, Dec. 21, 1911, page 885, gives description, also cut, of Aplco starter, Inter-State car. The writer owns a Speedwell car, model 10-G, No. 1385, equipped with the same system.

Where can I procure all the information there is published, descriptive of this starting and lighting system? The controller box has three positions for lever, Starting, Off and Reverse. I am anxious to know what the reverse is for. Is there any book published describing this system? If so, send name and price. Just traded this car and am completely in the dark about electric system.—John Healy, Bairdstown, Ohio.

Answering your letter of recent date, would say that we are unable to furnish you with any printed matter on this system. The particular issue you mention is out of print and the Splitdorf company has no more instruction books on this model.

The most important thing to know about this system is the operation of the lever on the dash. To start, this lever is pushed over to S, and as soon as the motor is running it is moved to R, which stands for Running position and not for reverse, as you imagine. The motor is shut off by bringing the switch to O, which stands for Off.

BINS AND DRAWERS FOR FORD PARTS

Editor Motor World:

Would you kindly send us the name of the manufacturer of steel stock cases, files, etc., that puts out a special article for the stocking of Ford automobile parts?—M. A. Cory, Central Garage, Medicine Hat, Alberta, Can.

We know of no concerns which manufacture steel stock cases, files, etc., particularly for the Ford car. Possibly the Ford Motor Co. can give you some information on this point.

We are mailing you a list of concerns which make stock cases, files, bins, etc., for all makes of cars, and we believe that you will be able to select what you want from this.

There is no special reason why the Ford should require bins that are different from those required by any other car.

A number of these products were described in the Garage and Equipment number of Motor World, which was published April 26.

WHO MADE KEETON GEARBOX?

Editor Motor World:

Who built transmission for Model L, 1910 Croxton Keeton?—J. H. Miller, the West End Garage, New Philadelphia, Ohio.

We are not sure, but we think that this gearbox was made by the Warner Gear Co., Muncie, Ind.

The parts for this car are handled by the Auto Parts Co., 737 West Jackson Boulevard, Chicago, and although you have not stated it, you probably desire parts, and consequently we are sure you will be able to obtain what you desire from them.

KING WIRING DIAGRAM

Editor Motor World:

Will you please publish a diagram of the electric connections on the King eight?—E. R. Thurber.

Fig. 5 shows the wiring of this car—a 1915 Model D. It is a two-unit, double-wire system with battery ignition. The Ward Leonard automatic lighting and starting system is used, and ignition is by the Atwater Kent system.

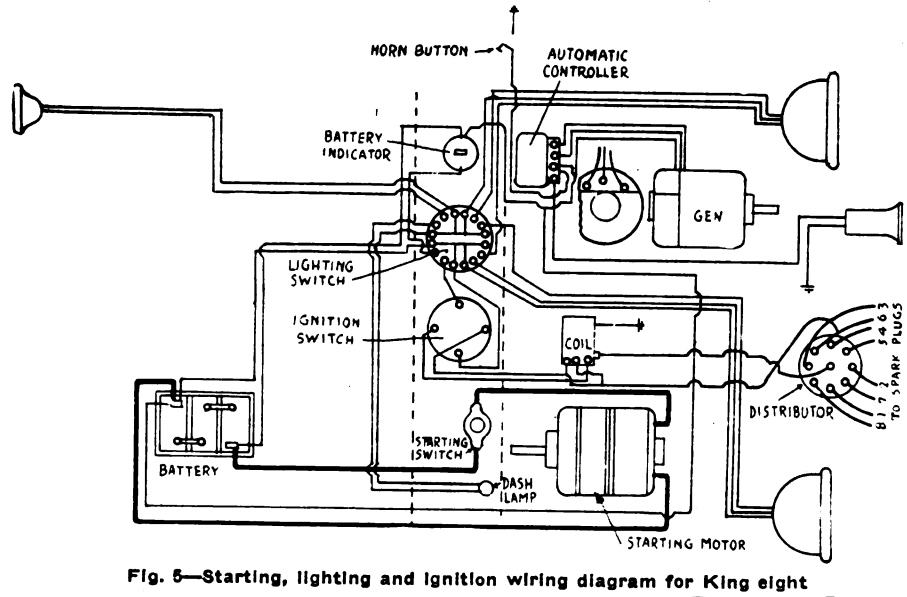


Fig. 5—Starting, lighting and ignition wiring diagram for King eight

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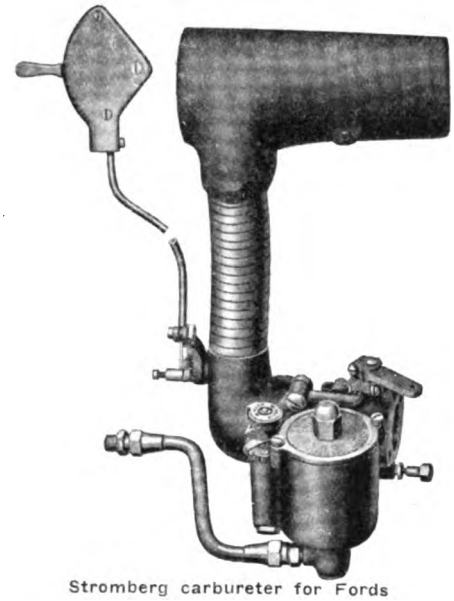
Accessories & Supplies



STROMBERG CARBURETER FOR FORDS

Stromberg Motor Devices Co., Chicago. PRICE, $18; dealers, 25 per cent.

A plain tube carbureter for Fords. In design this carbureter differs from other Stromberg models in many respects, as it is made to fit the requirements of the Ford motor. No springs or valves enter into its construction, yet it is said to give accurate mixtures at all times. The carbureter is supplied with all attachments, cap screws, gasket, steering post control, flexible tubing, hot-air stove, and primer wire. Complete directions come with the carbureter so that anyone can make the installation. No tools other than those in the ordinary kit are required. The parts will fit any model of the Ford motor. Each carbureter is tested and adjusted in the factory on a Ford motor and needs little adjustment after installation. Separate high- and low-speed adjustments are provided. The motor is first adjusted for low speeds by turning the low-speed adjustment nut, and then, with a partly open throttle, the high-speed adjusting is turned until the motor runs smoothly. Increased economy and power are claimed by the makers.

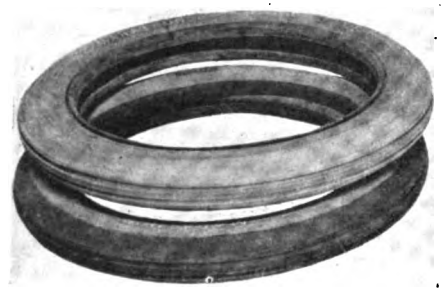


Stromberg carbureter for Fords

ANDERSON STEAM VULCANIZER

Anderson Steam Vulcanizer Co., Worthington, Ind. PRICE, $125, complete with set of tools.

A gasoline-operated steam vulcanizer for repairing tubes and casings. It is equipped with a large sectional mold which will take care of a 16-in. section in 4-in., 4½-in. and 5-in. tires, and a small sectional mold for sections to 15 in. in 3-in., 3½-in. and 4-in. tires. The tube plate has a capacity of four tubes, and seven tubes can be treated at one time, when the section molds are not in use. The normal capacity is three casings and four tubes.



Marathon tires with grooved treads

FORBES EXTENSION FOR FORD

Walter J. Forbes, 243 Columbus Avenue, Boston. PRICE, packed ready for shipment, $100; installed, $135.

Provides a method for lengthening the Ford chassis 36 in. After removing rear mudguards, body, splash plates, running boards, gasoline tank, muffler and exhaust pipe, both side members of the frame are cut through at the middle of the car with a hacksaw. The frame is then lengthened by hot riveting and swedging a channel into the opened section. Between the lengthwise members of the extended section is a cross-plate of cast steel, so arranged as to carry the thrust of the driveshaft. Each side of the frame is trussed throughout its entire length with steel rods fastened at the ends of the frame to steel brackets. An intermediate driving shaft is supplied, together with brake-rod extensions, longer running boards and splash plates, and all parts necessary to make the installation. The gear ratio is not changed in any way, and the entire rear end is left in its original form. The capacity of the truck is 1500-1800 lb.

SIEVERKROPP STARTER FOR FORD

Sieverkropp Engine Co., Racine, Wis. PRICE, $15.

A device for cranking the Ford from the seat. The device is attached to the crankshaft in place of the fan pulley, and is operated through a chain, bevel gears and a cable running over a large wheel to a handle on the dash. A pull on the handle turns the engine over with little effort, it is said, and without danger of backfires. A foot-controlled primer is included.

RESISTOIL AIR HOSE

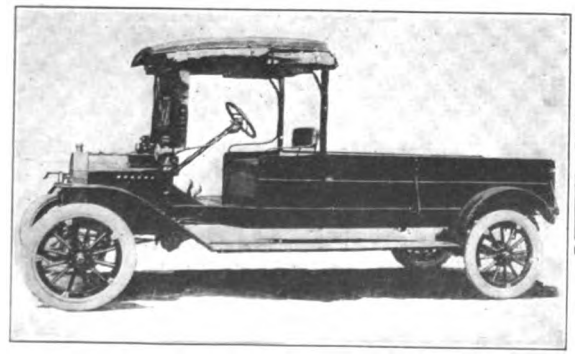
Brunner Mfg. Co., Utica, N. Y. PRICES: 3/16 in. inside diameter, 16 cents per foot; ¼ in. inside diameter, 18 cents per foot; ½ in. inside diameter, 27 cents per foot.

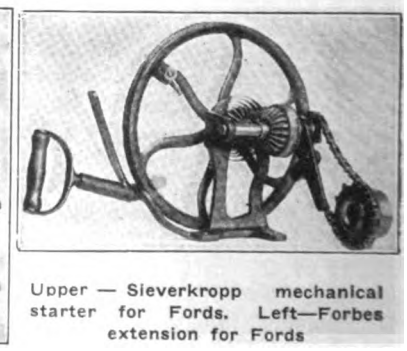
A compressed-air hose having special oil-resisting properties. The walls are made up similar to the common five-ply hose, which it resembles in outward appearance. The interior of the fabric tube is lined with a special compound that is said to resist the action of any oil or oil fumes that may be in the air.

NEW MARATHON TIRE

Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.

The Runner is a new Marathon tire with a grooved tread. Running around the tread of the casing are two parallel grooves, leaving three ridges in contact with the ground. The continuous hollow tends to reduce suction and dragging, while the ridges tend to protect against side slip. This tire is furnished in a fabric body with a white tread and with a whipcord body with a black tread. It sells at the price of the regular smooth-tread tire.



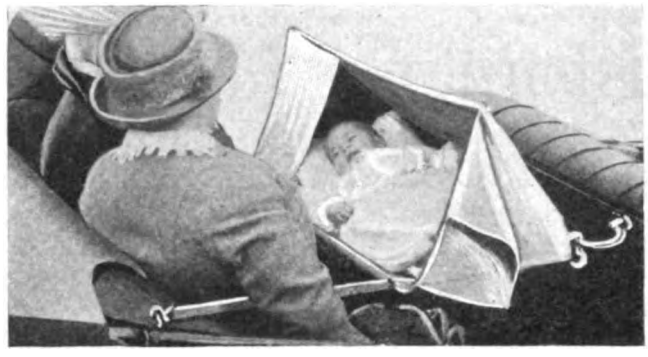


Upper — Sieverkropp mechanical starter for Fords. Left—Forbes extension for Fords

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Rauber - Fien tire pump



Hilton baby hammock

R-F TIRE PUMP

Rauber-Fien Mfg. Co., Rochester, N. Y. PRICE, $15, complete with hose and gage.

A single-cylinder vertical power-driven pump, 6¼ in. in height and weighing 6½ lb. The cylinder, crankcase and piston are of gray cast iron, the camshaft of forged steel with a bronze eccentric strap, and the piston is fitted with two lap-joint ground rings. The cylinder has cooling fins and a taper valve outlet. Splash lubrication is employed, a felt wiping pad on the cylinder taking care of the cylinder lubrication.

LOCKTITE TIRE PATCH

Locktite Patch Co., Detroit. PRICES: 108 sq. in., $1.60; 54 sq. in., $0.90; 28 sq. in., $0.50.

A cementless canvas-backed tire patch. In effecting the repair a piece large enough to slightly overlap the puncture is cut from the sheet. The tube is cleaned with gasoline and roughened with emery cloth, after which the patch is wet with gasoline and applied to the puncture. After working the facing of the patch well into the tube it is removed and allowed to dry. The patch is again applied to the puncture and the tube is ready for use. Outfits are supplied containing cement for casing repairs.

TIREOID PUNCTURE SEALER

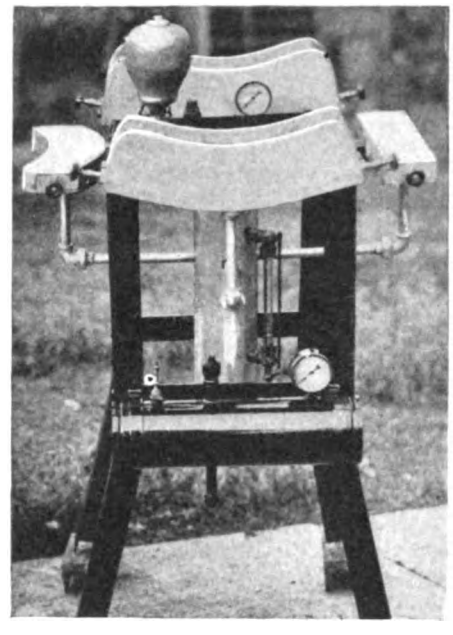
The Tireoid Co., 1200 Michigan Avenue, Chicago. PRICES: Four cans for four 3- or 3½-in. tires, $10; for 4- or 4½-in. tires, $13; for 5- or 5½-in. tires, $16. Prepaid.

An automatic puncture sealing compound for tubes. It is a semi-liquid substance, mostly mineral, that solidifies on exposure to air. One can of the preparation is injected through the valve stem of each tube and is kept in circulation by the rotation of the wheel. When the puncture occurs it rushes to the opening, filling and sealing the leak, it is said.

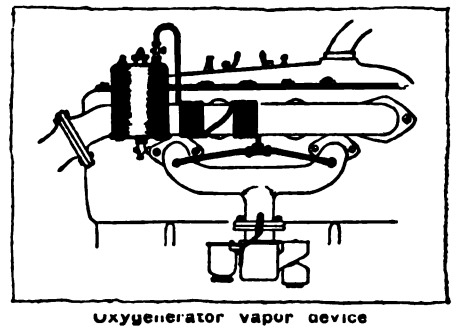
DUPLEX CANTILEVER SPRING

Duplex Cantilever Spring Co., Chicago. PRICE, $15 per set of four.

An auxiliary spring for Fords. One of the springs is fastened upon each end of the front and rear springs. The upper end of the spring is secured at about half the distance to the middle of the standard Ford spring, the lower end under the spring being fastened to the present Ford spring perch. This cantilever spring increases the acting length of the original about 5 in., and is said to promote easy riding and eliminate side sway.



Anderson steam vulcanizer

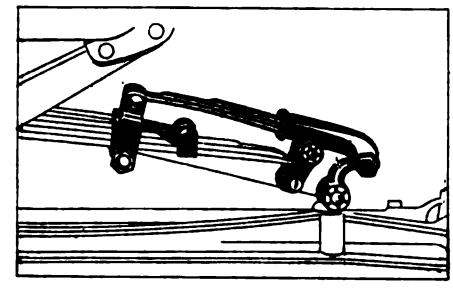


Oxygenerator vapor device

HILTON BABY HAMMOCK

Hilton Hammock Co., Seattle. PRICE, $5, delivered.

A hammock for comfortably carrying the baby in the tonneau. One side is attached to the robe rail by metal clamps, and the whole is suspended over the tonneau by straps extending to the sides of the rear-seat supports. The hammock is not in the way of the rear-seat passengers, and the baby is protected from the wind, dust and sun by a neat canopy. On the underside are pockets for milk bottles and change of raiment for the baby.



Duplex cantilever spring for Fords

CRANE TIRE PUMP

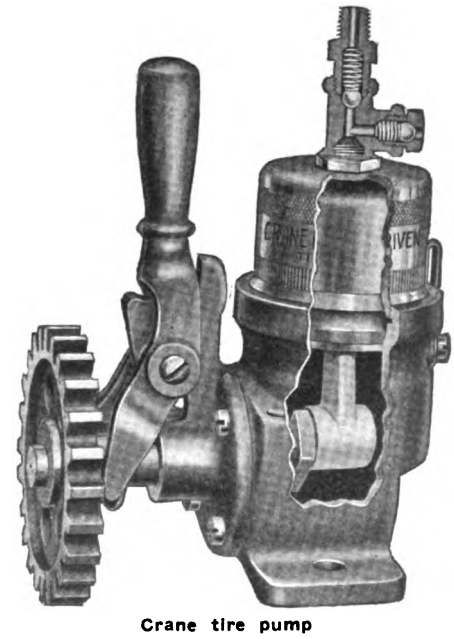
Bay State Pump Co., 275 Congress Street, Boston. PRICE, with hose and gage, $8.

A single-cylinder engine-driven tire pump. By the use of a special alloy packing ring in the place of piston rings it is claimed that no oil can be pumped into the tire. The pump can be supplied for any make of car and the installation may be made by the car owner. No drilled holes or machine work are required, as the brackets are designed to be attached to bolts or studs already on the engine.

Oxygenerator Vapor Device

The Oxygenerator Co., 1919 South Michigan Avenue, Chicago. PRICES: $10 on four- and six-cylinder; $12.50 on all V types.

This device introduces slight quantities of water vapor into the manifold. The reservoir is secured to the exhaust pipe and the water vapor generated there is sucked out through a coil which wraps around the exhaust manifold, and thence into the intake manifold. The heat absorbed in passing through this coil breaks the vapor up into its constituents, it is said.



Crane tire pump

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Telling the Customer Why Prices Rise

The story of how Fred A. Bean sold his car owners on increases in the prices in the Grosse Pointe Motor Service Station, Detroit, Mich.

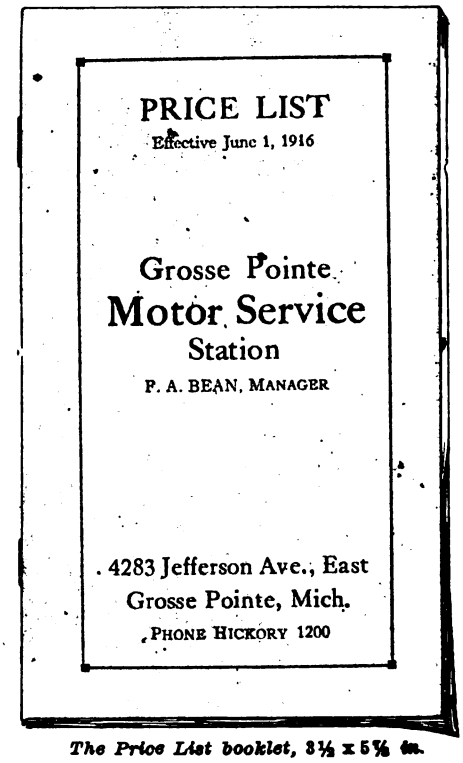
WITH prices rising all around in every business, Bean saw it was necessary to raise prices in his garage if the business was to continue to pay. He raised.

Then he realized he must SELL his customers on the new prices, so he issued the booklet that is illustrated herewith. In this he told the story of how labor and materials have risen in price, and at the same time he told of the excellent service his garage can give.

The booklet is a complete catalog of his prices, and Bean says he believes EVERY garage should have a schedule of prices so it may always know what to charge and assure the customer of a square deal and no chance for argument.

Not only is the booklet interesting in that it shows Bean's complete price schedule, but it is an exceedingly high-grade piece of garage literature, well written and well printed.

Last week in MOTOR WORLD *was printed the story of Bean's service booklet. It is an able twin to his price booklet. The story in the price booklet follows:*



The Price List booklet, 3½ x 5⅝ in.

OUR PRICES

THE issuing of new prices usually creates comment. Changes are made necessary from changing mercantile conditions, and from new methods of operation.

The commercial agencies show a greater percentage of failures among garages than almost any other line of business. Why? It is generally conceded that the answer is, because very few garage owners know what it actually costs to deliver service. It is also conceded that any business whose prices are figured from an actual cost basis plus the proper proportion of the overhead plus a fair percentage of profit will (except through gross mismanagement) have only an honest price list, and will not be in bad standing with its creditors.

The prices now offered are the result of a very careful analysis of a cost accounting system which we have had in operation for a period of thirty months. There is not a single guess-work price. We shall be very glad at any time to explain the details upon which any price is based.

The reductions, of which there are a number, are due to an increased volume of business and more efficient methods of delivering the service.

The increases are caused in a great measure by the data given herewith, which shows percentage of increase since July, 1913 (date of last price list).

This means an increased yearly cost of maintenance and operation of approximately $3,000.

Probably the most radical departure is in regard to electrics. We have long considered the current used in charging an electric to be fuel, the same as gasoline in a gas car, and should be charged for in proportion to the quantity used.

Heretofore we have had a flat rate of $40 for the service and charging. In several instances under the old lists the owner paid the full amount even when the car stood idle and he did not use current amounting to more than four or five dollars.

The new lists provide for a rate for storage and service (exclusive of charging) which is the same as a gas car of the same general type. The current will then be charged for as actually used.

We have not arranged a flat monthly rate for the charging of the various types of electrics, as we trust that our patrons will be glad to avail themselves of the many advantages of the metered system.

We pay rent, telephone, all insurance premiums, and similar items in advance; nearly all supplies, coal, gasoline, all repair parts, etc., are paid for upon delivery.

We are confident that you will agree with us when we say we do not believe we are unreasonable when we ask that storage and general service bills be paid in advance. It is not a reflection on your credit in any sense. It will mean a small amount to you for a period of 30 days. To us it means the carrying out of a sound business policy.

Supplies, etc., will be on the same basis as heretofore, payable on the tenth of the month following delivery.

Reduced cost to us means reduced prices to you.

You appreciate it, when as a result of good management, we can reduce prices to you.

We have several large items of expense due on the tenth of each month, upon which the discounts are large. The receipt of your check promptly on the tenth of each month will help very materially to cut the costs.

Since July, 1913

Salary Increases

Washers	30.1%
Polishers	33.3%
Foreman and Electrician	38.8%
Repairman	50.0%
Drivers	20.0%
Floorman	25.0%
Porters	50.0%
Office Help	25.0%

Increases in Supplies

Copper Wire and Electrical Goods	86.0%
Cordage	25.0%
Tires	39.0%
Glass	43.0%
Gasoline	100.0%
Oils	8.7%
Sponges	87.5%
Chamois	34.6%
Soap	126.6%
Coal	13.3%
Stationery and Printing	21.4%
Tools	28.3%
Paints	160.0%

TERMS AND CREDIT

All repair work, supplies, etc., are cash except to regular boarders and such others as make satisfactory credit arrangements.

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Storage and regular service accounts are payable in advance.

All other accounts are payable on the tenth of the month following delivery of material or service.

Accounts not paid on the first of the month following that in which they are due, will have interest added at six per cent per annum.

If you have credit with us and are in trouble in any part of the city, we will be glad to secure credit for you at any garage which is a member of the Detroit Automobile Trade Association, or we will assume the bill and add it to your next monthly statement.

Regular boarders of other garages in the Association will be extended emergency credit upon proper identification.

LIABILITY

We assume no responsibility for damages to cars from fire or accident, either in the garage or while being delivered or called for, or for loss of jewelry, packages, etc., left in the cars.

Our insurance does not cover your property.

Cars are accepted only with this understanding.

We, however, assure you that we will use every precaution to see that your property is protected at all times.

Our employees are required to furnish a surety bond and are forbidden the use of liquor at all times. Other rules for their government are equally strict.

INSPECTION SERVICE

Our Inspection Service consists of a thorough examination of the car. All bolts and nuts are tightened, steering gear and brakes looked over. All wires gone over for shorts or worn insulation, and the carburetor drained. Entire car oiled, including the filling of all grease cups. All working parts carefully examined for wear. In gasoline cars the fuel and water lines are examined for leaks and minor adjustments made. With Electric cars battery care is given at this time and without extra charge. If chain drive, the chains are cleaned and oiled.

Each regular boarder with an Electric will be assigned one morning, when his work will be done. To do this satisfactorily, the car must be held until noon.

Gasoline cars belonging to regular boarders will be inspected and oiled at night. Each car having a night assigned for this purpose.

Any car which is called out, or kept away from the garage during its regular inspection period will have missed this service until the next regular inspection day. We can not break up our regularly established schedule without making an extra charge.

Monthly Storage and Service

Type of Car	Full Service A	Limited Service B	Semi-Weekly Service C	Weekly Service D	Cleaning Service E	Live Storage F	Dead Storage G
GASOLINE CARS							
Cycle cars	$18.00	$15.50	$12.50	$11.00	$11.00	$10.00	$ 6.00
Small roadsters	20.00	17.50	14.00	11.00	11.00	10.00	7.00
Cabs and coupes	22.50	20.00	16.00	14.00	14.00	12.50	8.00
Large roadsters	25.00	22.50	17.50	14.00	14.00	12.50	8.00
Four- and five-passenger touring cars, Ford sedans	25.00	22.50	17.50	15.00	15.00	13.50	8.00
Medium size sedan, Five-pass. limousine	27.50	25.00	20.00	16.50	16.50	15.00	9.00
Seven-pass. touring	30.00	27.50	19.00	17.00	17.00	15.00	10.00
Seven-pass. limo., Large sedans	30.00	27.50	19.00	17.00	17.00	15.00	12.50
ELECTRIC CARS*							
*Does not include current for charging. Boarders on Monthly Service will be furnished current at $0.05½ per kilowatt.							
Roadsters	20.00	17.50	14.00	11.00	11.00	10.00	7.00
Coupe	22.50	20.00	16.00	14.00	14.00	12.50	8.00
Five-pass. brougham	25.00	22.50	17.50	15.00	15.00	14.00	8.00
Cars with wire wheels (extra)	2.50	2.50	.50	25	1.00	....	....
MOTORCYCLES						3.00	2.00

Delivery of cars outside of ½-mile circle, each additional half mile or fraction thereof, per month, $1.50.

Any car coming in under any class of service and remaining seven consecutive days or less in any calendar month will be charged for at transient rates. When in over seven days or less than twenty-five days, they will be charged pro rata at the class rate for the number of days they are in plus 10 per cent. Twenty-five days will be considered a full month. Cars changing from one class to another will be charged for in the same manner. Any service not included in the class contracted for will be charged for at transient rates.

All storage and service charges are due and payable on first of the month in advance.

The Table Above Gives the Class of Service and the Prices. The Tables That Follow Tell What Each Class Includes:

"A" FULL SERVICE

Storage space—7 foot stall.
Daily wash and metal polished.
Daily cleaning of windows and inside.
One delivery and call for each 24 hours in half mile circle.
Two inspections and oiling of car per month. (If Electric, battery care is included.)
Tires kept inflated.
Radiator kept filled.
Storage battery kept flushed.

"B" LIMITED SERVICE

Storage space—7 foot stall.
Daily wash and metal polished.
Daily cleaning of windows and inside.
Two inspections and oiling of car per month. (If Electric, battery care is included.)
Tires kept inflated.
Radiator kept filled.
Storage battery kept flushed.

"C" SEMI-WEEKLY SERVICE

Storage space—7 foot stall.
Wash and metal polish twice a week.
Cleaning windows and inside twice a week.
Two inspections and oiling of car a month. (If Electric, battery care is included.)
Tires kept inflated.
Radiator kept filled.
Storage Battery kept flushed.

"D" WEEKLY SERVICE

Storage space—7 foot stall.
Car washed, metal polished, windows and inside cleaned once per week.
One inspection and oiling of car per month. (If Electric, battery care is included.)
Tires kept inflated.
Radiator kept filled.
Storage battery kept flushed.

"E" CLEANING SERVICE

Storage space—7 foot stall.
Dust off and clean inside and windows daily.
Tires kept inflated.
Radiator kept filled.
Storage battery kept flushed.

"F" LIVE STORAGE

Storage space—7 foot stall.
Car may be moved at will.

"G" DEAD STORAGE

Storage space—6 foot stall.
Car cannot be moved but is placed on jacks and covered.

TRANSIENT SERVICE AND LABOR RATES

STORAGE

Up to 6 hours..... $ .50
Over 6 hours—up to 24 hours... .75

WASHING

(Includes polishing metal, cleaning windows and inside.)
(7 P. M. to 7 A. M.)

Roadsters, five-passenger touring cars 1.50
Coupes, small sedans, seven-passenger touring cars..... 2.00
Large sedans, limousines..... 2.50
Cars with wire wheels—extra... .50

Note—Tourists' cars covered with clay, tar or grease will be charged extra according to condition.

POLISHING BODIES

With body polish..... 1.00

CLEANING MOTORS

With compressed air and kerosene 1.50

USE OF WASH RACK

(8.30 A. M. to 4 P. M.)

With water only..... .50
With water, sponge, chamois, boots, etc. 1.00
With hot water—extra..... .50

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CHARGING ELECTRIC VEHICLE BATTERIES

Day Service
Current at metered rate per kw. .12
No charge less than..... .50
Night Service
Current at metered rate per kw. .07

CHARGING, STARTING AND LIGHTING BATTERIES

Night Service Only
1 to 7 volts (1 to 3 cells)..... .50
Over 7 volts (over 3 cells)..... .75

FLUSHING ELECTRIC VEHICLE BATTERIES

Distilled Water
20 to 34 cells..... .50
35 to 42 cells..... .75
Over 42 cells..... 1.00
Starting and lighting batteries. .15

WASHING BATTERIES

Per cell 1.00
Setting up of same per cell..... .25
(Extra charge for all material used.)

INSPECTION

(Gasoline and Electric Cars.)
Complete mechanical and electrical; full oiling and greasing; complete battery care, including flushing and equalizing of solution, making minor adjustments. No repairs, washing or delivery..... 3.00
Inspections given to regular monthly boarders out of scheduled date 2.00

LIVERY

(Time figured from time of leaving garage to return.)
Car with driver, per hour..... 4.00
No charge less than..... 1.00

DRIVERS

(For private cars)
Per hour ..... .75
No charge less than one hour... .75
(Time figured from time of leaving garage to return.)

TOWING

Car with one man, per hour..... 4.00
Each additional man, per hour.. 1.00
Use of team per hour..... 3.00
No charge less than..... 2.00
(Time figured from time of leaving garage to return.)

TIRE CHANGES

At Garage
Demounting rim ..... .35
Change on rim (small tires).... .35
Change on rim (large tires)..... .50
Demounting rim and change (small tires) ..... .50
Demounting rim and change (large tires) ..... .75
Note—Small tires include 32 x 3½, with soft clincher beads.
On Road
In one mile circle—Garage rates as shown above plus..... 1.00
Each additional mile or fraction thereof ..... .25

TUBE REPAIRS

Cold patch—first patch..... .25
Each additional patch..... .15
Vulcanizing—small holes, first patch ..... .50
Each additional patch..... .25
(Large blow-outs and sections priced according to size and condition.)

INFLATING AND TESTING TIRES

One or all on a car..... .10

LABOR

In Garage
Per hour ..... .75
No charge less than..... .25
(When men are held over-time or on Sundays to complete rush jobs double time will be charged.)

On Road in One-Mile Circle
One man with car, per hour.... 1.50
Each additional mile..... .25
Each additional man..... 1.00
No charge less than..... 1.00

Delivery or Calling for Cars
One-mile circle ..... .25
Each additional mile..... .10
(Carfare will be added when used.)

DELIVERY OF GASOLINE AND SUPPLIES

First mile ..... .50
Each additional mile..... .25

COLLECTING OF REPAIR PARTS FROM FACTORIES AND SERVICE STATIONS

Per hour 1.00

TIRES, OILS, SUPPLIES AND ACCESSORIES at usual list prices.

GASOLINE

Ledger accounts, advance on market, per gallon..... .01½

The Garageman's Creed

AND TEN COMMANDMENTS

1. My business is a part of the world's greatest and newest industry—THE AUTOMOBILE. By nature of its characteristics I come in contact with men who lead in all lines of human endeavor, therefore I will strive to keep my business above criticism.
2. I will avoid poor and careless bookkeeping methods that result in selling service and merchandise at a loss.
3. I will avoid over-stocking with unsalable goods and avoid poor merchandising methods.
4. I will try to avoid losses from depreciation of merchandise due to improper attention and will strive for frequent turn-over of stock.
5. I will endeavor to keep up collections and avoid losses through the extension of credit where not justifiable.
6. I will endeavor to discount all bills when due.
7. I will discipline my employees to render courteous, pains-taking and efficient service.
8. I will keep my business clean and sanitary in keeping with the dignity of this industry.
9. I will carry sufficient protection against loss from fire and accident.
10. I will strive to advance the sale of accessories and supplies, using honest and ethical merchandising methods and to patronize my home jobber whenever possible, as so doing is an economic factor in building up my town, community and state.

COMPLIMENTS OF

American Supply Company

Florida's Only Automobile Supply Jobbers

MEMBER

TAMPA FLORIDA

"Everything for the Automobile"

FRANKLIN PTG. CO. TAMPA

THIS CREED IS BEING DISTRIBUTED THROUGHOUT FLORIDA BY THE AMERICAN SUPPLY CO., TAMPA.

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Salesmanship a Science

THAT, briefly, is the object of the World's Salesmanship Congress that was formed 2 weeks ago in Detroit and which aims for "Better Business through Better Salesmanship." The idea is worthy of support. Salesmanship has long been in need of betterment and it is obvious that the improvement of this profession will work benefits for industry and the individual salesman as well.

The man who wishes to become a lawyer may in schools learn the fundamentals of that profession. He may learn things in school that he will never apply until he is out in the world of law.

The man who wishes to become an engineer can find schools wherein he may draw upon a great store of technical data that has been accumulated and classified by scientists. He may go to a fountain of comprehensive information, because engineering is a science.

A science is nothing but classified knowledge.

But the man who wishes to become a salesman has no such fount of knowledge to which he may go. There are a few sales schools, it is true, but the sales school has not reached the desired foundation. As far as it has gone it has done well, but that much remains to be done is evidenced by the fact that there are no real text books that adequately cover selling as other sciences are covered. There are books that cover certain phases of selling and a few purport to cover the whole science, but many of them consist of only a few good points buried in a pithy covering of verbosity and opinionated assertion.

The few good points in existing books, with the good points in other books and in the minds and experiences of salesmen, all collected and classified, will constitute a science. And then the man who would enter sales work may find a concentration of classified knowledge that will give him the foundation of a career.

To-day the sales beginner may be taught by one sales executive. This executive is limited in his knowledge—because no one man can accumulate all the knowledge there is by himself—and so the teaching of the executive is limited, and likewise the learning of the student.

The Congress recommends sales courses in universities and colleges. There is no reason why every worth-while university should not include a College of Sales, or a College of Applied Psychology, or call it what you will. Psychology has been taught for years, but the teaching of how to use it has been neglected. A College of Applied Psychology would go a long way toward the realization of the ideals of the new movement. A College of Sales would go further.

It is a thought for every university executive who is anxious that his institution approach its maximum of value to the world.

The Dealer and the Farm Tractor

EVERY man engaged in the motor car business would do well to pay close attention to the farm tractor situation, and it is suggested herewith that Motor World readers study the farm tractor articles that are appearing in description of the tractor demonstrations. There are eight of these demonstrations at different points throughout the West, each lasting about a week.

All along there has been speculation and discussion as to whether the car dealer or the implement man would handle the farm tractor and there is excellent opinion among the tractor people that the car dealer is the logical man. It certainly is an analogous line and the profits that would ensue would be welcome.

There may be some dealers who do not care to go into farm tractors, but every up-to-the-minute man in this industry should at least inform himself on the subject. Preliminary knowledge on any question is invaluable. It equips the man to meet the occasion should it arise.

There is no question but that the farm tractor is going to assume prominence. There is going to be considerable business in making and selling them. No matter what the dealer thinks of the tractor now he should follow it closely and keep posted at every step. Don't let it be discovered at too late a day that a big industry has developed and that he knows little about it.

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ANGLES OF THE LAW



By George F. Kaiser

HOW many times we all have argued about the law! And how little we really knew about it! Any doubt on a legal point is always best referred to an attorney. To settle such questions this department is at your service.

Can Standardize Prices

Editor Motor World:

I read the article in Motor World of Jan. 21 with regard to the Atlantic City, N. J., association having decided to post in a conspicuous place, and near their membership cards, the schedule of prices charged for labor, etc.

Now, I would like to ask what the difference in the law is in New Jersey from the law in the State of Iowa on this particular point.

We have wanted to do something of this kind ever since we have had an organization, but I have advised the boys to stay away from it for the reason that it appeared to me the moment we put up a uniform price list in several places it would be used against us to prove that we were in a combination to control prices, and then we would run foul of the Sherman law.—N. T. Miller, Des Moines.

As I presume the business of the dealers who are members of your association is local in character and not an interstate business, you need not worry about the Sherman law or any other United States statute which deals with interstate commerce; it is not necessary to set out at length a comparison of the decisions reached in New Jersey and Iowa on this particular matter.

What you wish to know, as I understand it, is, Can your members adopt a uniform schedule of rates and post this up?

A Theoretical Case

I have no hesitancy in saying that you can do this. If A, B and C are in the same business in the same town or city, and A decides that he will charge a certain amount for labor and certain prices for specified articles of material, and does charge these amounts, there is no prohibition on B or C in any law, either State or Federal, which prevents him from adopting a like schedule. Of course, if there were a combination in restraint of trade the matter would be different; but, acting independently, each dealer can charge just what he pleases, and the mere fact that some other dealer is charging the same amount is no hindrance to his doing so.

I would not advise that any contract be drawn up or entered into among the members of your association regarding the fixing of prices if the members control all except a very small percentage of that business in your territory, as you might then be assumed to have a monopoly. If your members do nothing more than adopt uniform prices they certainly need fear nothing.

Insurance and Brokers

ONLY a few days ago a dealer laid the following case before me and asked for my advice:

He had procured fire insurance on his plant in a well-known company through a broker with whom he had dealt for a number of years. When the broker rendered a bill for the insurance the dealer sent a check and considered the incident closed.

Some time later, greatly to his surprise, he received a notice from the company advising him that unless the premium on his policy was paid the company would cancel.

The dealer called up the broker and told him the facts. The broker said that the matter was all a mistake; that he would immediately see that the premium was paid.

A few days later the dealer consulted me and wanted to know what he could do. I had to advise him that the only thing he could do, if he wished insurance from that company or any other company, was to pay the premium again, but that he could proceed against the broker and have his license revoked if he wished.

It appeared, on investigation, that the dealer had made the check payable to the broker personally instead of to the company. This is always a dangerous thing to do, as the broker simply indorses it and deposits it in his own bank and if he does not send his check for the insurance the person who has the policy must pay the amount over again.

It is far better to make the check out to the company direct. I have even known cases where this was done in which the broker has cashed the check; but when he does it when the check is so made out he makes himself liable to punishment for forgery and the chances are that he will make speedy restitution when he finds out that his theft has been discovered.

Dealers should remember, when placing their insurance, that it is a very important thing for them to place their insurance through an honest broker. The broker is not the agent of the company, according to the law; he is the agent of the party who procures the insurance; and for that reason the company is not liable for any of his misdeeds and the other party must stand responsible for them.

The other important thing for the dealer to remember is not to make any checks for insurance premiums payable to the order of the broker, but to make them payable to the order of the company.

Those Familiar "Notices"

WHETHER or not notices such as "All agreements made contingent upon strikes, fires, accidents or causes beyond our control," "All prices are subject to change without notice" and "All contracts and orders taken are subject to the approval of the executive office at New York, N. Y." are valid and binding has been asked.

This very matter has been given attention in a most recent New York case, and the New York Court of Appeals, which is the highest court in that state, has decided that when an offer, a proposal or a contract is expressed in clear and explicit terms, any writing which is not in the body of the instrument or is not referred to therein but appears in small type at either the top or bottom of the stationery, where it is not easily seen, need not be considered as a part of the contract. Judge Seabury, in writing the opinion of the court, said:

> The language of the proposal is clear and explicit, and this provision which is printed in small type cannot be allowed to change, alter or modify it unless it was a part of the proposal. It was not incorporated in the body of the proposal or referred to in it.

And, further, the court said:

> When an offer, proposal or contract is expressed in clear and explicit terms, matter printed in small type at the top or bottom of the office stationery of the writer, where it is not easily seen, which is not in the body of the instrument or referred to therein, is not to be considered as a part of such offer, proposal or contract.

Under this decision, if the meaning of a contract can be clearly ascertained, the mere fact that it is written upon a printed billhead which contains a notice or notices will not cause it to be altered. —Sturtevant Co. vs. Fireproof Film Co., 216 N. Y., 199.

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The RETAIL NEWS

PACIFIC COAST

W. W. Crawford, Albany, Oregon Ford agent for the past 10 years, has erected a garage opposite the Oregon Electric Depot.

The Ralston Electric Supply Co., Albany, Ore., has secured the agency for Gould storage batteries and Michelin tires.

Hoyt & Lash, Tacoma, have opened a general repairshop, 1115 Tacoma Avenue. A specialty will be made of repairing Studebakers.

Chanslor & Lyon, Seattle, have leased 5,000 ft. additional floor space for use of their car department.

M. G. Farnsworth, Seattle, has taken the distribution of the Abbott-Detroit for Washington, Oregon and northern Idaho.

John Geissler, Tacoma, proprietor of the Square Shop, has been named distributer of Miller tires.

A. C. Smith, Endicott, Wash., has been named Chalmers agent.

Albert Steen, Spokane, has located at N. 2603 Monroe Street. Will handle the Abbott-Detroit.

H. F. McDonald, Spokane, has purchased an interest in Enterprise Garage, Wilbur, Wash. Hudson and Dodge cars will be handled in Wilbur territory.

Smith & McGreevy, Tekoa, Wash., have taken the agency for the Chalmers.

E. B. McCarthy, Winchester, Wash., has taken agency for Hudson line.

Ecker & Johnson, San Diego, Cal., have been appointed representatives of the Electric Equipment Co. of Los Angeles and will operate a service station and handle U. S. L. storage batteries, Eisemann magnetos, Mea magnetos, Disco electric starters, North East electric starters, Jijur electric starters, Detroit electric starters, Ward Leonard electric startes, Eeco magnet chargers, Eeco magnetmeters and Klaxon horns in San Diego.

E. C. Habel, Portland, Ore., who has for some time past been employed as salesman by the Dulmage-Manley Auto Co., has been made assistant manager and acquired an interest in the business.

Couchman & Sullivan, Portland, Ore., have recently established a motor livery, a fleet of Maxwells having been put in service. Headquarters are at the City Garage on Tenth Street.

A. E. Neate, Portland, Ore., formerly of Neate & McCarty, has purchased a half interest in Bolton's Service Station, Portland, Ore.

Harrison Sons Co., Portland, Ore., has taken the agency for the Crow-Elkhart.

Charles W. Noble and **Hal V. Cadwell,** Ontario, Cal., have established the Ontario Auto Supply Co. at 218 West A Street. The new concern does not do repairing. Motor cars are not sold by the firm, but everything for the automobile in the accessory and supply line is handled.

The Garford Motor Truck Co., Inc., Seattle distributer of the Garford truck, in the Northwest, Western Canada and Alaska, has opened salesrooms and a service station at 1726 Broadway, Seattle. A. W. McKenzie is district sales manager and Charles A. Eastman will have charge of the Seattle branch.

F. T. Carleton has moved from Everett to Seattle and will hereafter conduct Carleton's Tire Shop at 714 East Pike Street, Seattle. The premises have been remodeled and consist of an attractive salesroom and completely equipped vulcanizing and retreading department.

F. W. Knapp and **W. T. McNiece,** Seattle, doing business under the firm name of Auto Supply & Service Co., have erected a brick building at Olive Street and Westlake Avenue, especially designed as a showroom for accessories and supplies.

The Seven Seven Co., Spokane, distributer of the Dodge Bros., will build a one-story brick addition to its present quarters, 50 x 60. The addition will house a portion of the garage and repairshop.

The Ahlberg Bearing Co., Chicago, has opened a branch at 325 Davis Street, Portland, Ore.

The Northwest Buick Co., Seattle and Spokane, Wash., has secured the distribution in the State of Washington of the Warner auto trailer.

A. R. Dawson, Seattle, formerly of California, has been made manager of the newly organized Overland-Pacific, Inc.

A. W. McKenzie, Seattle, the Northwest representative of the Garford Motor Truck Co., who recently opened a branch for that factory at 1726 Broadway, Seattle, to cover Washington, Oregon, Idaho, Utah and British Columbia, has completed an attractive salesroom. The walls are of dull oak, and the floor is painted a light green.

SOUTH

The Bailey Garage, Stamford, Ky., has been incorporated at $1,800. Incorporators: H. L. Bailey, J. H. Warner and R. L. Collier.

The Martin Motor Co., Louisville, Ky., has been incorporated at $5,000. Incorporators: W. C. Martin, Ophelia Martin and A. G. Martin.

MIDDLE WEST

Charles Sweet, Leslie, Mich., is erecting a new garage.

Pape & Hunt, Battle Creek, Mich., is the new name of the Finley Garage, West Main Street, distributer of several cars. Rowland Finley, former proprietor, has sold his interest in the garage to go to Detroit.

Britten & Fohey, Howell, Mich., have leased a new building, 50 x 160, which is being erected on Grand River Street.

The Main Garage, Midland, Mich., has been sold by W. F. Valliere, who has been the proprietor for the past year, to George Venner, a well-known resident of that city.

Frank A. Sealand, manager of the Detroit Winton branch for the last 4½ years, has resigned to become general manager of the Cleveland-Cadillac Co., the Columbus-Cadillac Co., and the Toledo-Cadillac Co.

The New Southern Michigan Garage, Coldwater, Mich., has been opened by E. A. Biddelman.

Wetherald & Zimmerman, Davison, Mich., have recently taken possession of a new garage.

The Wisconsin Magneto Exchange Co., Milwaukee, will succeed to the partnership business conducted at 511 Broadway, Milwaukee; capital stock, $11,000; incorporators, Adolph Grauer, August D. McIntyre and Nomene McIntyre.

Fred Riley, Battle Creek, Mich., one of the partners in the Riley-Newman Auto Agency, has disposed of his interest.

The Andrews Motor Sales Co., Saginaw, Mich., Studebaker distributer, gave a luncheon a few days ago to its subdealers. This company takes care of the Studebaker business in Saginaw and surrounding territory.

The Opera House Motor Sales & Garage Co., Pontiac, Mich., has been incorporated at $10,000.

The Demers Auto Exchange, Saginaw, Mich., Maxwell dealer, has increased its territory, having secured the distributing agency for twelve Michigan counties. The company has contracted for 800 Maxwells for the 1917 season and is now establishing subagents in all of the counties in its new territory.

Nank & Priehs, Mount Clemens, Mich., have become distributer of the Buick and have opened a salesroom at 51 North Walnut Street.

The Rapson Garage, Bad Axe, Mich., has opened for business.

Fred Burt, South Lyons, Mich., has opened a garage.

Charles Doust, Ann Arbor, Mich., has purchased the repairshop of E. D. Chipman.

F. E. Hines, White Cloud, Mich., is now occupying a new garage.

Albert O. Braun, Muskegon, Mich., has been appointed sales manager of the Ideal Garage & Machinery Co., which concern will open a new two-story garage, 50 x 112. The company has secured the agency for the Maxwell.

N. Wendell, St. Johns, Mich., is erecting a new garage at Spring and Highan Streets.

The H. S. Moore Sales Co., Cleveland, has secured the distribution of the Stewart truck.

The Columbus Cadillac Co., Columbus, Ohio, central Ohio agent for the Cadillac, will erect a modern two-story salesroom and service station at Broad and Sixth Streets.

R. W. Pharis, Columbus, Ohio, who has been connected with the Pharis Tire & Rubber Co. as secretary and manager of the Columbus office, has resigned to accept the management of the International Tire Co., 187 East Gay Street.

The Mahoning Motor Co., Youngstown, Ohio, has been incorporated at $10,000 to deal in motor cars, by R. H. Rogers, Myron DeVenne, A. O. Fleming, P. H. Stambaugh and Louis S. Baldwin.

The Ollar-Overland Co., Toledo, Ohio, has been incorporated at $10,000 to deal in motor cars by Howard Lewis, Elizabeth H. Watson, S. A. Carter, Frank S. Lewis and Frank M. Hackett.

The Master Motor Car Co., Cleveland, Ohio, has been incorporated at $10,000 to deal in cars and accessories by Charles W. Rush, William G. Radcliffe, L. E. Yaggi, Helen M. O'Boyle and R. E. Kouba.

The Ford Motor Co.'s Milwaukee branch has made a number of changes. Herman A. Netter, head of the retail selling force at Milwaukee, has been promoted to manager of the branch in Duluth, Minn. C. C. Signer goes to Grand Rapids, Mich., as assistant manager. E. C. Schumann is transferred from Milwaukee to St. Joseph, Mo., as assistant branch manager. A banquet was tendered the three men and A. W. L. Gilpin, manager at Milwaukee, was toastmaster. On July 9 the 1400 employees of the Ford company in Milwaukee were entertained at an outing at Waukesha Beach, Wis.

Ronald and **William Keefe,** Mosinee, Wis., have opened a motor livery and repairshop in the former Keefe livery stables, which have been remodeled for the purpose.

The Rider Motor Co., Algoma, Wis., intends to take occupancy of its new garage and repairshop at Fourth and Fremont Streets this week.

Wallace Poe, 905 Copeland Avenue, Beloit, Wis., has opened a used-car and parts store and shop and will specialize in dismantling old cars and selling parts.

Alex Bock, Black River Falls, Wis., has opened an exclusive motor car repairshop and tire store in the garage building until now occupied by Hogg & McManners.

Hogg & McManners, Black River Falls, Wis., have moved into their new fireproof garage on First Street.

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The General Welding & Mfg. Co., 330 Oregon Street, Milwaukee, will erect a 35 x 35-ft. addition to its plant, to be ready Sept. 1.

The Geuder, Paeschke & Frey Co., Milwaukee, sheet metal works, which recently opened a division for supplying motor car manufacturers, is adding 55 x 130 ft. to its main shop building.

D. G. Bennett, DeForest, Wis., is making an installation of oxy-acetylene welding and cutting apparatus.

Roy and **Adolph Klement**, Fort Atkinson, Wis., have taken possession of their new garage on South Third Street, West. The building is 50 x 100, two stories and basement. The repairshop on the second floor is connected with the other floors by a large electric elevator. Storage for seventy-five cars is provided.

The Overland-Madison Co., Madison, Wis., has purchased a site at King and East Wilson Streets and will at once erect a new fireproof garage and showroom, 66 x 80 ft. The company is a consolidation of the Park Motor Co., Madison, and the Roe Motor Co., Stoughton, Wis., and on July 1 contracted to sell 1500 cars in ten counties in western Wisconsin.

The Pell Garage, Bloomer, Wis., is adding a two-story shop, 36 x 68, to its garage and will have a building 64 x 138 when the improvements are completed. The concern handles the Maxwell, Grant and Chandler.

The Terwilliger Garage Co., Clinton, Wis., has made several important changes. Jerome Terwilliger has taken over the sales and agency department and Edwin J. Terwilliger becomes sole owner of the repairshop and service station. Jerome has taken W. H. Hughes as a partner and will handle the Dodge Bros. and King in Walworth and Rock Counties. Edwin has taken Roy Osborn as a partner and in addition to acting as service station for Terwilliger & Hughes, will do a general line of machine work in the present quarters.

A. F. Fuerst, A. W. Rickaby and **R. B. Ricaby**, New London, Wis., have formed a partnership with the Oestreich Bros., New London, to handle the Maxwell. A. F. Fuerst will be sales manager. The Oestreich Bros. have been operating a garage in New London for several years.

F. W. Abenschein and **George E. Sande**, Neenah, Wis., have severed their connections with the J. P. Stroebel Hardware Co. and will establish an implement and motor car agency. Temporary quarters will be leased at once and later a garge and warehouse will be erected.

Demars Bros., Washburn, Wis., owners of the Service Garage, have made a large installation of steam vulcanizing and other tire repair equipment.

The Olson & Pauly Automobile Co., Manitowoc, Wis., has sold its garage on Commercial Street, Manitowoc, to Behnke Bros., Whitehall, Wis., who take immediate possession. Olson retains an interest in the company and will devote his entire time to the State agency for the Ross. The Behnke concern will specialize in the Olds and Chevrolet. The Olson & Pauly company has opened a showroom and service station at 443 Jackson Street, Milwaukee.

Harlow & Herrell, Whitehall, Wis., is the name of a new garage and agency firm established in a new fireproof garage building recently completed on Scranton Street, Whitehall. The concern is agent for the Allen and Velie. The garage is 36 x 90 and equipped with power machines for repair and machine work.

Charles E. Marks, Madison, Wis., has taken the Dane County agency for the Haynes and will open a garage and service station at once. A definite location has not yet been selected.

The Monroe Auto Co., Monroe, Wis., sustained a loss of $2,000, fully covered by insurance, by fire last week. It is believed the blaze originated from a defective vulcanizing mechanism. Repairs are under way and the business is suffering only slight inconvenience.

Palmer & Beacham, Poynette, Wis., have taken occupancy of their new fireproof garage and service station, erected at a cost of $8,000.

SOUTHWEST

The Chevrolet Motor Co. of Texas will purchase a 7-acre tract of land, situated west of Trinity Park and south of Arlington Heights Boulevard, as a site for its proposed automobile assembling plant. The erection of the new plant will be started in the near future, it is announced.

G. S. Loomis, formerly employed at the Packard factory at Detroit, and for the last 2 years general manager of the Southern Motors Co., Louisville distributer of the Packard, has resigned to accept a similar position with the Packard-Missouri Motor Co. of St. Louis.

The Robinson Motor Car Garage & Repair Co.'s. St. Louis property was destroyed by fire July 11. Loss, about $20,000. Robinson, head of the company, was formerly head of State Anti-Saloon League and said his property had been threatened on that account and he has asked police inquiry.

J. D. Cathey, St. Louis, has been named manager of the uptown depot of the Chevrolet Motor Co. of St. Louis. This building, with 150 ft. of show window space, fronts on the Locust-Lindell cutoff, made expressly for motor traffic, and will be opened Aug. 1. It will be the city salesrooms and service station, the latter having all of the second floor space and needed first floor shop. The warehouse space will be in the basement. Cathey formerly was president of the Regal Buggy Co., which was sold to Russell E. Gardner, president of the Chevrolet company, while the latter was president of the Banner Buggy Co. Cathey and Gardner have been business associates and rivals for 25 years.

The Hudson-Phillips Motor Car Co., St. Louis, opened new showrooms on the Locust-Lindell cutoff July 17.

The R. L. Cameron Automobile Co., Dallas, has been made North Texas representative for the Allen. Cameron also handles the King and Lozier.

Hudson-Phillips Automobile Co., St. Louis, has leased 100 x 150 ft. at 3308 Washington Avenue for repair yard. On the lot is a three-story residence, which will be fitted for living quarters for yard employees.

I. R. Watts, Clay Center, Kan., has sold his automobile business to Homer Harner of Green, Kan. Watts will build a garage for storage and repairs.

W. N. Thielen, Peirce City, Mo., who will occupy his new garage shortly, has secured the agency for the Chevrolet.

J. C. Duncan and **Oakley Sitton**, North Lincoln, Mo., have opened a repairshop.

Paul Spurlock and **Loyd Lumpee**, Versailles, Mo., will soon open a garage, where they will handle accessories. Lumpee is an electrician as well as a car repairman.

The Independent Garage, Home City, Kan., is being rebuilt and enlarged.

The Albany Equipment Co., Albany, Mo., Ray Webb, proprietor, has opened for business.

W. H. Reynolds, Sedalia, Mo., has leased quarters for a salesroom and garage; he will install accessory and repair departments; he has secured the agencies for the Chalmers and Briscoe.

The Holzmark Motor Co., Kansas City, Kan., Overland dealer, will open a branch in Leavenworth, Kan.

L. E. Fawver, Cassville, Mo., has secured the agency for the Ford, formerly held by Chandler & Black.

J. C. Dickinson, Odessa, Mo., formerly in the repair business in Kansas City, has purchased a half interest in the Colvin Garage; the name of the firm is now Colvin & Dickinson.

Noah Hudgess, Newburg, Mo., has nearly completed a new garage.

Hogeboom & Thompson, Goodland, Kan., will take possession of a new garage about Aug. 1.

The Riverside Garage & Machine Shop, Dodge City, Kan., is enlarging its quarters and adding to its equipment of machinery. Frank Gingrich and Paul Elgin are proprietors.

Linn & Danielson, Clyde, Kan., have bought the Ford Garage from Phil Lapaille and are now in charge.

C. F. Grant, Eureka, Kan., has leased the Jackson Garage and purchased the equipment; he formerly lived in Marseilles, Ill.

W. E. Knabe, Milan, Mo., has opened a repair department in his new garage.

Wilkinson & Allyn, Albany, Mo., have succeeded the firm of Webb & Allyn, Clarence Wilkinson being the new member, taking the place of Webb. Their repair and livery business is located in the Wilkinson Garage.

J. S. Stover, Lincoln, Kan., has bought the R. E. Curtis Garage, taking over also the Ford agency; Rex Stevens continues in charge of the garage.

C. S. Gatchel, La Plata, Mo., will move next month into a building being remodeled for his garage.

F. R. Plummer, Coats, Kan., is now occupying his new garage and repairshop.

The Stafford Motor Car Co., Kansas City, Mo., Twenty-second and Campbell Streets, is still making parts for Stafford cars and giving service to the 500 cars now out in the Middle West and the Pacific Coast. The plant, which discontinued making cars 2 years ago, is now employed in repair work on all kinds of cars. C. W. Winkler is assistant manager to Stafford.

The Springfield Overland Motor Co., Springfield, Mo., has been organized with $10,000 capital to distribute the Overland in twenty-five counties of southern Missouri and northern Arkansas. It is planning a brick and concrete building, 36 x 150, having temporary headquarters at the Haskett-Mace Garage. The company consists of C. W. Lehnard, Monett, Mo., president; J. C. Hastie, local manager, and G. F. Wiltse, assistant manager. A. F. Williams will be territory salesman. Lehnard is also interested in the Overland agency in Joplin. Hastie has managed the Dodge Bros. and Ford agencies in Springfield. The new company will be a branch of the Overland factory.

J. A. McDaniel, Dallas, has been appointed representative for Dallas territory of the Commerce Motor Car Co.

W. L. Bayha, Kansas City, Mo., for 7 years manager of the Ajax Kansas City branch, has established the Bayha Tire & Rubber Co. and will distribute these tires locally. The district headquarters of the tire company is with this local office, at Fourteenth and McGee Streets.

EAST

The Electric Storage Battery Co., Philadelphia, Nineteenth Street and Allegheny Avenue, has purchased forty-four dwellings in the vicinity of the plant, and after tearing them down will start operations for a number of additional buildings.

William H. Ryan, Wilmington, Del., has taken the agency for the Paterson car.

Mack's Auto Sales Co., Buffalo, has changed its location to 1474 Main Street, opposite Woodlawn Avenue.

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White Bros., Wilmington, Del., have just established a service station for the Dort, Bell and Metz.

The H. J. Koehler S. G. Co., Newark, N. J., has appointed these dealers: H. J. Crumley, Farner, Tenn.; Cadillac Sales Co., Knoxville, Tenn.; W. S. Straus, North Adams, Mass., and Juanita Auto Co., Mifflintown, Pa.

Edward W. Burnshaw, Jr., Philadelphia, recently in charge of the wholesale department of the Girard Automobile Co., 2314 Chestnut Street, distributer of the Peerless, has been promoted to general manager.

William P. Herbert, Philadelphia, Chandler dealer, at Broad and Race Streets, has incorporated the business with the addition of Ralph W. Cook and Walter G. Herbert. Herbert is president, Cook vice-president and general manager, and Walter G. Herbert secretary and treasurer. An effort will be made to exceed 600 cars for the current year.

The Eastern Top & Body Co., Philadelphia, has been incorporated by William J. Beury, Charles E. Beury and A. L. Hastings, to manufacture tops and bodies.

The Philadelphia Motor Service Corp., Philadelphia, is in process of formation and will operate a number of garages. The company was incorporated at $75,000 by H. Bonsall and R. M. Cook of Philadelphia, and J. M. Frere of Wilmington.

MOUNTAIN

The Automobile Sales Corp. Denver, Studebaker and Franklin distributer in Colorado and Wyoming, has moved from 1509 Cheyenne Place to 1520 Broadway.

The C-B Auto Service Co., Denver, has opened a Moore distributing agency for Colorado at 1439 Cleveland Place.

Woodbury & Davis, Parker, Col., are building a $2,000 brick garage. It will be 45 x 75, and one story high.

The Maines-Hough Motor Co., Denver, Chevrolet, Monroe and Mitchell distributer, with sales and service station at 439 Broadway, has given up the Mitchell and is handling the other two lines exclusively.

J. M. Scoville, Fort Morgan, Col., has secured the Chalmers agency for Morgan County.

The Denver Tire Service, Inc., Denver, United States tire distributer for Colorado and Wyoming, with salesroom and service station at 215-217 Sixteenth Street, is now managed by John A. Payment, formerly manager of the Quick Service Tire Co., distributer of Quaker tires.

The George H. Estabrook Auto Co., Denver, Briscoe and Hollier distributer, has secured the McGraw tire distributing agency for the same territory. The general salesroom is located at 1646 Broadway.

The Chamberlain-Woods Motor Sales Co., Denver, the new firm name of the Hupp Motor Sales Co., Hupmobile and Locomobile distributers, has added the Dort agency.

F. P. Van Sickle, Denver, has opened a Colorado, Wyoming and Utah distributing agency for the Aurora demountable truck at 1608 Broadway.

Willys-Overland, Inc., Denver branch, Denver, is the name of a factory sales and service branch just opened at Fifteenth Street and Cheyenne Place to handle the Rocky Mountain territory. The new concern will be managed by Calvin C. Eib, formerly general manager for J. W. Leavitt & Co., San Francisco, Overland and Willys-Knight distributer for the entire Pacific Coast. The new branch will supply all of Colorado and part of Wyoming, Utah, Idaho and New Mexico.

The Colorado Motor Car Co., Denver, Cole, Saxon and Reo distributer, has given up the Cole and Saxon and is arranging to move the Reo headquarters from 1520 Broadway into another location.

H. Grant Wimbush, Denver, formerly vice-president of the Motor Sales Co., a time-payment concern for Ford buyers, has secured the Mitchell distributing agency for Colorado and Wyoming and opened a salesroom in the new Fisk Building, Broadway and East Twelfth Avenue.

The Automobile Sales Corp., Denver, Studebaker and Franklin distributer, has given a two-day exhibition of the Studebaker golden chassis, which attracted a great deal of attention.

The Cole Motor Sales Co., Denver, is the name of a new Cole distributing agency for Colorado and Wyoming just opened at 17 East Colfax Avenue by H. P. Federspiel, formerly manager of the Colorado Motor Car Co.

The Mid-West Auto Sales Co., Denver, King, Wichita and Wichita truck distributer for Colorado and Wyoming, has given up the King and secured the distributing agency for the same territory for the Patterson light six and the Ross eight, and the Colorado territory for the Twin Bed Trailer.

George A. Duggan, Denver, recently sales manager for the J. S. Morrison Auto Co., has taken a position with the Continental Oil Co. as district salesman in Salt Lake City.

The Overland Auto Co., Denver, for several years Overland distributer for Colorado and Wyoming, has given up this agency on account of the new Willys-Overland factory branch just established, and has secured the King and Saxon distributing agency for the same territory, with headquarters at 1200 Broadway. The concern will continue to operate under its established name, at least temporarily, with W. J. Carter as president and treasurer.

The J. S. Morrison Auto Co., Denver, Oakland distributer in Colorado and Wyoming, has taken on the Allen distributing agency for the same territory. The salesroom is at 1528 Broadway.

The National Motor Co., Denver, National and Elgin distributer in Colorado, Wyoming and western Nebraska, has added the Weston distributing agency for the same territory and has just placed its first demonstrator in its salesrooms at 1616 Broadway.

The Quick Service Tire Co., Denver, dealer in Quaker tires, which was formerly managed by John A. Payment, is now handled directly by the Boss Rubber Co., 1548 Broadway, which has added the Quaker to its Kelly-Springfield tire distribution for Colorado, Wyoming and New Mexico.

CANADA

The James Walker Hardware Co., Montreal, is opening an accessory department.

The Montreal Motor Sales Co., Montreal, has just been appointed representative of the Chalmers in addition to the Dodge Bros.

NORTHWEST

G. H. Martin, Lenox, Ia., has sold his repair business to L. E. Neely of Sharpsburg, Ia.

Cochrane & Lardell, Stockville, Neb., has been dissolved, Cochrane buying his partner's interest and continuing the business.

Charles Hindes, Minatare, Neb., has sold his interest in the Ford Garage to Harry Leafgreen.

F. H. Roland, Beaver Crossing, Neb., has bought the Watts & Owen Garage and taken possession.

L. A. Newman, Auburn, Neb., has opened a new garage.

William Robertson, Cozad, Neb., has sold his garage to Frank Corpenning and A. Duval.

A. Sinamark, Nickerson, Neb., and C. W. Jordan, Morse Bluff, Neb., have leased a building in North Bend, Neb., which will be remodeled for a garage and salesroom.

The Wilson Garage and Motor Co., Thermopolis, Wyo., has been incorporated by Chester W. Wilson, Theresa O. Wilson, L. Lilly and G. A. Ukensky, with capital stock of $10,000.

Mohr & Ehlers, Culbertson, Neb., will be the firm to have charge of the new Hein Brothers' garage when completed.

A. C. Fogelsong, Tulare, S. D., has bought the W. H. Plakett Garage.

Edward Stanton, Martin, S. D, has leased the C. S. Allen Garage.

Joseph Mitchell, Hamburg, Ia., has bought the interest of his partner, Halbert Martin, in the Standard Garage.

J. S. Messer, Hartley, Ia., has bought out his partner, Edward Johnson, and the firm has been dissolved.

The Nelson Motor Co. Garage, Ringsted, Ia., has been bought by N. H. Hendricksen.

Dorf Bakke, Essex, Ia., has opened a garage.

C. S. Prime, Oxford, Neb., has purchased the interest of his partner, A. J. Archer, in the Ford Garage, which he will conduct alone.

Chester Joy, Franklin, Neb., has bought the garage business of his brother, Guy Joy, who retires.

The Stump Garage, Falls City, Neb., has been bought by H. J. Prichard.

Graham & Co., Bridgeport, Neb., have bought the garage business of Clawges & Nelson.

Joseph Harbaugh, Humboldt, Neb., has sold his garage to Edward Uhri, Falls City, Neb.

F. A. Plummer and **Earl Wheeler**, Chadron, Neb., have converted the old bottling works to a garage and begun business.

William Howell, Auburn, Neb., has bought the interest of Dudley Leeper in the Leeper Bros.' automobile supply business.

The Schee Motor Co., Des Moines, will build a new Studebaker service station at West Seventeenth and Grand Avenue, to cost $20,000.

C. Van Oosting, Kanwha, Iowa, has let the contract for a new garage on South Main Street. The building is to be completed Aug. 10.

TIRE REPLACEMENT ORDER

9802 Ossining, N. Y.,

To

GENTLEMEN:—

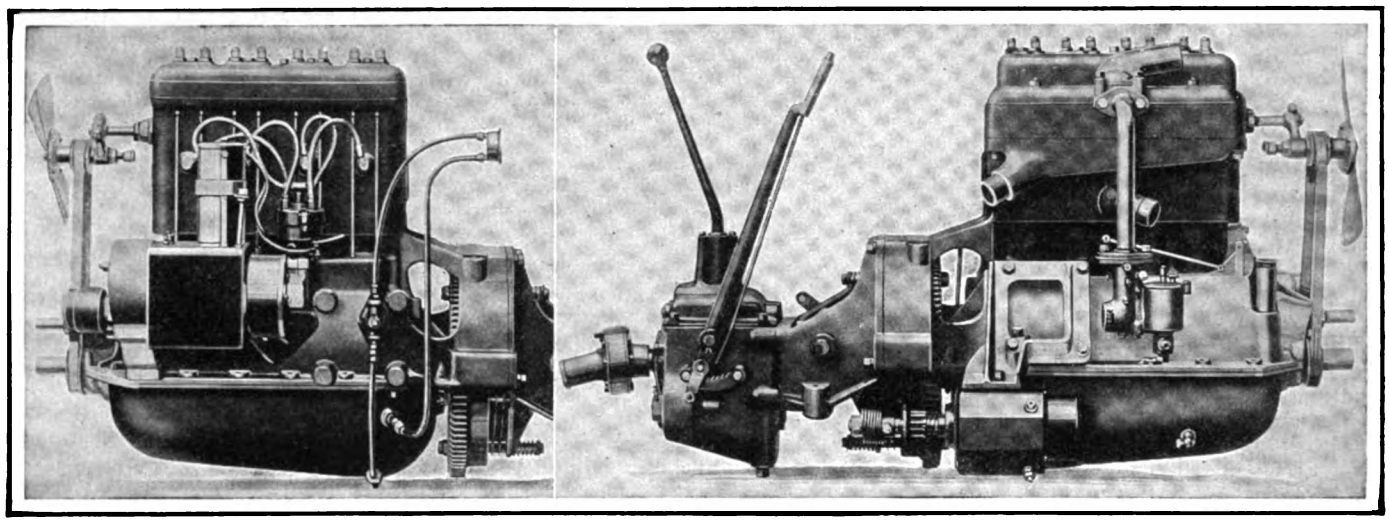
We have shipped by for replacement:

Mileage
Car
Wheel
Received from you
Delivered to customer
Owner
Remarks:—

Yours truly,
OSSINING GARAGE CO.,
Per

WHEN the Ossining Garage Co., Ossining, N. Y., returns tires to the factory for adjustment, one of these printed slips goes with each, properly filled out, of course. The slip saves correspondence and gives the information the tire company wants.

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Fully inclosed rocker arms are a feature of the new motor. Starting and lighting units are separate

Many Monroe Improvements Include New Motor

Disk Clutch—Crowned Fenders—Muffler Cutouts Are New Price Now $565

THE Monroe Motor Co., formerly located at Flint, Mich., but now at Pontiac, Mich., is now ready with its 1917 roadster, the only type of machine which it is making at present. Looking somewhat the same as the previous model, the new car, which is designated as Model M-3, has a number of improvements over the model it replaces.

The price has been raised $70—from $495 to $565—this partly due to the added cost of materials and partly to the considerable added equipment and improvements in design and construction.

Chief among the changes over the preceding Monroe is the adoption of an entirely new motor to replace the 3⅛ x 3¾ in. engine that was used last year. The new power plant is designed by the Brush Engineering Association, Detroit, and has the same overhead-valve construction with outside adjustments that characterizes most of the engines Brush now lays out. This new engine has a bore of 3 in. and a stroke of 4¼ in. and is of the block type with gearset in unit.

Along with the motor change, a multiple-disk clutch takes the place of the previously-used cone type. The frame has been lengthened 3 in. at the rear to accommodate the longer rear deck now fitted, and the ratchet foot pedal that controlled the emergency brake heretofore has given way to the standard method of emergency control by a hand lever. In front of the radiator a sheet metal piece has been fitted between the frame rails. This helps to send the air to the radiator and also acts as a mudguard for the radiator.

Crowned fenders have replaced the flat variety of last year, and they do much to enhance the outward appearance. This, together with the lengthening of the body back of the seat, suggests a larger vehicle even though the wheelbase remains unchanged at 96 in.

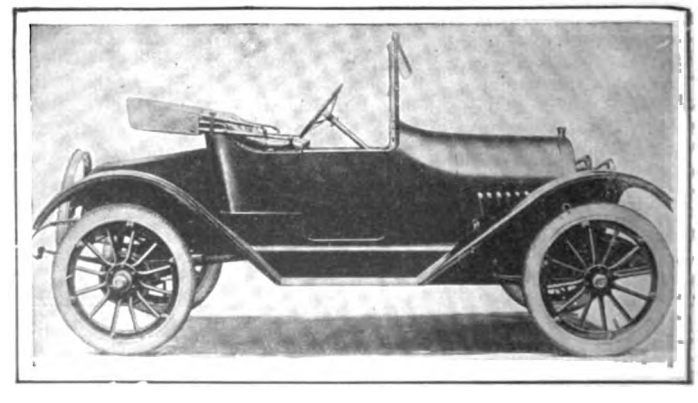
Considerable has been added to the equipment. Demountable rims have replaced the clincher type, and in the rear the tires are nonskids instead of smooth. A muffler cut-out has been put on, a feature which a great many drivers will appreciate. Then, a sight oil feed has been put on the dash; a lock switch for protection against theft of the car has been added, and there is also a Stewart-Warner speedometer, no speed indicating instrument being furnished as standard equipment previously.

Looking more closely at the details of the motor, it will be noted that the cylinders and upper half of the crankcase are cast in one piece, a construction very often employed where the cylinder-head is made removable, as it is in this case. The rocker arms and valves are carried in the head unit, being entirely inclosed within a single cover plate that bolts to the top of the cylinder-head. Protruding through the top of this cover plate are the adjusting nuts, which, after the lock nut has been loosened, can be turned by hand until the proper clearance between the end of the valve stem and the rocker is obtained. Thus, it is possible to secure an adjustment of the valves simply

MONROE, MODEL M-3

Price—Roadster	$565
Color	Blue
Make of motor	Own. Brush design
Number of cylinders	Four
Shape	Overhead-valves
How cast	Block
Bore	3
Stroke	4¼
S. A. E. horsepower	14.4
Ignition	Connecticut distributor
Carbureter	Zenith
Engine starter	Auto-Lite
Lighting system	Auto-Lite
Clutch	Disk
Gearset	3-speeds selective
Wheelbase	96 in.
Front tires	30 x 3
Rear tires	30 x 3, non-skid
Wheels	Wood
Steering	Left
Control	Center
Type rear axle	three-quarters floating

Equipment includes: Top, side curtains and dust cover, windshield, electric horn, demountable rims—one extra, lock switch, Stewart speedometer, muffler cut-out, set of tools, tire repair kit, jack, tire pump, sight oil gage.



Crowned fenders are found on the new model

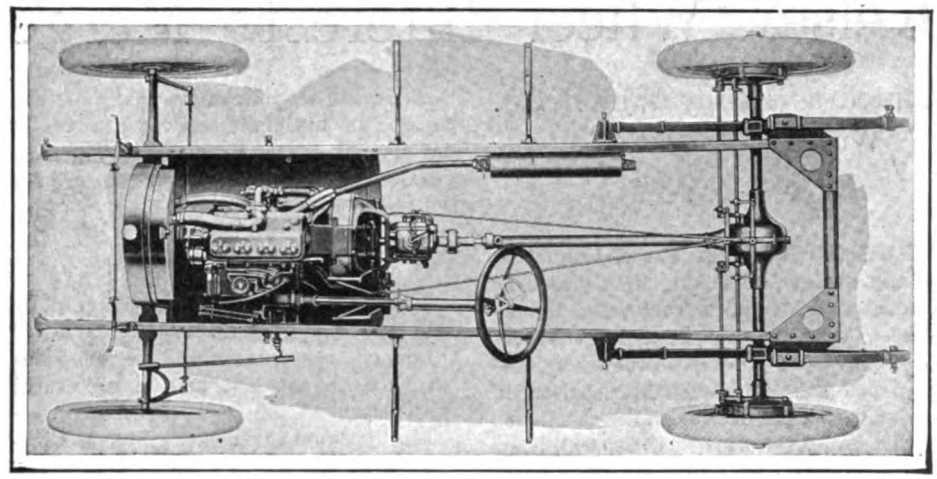
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and accurately. The valve push-rods run up to the rockers on the left side of the motor and the spark plugs enter the cylinders between the two rods of each cylinder.

Manifolds are on the right side, the intake having but a single connection to the carbureter pipe at the center of the head casting. Hung from a bracket, attached to the right rear side of the upper crankcase, is the Auto-Lite starting motor, which is geared to the flywheel by means of the Bendix automatic starter drive. On the left and driven through gear connection with the camshaft is the generator, also an Auto-Lite unit. This generator has mounted on its top the ignition coil, and its rear end carries the vertical Connecticut ignition distributor which connects to the armature of the generator by helical gears. The flywheel is only semi-inclosed, due to the use of a form of bell housing which extends back from the crankcase and integral with it, until it meets the forward extension at the gearbox. Thus the lower half of the flywheel is exposed, as well as a portion of the upper part, where the crankcase extension is cut out to reduce the weight without affecting the strength.

Rocker-Arm Details

Peculiar to the Brush type of overhead valve motor, the rocker arms which transmit the upward motion of the push-rods into a downward motion on the valves, are not carried on rocker shafts, as is usually the case. Instead, the rockers, which are steel pressings, have formed at their centers a socket which rests on a pivot and allows the same rocker motion that would be possible if the conventional form of shaft were used. The pivot is simply a threaded pin which seats in the body of the head, and its end protrudes through the top of the cover plate as already mentioned. Thus adjustment of the rocker is obtained by screwing this pivot in or backing it out, as the case may require. The valves are quite large for a motor of this size, having a diameter of 1¼ in., and being operated by a two-bearing crankshaft of generous proportions, the bearings of which measure ⅞ in. in diameter by 2 7/16 in. long. It is driven from the crankshaft by helical timing gears, which are completely inclosed in a compact manner.



Plan of chassis. The frame members are straight-sided, slightly tapering

Realization of the fact that a great deal of the smooth running of any motor depends upon the sturdiness of the crankshaft and its support, the motor has been fitted with a main shaft that is also of good size, having two main bearings, the front measuring 1 9/19 x 2 15/16 in. diameter and length respectively, and the rear of the same diameter, but 3 3/32 in. long. Although a moderately high-speed engine, it is fitted with a comparatively heavy flywheel, whose diameter is 12 in.

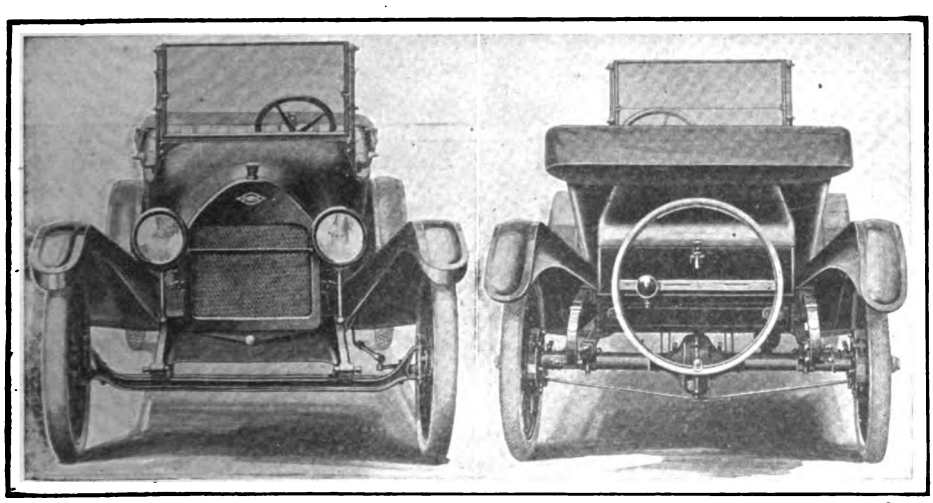
Lubrication of the motor is accomplished by the use of a conventional splash system, with troughs supplied by a plunger pump drawing its oil from the reservoir in the motor base. Each rod end dips into its trough and splashes the oil onto the several bearing surfaces in the customary manner. Simplicity is also obtained by the use of thermo-syphon cooling, which is advantageous to a motor of this size. The head casting carries the water outlet to the honeycomb radiator, and water enters the cylinder blocks at the center of the right side. A fan driven by belt from a pulley on the crankshaft is used, this having provision for adjustment of the belt tension by means of an arm attached to the forward end of the cylinder-head.

From the motor the power passes through a simple dry-plate clutch, having six disks, alternately Raybestos and steel. Three selective speeds are afforded by the compactly designed gearbox, which is mounted in unit with the motor, in the manner already described. The gears are of double heat-treated nickel steel, with the teeth of the stubby variety to resist driving strains and sudden shocks. The gear shafts are carried on ball bearings. A ball and socket control lever is positioned on top of the gearbox proper, and the emergency brake lever attaches to the right side so as to play over a ratchet sector, also carried on this side.

Rear Construction

Back of the gearbox there is a well-inclosed universal joint, after which the driveshaft enters a torsion tube, which incloses it the rest of the way back to the rear axle. Thus the drive is taken through the rear springs, while the torque is provided for by the propeller shaft housing. The rear axle is a three-quarter-floating type that affords a ratio of 4¼ to 1. Axles and pinion shafts are mounted on Hyatt roller bearings in conjunction with ball thrust bearings that take care of any end thrust. The axle tubes, which carry the car weight, are riveted into the two halves of the differential housing, and as a strengthening factor a truss rod passes below the housing from one brake drum to the other.

The new Monroe is painted a royal blue as a standard color and is said to be capable of speeds ranging from 3 to 50 m.p.h. on high gear. Tires are 30 x 3.



Front and rear views of the Monroe runabout

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Kelsey Wheel Interests Merge

United as Kelsey Wheel Co. With Capitalization of $13,000,000

DETROIT, July 22—The consolidation of the Kelsey Wheel Co., with plants at Detroit and Memphis, Tenn.; the Kelsey Wheel Co. of Windsor, Ont., and the Herbert Mfg. Co., Detroit, practically has been completed, the new corporation to be known as the Kelsey Wheel Co., Inc., with a capital stock of $13,000,000, composed of $3,000,000 of 7 per cent cumulative preferred and $10,000,000 common.

John Kelsey is to become president of the new corporation, but the rest of the officers have not yet been determined. Control of the new organization will remain with Kelsey and the others already associated with him in the several companies entering the merger. Kelsey is the leading figure in the several companies above mentioned, and it is largely due to his genius that these enterprises have grown to their present great size.

Few realize the enormity of the Kelsey interests, both here and in the South. At the main Kelsey plant in this city twenty-five sets of wood wheels are produced daily, complete with rims. In the making of automobile rims the Kelsey company now ranks at the top, and utilizes 150 tons of steel per day for this product alone. The Herbert Mfg. Co. makes 500 automobile bodies per day, besides finishing and trimming a large proportion of them. This plant is also a very large producer of a variety of steel stampings required in the manufacture of motor vehicles.

The Memphis, Tenn., plant of the Kelsey company represents an investment of $500,000 and is the factory at which the hickory used in the manufacture of the wheels is concentrated. It is here worked into spokes and felloes, the completed wood wheels then being sent to Detroit, where they receive their steel rims. The Kelsey company located in Windsor, Ont., is a separate corporation, but includes most of the same stockholders. It is the Canadian car manufacturers' main source of wheel supply. The Detroit Kelsey company has an authorized capital stock of $1,500,000, all of one class, and $900,000 of this is outstanding.

The preferred stock of the Kelsey combination is underwritten by Sachs, Goldman & Co., New York bankers, and the common is said to have been oversubscribed. In the organization plan there is provision for retiring the preferred stock at the rate of $90,000 per year. It is proposed to make the consolidation effective from Jan. 1, 1917.

There are no immediate plans for expansion of the plant nor for changes in the several companies entering the merger. Each will operate as heretofore for the time being.

De Palma Wins $2,500

KANSAS CITY, July 22—Marred by only one accident, an injury to Eddie O'Donnell, the Duesenberg driver, Kansas City has at last held a successful speedway meet.

Ten thousand enthusiastic Kansas Cityans this afternoon saw Ralph De Palma, in his cream-colored Mercedes, win the 100-mile grind after a thrilling contest with O'Donnell. The Italian's time was 1 hr. 42 min. 54 sec., an average of 58.48 miles per hour.

After cheering O'Donnell for his game fight in the 100-mile event, the crowd saw the clever little driver hurtle through the fence on the first turn of the track in a 25-mile event which followed the first race. He was badly hurt, but the mechanician was uninjured. A broken steering knuckle caused the accident.

The first four cars which finished came across the tape in the following order:

De Palma, Mercedes, 1 hr. 42 min. 54 sec.; average, 58.48 m.p.h. Prize, $2,500.

O'Donnell, Maxwell, 1 hr. 45 min. 6 sec.; average, 57.02 m.p.h. Prize, $1,000.

George Buzane, Duesenberg, 1 hr. 49 min. 42 sec.; average, 52.98 m.p.h. Prize, $600.

Art Klein, Kleinart, 1 hr. 54 min. 56 sec.; average, 53.29 m.p.h. Prize, $400.

Others who started were: Eddie Rickenbacker, Maxwell; Charles Devlin, Duesenberg; Pete Henderson, Maxwell; Billy Chandler, Crawford; Dave Lewis, Crawford; Andy Burt, Ogren; W. W. Brown, Duchesneau.

W. W. Brown (Duchesneau) probably gets first money, $600, in the 25-mile, and Art Johnson (Crawford) second, $400. The race was stopped after O'Donnell's accident.

O'Donnell Recovers

KANSAS CITY, MO., July 25 (Special Telegram)—O'Donnell will be out of the hospital in two weeks. The speedway association plans strengthening the track and holding a meet Oct. 7, the last day of the American Royal Live Stock Show.

Fire in Gibson Plant

INDIANAPOLIS, July 22—Fire which was caused by defective electrical wiring last night burned out the third floor of the Gibson Co.'s plant. This contained motor car parts and some accessory stock. The loss is approximately $85,000. Business, however, was not at all delayed. The company opened as usual this morning, adjusted itself to conditions, and its service system continued to operate as usual. Manufacturers assisted the jobbing company greatly by expressing a duplicate of the stock that was damaged, and this, with the reserve stock in warehouses, served to overcome the difficulty.

Aubrey and Mechanician Killed

TACOMA, WASH., July 24 (Special telegram)—Ulysses Aubrey, driving a Tacoma special, and his mechanician, Frank Lake, were instantly killed in the Australian pursuit race on the Rose City Speedway to-day. A series of accidents marred a good race program with record attendance. F. M. Penticost, driving the Schnieder special, went through the fence but was unhurt. M. J. Moosie of Los Angeles, in the Gandy special, plunged 300 yd. and his car jumped 22 ft. in the air with a broken steering knuckle. The 50-mile race was won by Omer Toft of Los Angeles; time 49 min. 27 2/5 sec. The 20-mile race also was won by Toft in 20 min. 29 1/5 sec. The fastest lap of the mile dirt track was made by Rea Lenz, in the Ramono special, of Seattle.

Where Is Russell?

NEW YORK, July 24—The Postal authorities are anxious to learn the whereabouts of Charles A. Russell, who is charged with having used the mails to defraud. The charge is that he operated at 56 Murray Street, New York, under the name of John J. Treacy, and by circular letter, sent out in April, offered spark plugs, tubes and headlights at prices which are said to be far below the best quotings of the manufacturers on any occasion.

It is charged that he received $3,100 in 10 days' time for goods and failed to deliver any merchandise. He was apprehended in York Village, Me., but escaped custody, although the authorities succeeded in holding Frank A. Boyle, who is said to be Russell's chauffeur and who is charged with having operated with him. There is a John J. Treacy formerly engaged in the supply business, but he has, it is said, been on the Pacific Coast for about 2 years and his name was used without his knowledge.

Russell is said to be known to all the jobbers as far west as Denver and his description follows: Forty years, 6 ft., 175 lb., wavy gray hair, well built, good chest and shoulders, thin legs, good looking, scar on one jaw or cheek, dark clothes, watch chain from one lower to opposite upper vest pocket.

Some of the prices he quoted are: Champion plugs, ½ in., 17 cents; Champion regular, ⅞ in., 19 cents; Bosch, ½ in., 35 cents; Bosch, ⅞ in., 45 cents; Sootless, ⅞ in., 28 cents; Goodrich 33 x 4 safety tread tires, $8.50; Goodrich 33 x 4 gray tubes, $1.95; Raybestos lining, 2½ x ¼, 22 cents; E & J headlights, 10 in., $2.85 per pair; E & J No. 23, tail lights, 3 in., 40 cents each.

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Tractor Demonstration on In Hutchinson, Kan.

Second Event of National Circuit Arouses Great Interest—Conditions Different

HUTCHINSON, KAN., July 24—The second in the circuit of National Farm Tractor Demonstrations opened to-day on a farm near this city. The demonstration gives promise of being fully as valuable in its results as that held last week at Dallas.

Agricultural conditions in this section are slightly different than in Texas; and whereas practically all of the tractors drew disk plows at Dallas, most of them will draw mold board plows here because of the difference in soil. There has been no rain here for a month, and dry soil will test the tractors severely. The accessory exhibit here is much larger than in Dallas. Several tractors not shown in Dallas have appeared here. Their manufacturers are:

Sweeny Tractor Co., Kansas City; Gray Tractor Co., Minneapolis; Kansas City Hay Press Co., Kansas City; Pioneer Pony Co., Winona, Minn.; Russell & Co., Massillon, Ohio; Waite Tractor Co., Chicago; C. O. D. Tractor Co., Minneapolis; Bullock Tractor Co., Chicago; Buckeye Tractor Co., Anderson, Ind.; Commonwealth Tractor Co., Ludington, Mich.; Dayton Dick Co., Quincy, Ill.; Interstate Engine & Tractor Co., Waterloo, Iowa; Killen Strate Co., Appleton, Wis.; John Lauson, Port Washington, Wis.; McIntyre Tractor Co., Columbus, Ohio.

Why Texas Needs the Farm Tractor

(Continued from page 9)

ers are enthusiastic about it. There is no doubt but what it brings a better crop.

Agricultural experts tell me that even an unpracticed eye can distinguish quite easily those wheat fields which have been tractor plowed and cultivated. We don't have to assume that the farmer wants the tractor. This is known. So, then, it only remains to demonstrate that the farmer has the wherewithal to buy the tractor.

Look At the Cotton!

Let us take the cotton crop, for example. Last year Texas ginned 3,175,000 bales of cotton, and cotton was then selling for 7 cents. The crop was worth $850,000,000. This year she will equal this crop, but cotton is now selling for 14 cents. What the price will be in the event of peace being declared in Europe, thus throwing open the world's markets, few care to predict, though some optimistic spirits have no hesitancy in putting the figure at 18 or 19 cents, and a few, still more optimistic, look for 25-cent cotton.

Furthermore, there is absolutely no hold-over cotton. There cannot be the depressing effect of a big reserve supply to hold prices down.

Another thing: Cotton-seed pressing mills are now contracting for seed at the record price of $42.50 to $45 a ton. *With cotton at 15 cents and seed at $45 a ton, cotton farmers of Texas will have more money than they ever had before.*

Already the Federal Reserve Bank reports that the available credit of Texas is greater than ever before—that there is more actual cash on hand. West Texas has already cleaned its slate, is completely out of debt. East Texas will clean its slate this fall.

There has never been, may never be again, a more propitious time to push tractor sales than right now.

Yellowstone Tour Is On

MEDORA, N. D., July 25 (Special Staff Correspondence)—Twenty cars of motorists, representing nearly as many States, spent yesterday here. It was one of the most unusual sights most of them ever witnessed, for a typical Wild West round-up with broncho-busting acts was staged by real cowboys. The party was the sociability tour which left St. Paul July 20, bound for the Gardiner entrance to Yellowstone Park over the National Parks Highway.

The event which the cowboy stunts commemorated was the dedication of the $18,000 motor bridge over the Little Missouri River. This bridge completes the last link of this transcontinental motor passageway. The first five days of this sociability tour, unique in the annals of American motoring, have been delightful. Participants vote it a wonderful tour from every standpoint, and the highways over which it has passed have proven their worth. In fact, entrants declared that it has paved a new way for motor travel to the Pacific Coast.

In the Hardware Store



Customer: Have you Champion spark plugs?

Clerk: No, most of our customers chew fine cut.

Plan to Standardize Ratings of Tractors

Committee Named By National Gas Engine Association—Olney is Chairman

WICHITA, KAN., July 24—The National Gas Engine Association has appointed a tractor ratings committee, which will seek to standardize methods of rating farm tractors, both as to drawbar pull and belt horsepower. The drawbar rating favored is in pounds pull with the time element incorporated. The belt power will be in terms of horsepower. The committee will endeavor to evolve a method which will be satisfactory to all manufacturers.

The chairman of the committee which was appointed, following the recent convention of the National Gas Engine Association in the Twin Cities, the personnel just having been made public, is Raymond Olney, editor, Gas Power. Other members are Fred Glover, vice-president, Emerson-Brantingham Implement Co.; C. M. Eason, Hyatt Roller Bearing Co.; George T. Strite, president, Strite Tractor Co.; H. C. Buffington, chief engineer, Minneapolis Steel & Machinery Co.

Plan Dallas Fall Show

DALLAS, TEX., July 24—At a meeting of State fair directors this week plans will be completed for the 1917 automobile show, Oct. 14 to 31, inclusive. The event will be in connection with the State fair, the event itself being one of the most important during the exposition. Some new features in this connection are planned this year.

A 3-day race meet, in which prominent drivers will take part, will be given. The racing will be on Oct. 17, 22 and 29. The fair management is spending $10,000 on the infield racetrack, and it is on this 1-mile circuit that the races will be staged. Within a few days a list of purses and drivers will be announced by Secretary Stratton of the State fair. These racing events will be the most important in Texas this fall.

Overland 85 Six 3¼ x 4½

The stroke of the Overland 85 Six is 4½ in., instead of 3½ in., as stated in the July 12 issue. The bore is 3¼ in. On the 85 Four, the bore is 4⅛ and the stroke 4½, and not 3¼ x 4½.

Jordan in Cleveland

The Jordan Motor Car Co. is located in Cleveland, Ohio, and not in Detroit, as stated last week in the description of that car.

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Dealer Opens Office in Detroit

Botterill, of Denver, Wants to Be Close to Factory—Hood Has Bureau

DETROIT, July 24—A new wrinkle as regards having permanent representation in Detroit so as to insure prompt shipment of cars, materials, accessories and other supplies has been worked out by at least two parties, one being Tom Botterill, distributer of Hudson cars for Utah and Colorado, with headquarters at Salt Lake City and Denver, and the other is the recently formed Wallace C. Hood Service Bureau.

The former differs from the latter mainly in the fact that Botterill's establishment of a Detroit office was done to seek closer touch with the Hudson factory only, while the Wallace C. Hood bureau is organized to help any manufacturer, jobber or distributer acting as his representative in securing prompt shipments, following orders through production at any factory, and, in fact, assisting automobile manufacturers or distributers who have been working at a disadvantage through lack of representation in Detroit and Michigan.

Botterill has opened an office here, with A. S. Broadhead, his distributing manager, in charge; and while the move is merely an experiment, it is thought that if it works out satisfactorily the office will be made permanent. It will save traveling expenses back and forth from the West to the factory. The first-class fare alone is about $30 one way, and it takes from 40 to 45 hr.

Wallace C. Hood, at one time general sales manager of the Chalmers Motor Co., the Everitt Motor Car Co. and also of the Empire Automobile Co., has associated with him several well-known men in the industry in his new kind of business.

The office opened in the Dime Bank Building has been arranged as a convenience to visiting dealers and to manufacturers' representatives while in Detroit. It is the plan of the service bureau to maintain close communication with these manufacturers and distributers and facilitate the management of their business by attending to their most necessary work in the manufacturing centers of Detroit, Michigan and the surrounding country.

The bureau has been established for the purpose of taking up the work which is ordinarily done by representatives sent to Detroit at a big expense to look after deliveries of goods and to secure parts, accessories, etc. The bureau will cover every angle of the business which the distributer or manufacturer is called upon to transact at the expense of time and of money for traveling. From the Detroit office business will be looked after in Toledo, Cleveland, Indianapolis, Jackson, Flint, Lansing and at all other points where automobiles are manufactured.

The service bureau will also operate a public accounting and auditing department, which will be in position to install accounting systems for either distributers or manufacturers.

Martin-Evans Company Holds Outing

BROOKLYN, July 24—The Martin-Evans Motor Accessories Co. employees held an outing at Witzel's Casino, College Point, L. I., Sunday, July 16. The feature of the day was a lively ball game between the married and the single men, in which the single men came off victorious. A field day took up the balance of the afternoon, and after a late dinner in the casino the party motored home. About seventy-five were present, and bronze medals were awarded to those winning first and second places in the field-day events.

Studebaker Day in Iowa

DES MOINES, IOWA, July 24—"Studebaker Day" was celebrated here when over fifty of the three hundred Studebaker dealers of Iowa were the guests of the Studebaker Corporation of Detroit for one day. The dealers were the guests of Des Moines representatives of the factory at automobile races and at a dinner served at the Des Moines Club. G. L. Willman, assistant general sales manager from the factory, and J. A. Haskell, Des Moines branch manager, were the official hosts.

Want Lower Speed Limit

DALLAS, TEX., July 24—The next legislature, which convenes in January, will be asked to repeal the speed limit law of 15 miles per hour in rural precincts. Efforts will be made to get a speed limit of 20 or 25 miles. The question came up several weeks ago and has been made an issue in the political contest now being waged. The plan originated with the Dallas Automobile Club.

Price War in The Dalles

THE DALLES, ORE., July 24—Motor car owners of this city are watching with considerable interest the progress of a merry price-cutting war being waged by the local dealers' association against a recalcitrant former member.

The association members are reported to have pledged themselves to maintain the retail price of gasoline at 24 cents, but the rebellious member, it is said, insisted that 22 cents offered a sufficient margin of profit when the wholesale cost was 18½ cents, and not only refused to enter the combine but at once cut the price to 19 cents.

In what appears to be an endeavor to bring him to terms the associated dealers are permitting one of their members, whose place of business is opposite that of the seceder, to sell gasoline at 17 cents and are "chipping in" to cover the deficit. With gasoline selling at 17, 19 and 24 cents, the high cost of fuel is a negligible problem to the motorist of The Dalles.

Hall Leaves the Oldsmobile

LANSING, MICH., July 25—Jay Hall, general sales manager and associate executive of the Olds Motor Works for the past 3 years, has resigned. No disclosure is made as to his future plans.

The greater part of Hall's career has been spent in the service of Oldsmobile, with which he started as a salesman in Pittsburgh years ago. Later he was appointed branch manager for the Olds Motor Works in Cleveland, opened a new branch in Pittsburgh, and finally became branch manager for the company in Chicago. In 1913 he was appointed general sales manager at the factory.

Hall is generally credited as being largely instrumental for the change which in 1914 lifted the Olds Motor Works from the ranks of the small producer. The Olds Motor Works next year will produce and market more than 20,000 cars.

Saxon in Coast-to-Coast Relay

DETROIT, July 21—Fifty-two Saxon six cars will relay from New York to San Francisco by way of demonstrating what can be done with a motor car as the bearer of messages over long distances. They will race at top speed for stretches of about 75 miles each.

Starting to-morrow morning from New York City, a Saxon car will enter the Lincoln Highway, which leads from coast to coast, and will travel the first lap of the journey. A message from Mayor Mitchel of New York to Mayor Rolf of San Francisco will be handed the driver just before the start, which will be passed along the line and eventually delivered at the Golden Gate.

An observer from the Saxon factory will make the transcontinental journey. There will be no waits between legs of the race. Before each car reaches the end of its lap another will be ready to start out. Every effort will be made to clip time from other transcontinental records, and speed and endurance of the cars will be the only things asked in the contest, speed being the slogan of the race. Stops along the various laps will be made only in cases of emergency.

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Association News

St. Louis to Entertain Jobbers

ST. LOUIS, July 22.—L. E. Allmon, recently installed president of the Motor Accessory Trade Association of St. Louis took the first steps toward entertaining the National Association of Automobile Accessory Jobbers at the July meeting, held this week. The National Association meets here in October. Mr. Allmon will serve with the following committee to provide entertainment during the convention: Fred Campbell of the Fred Campbell Auto Supply Co.; William L. Niekamp, Beck & Corbett Iron Co.; W K. Norris, McQuay-Norris Manufacturing Co.; John F. Shuford, Phoenix Auto Supply Co. All of these firms are members of the National Association.

The following were appointed chairmen of permanent committees: Credit Bureau, Wiley R. Comstock of Fred Campbell Auto Supply Co.; Entertainment, Roscoe C. Buckley, Bittel-Leftwich Tire Co.; Finance, A. C. Bauer, A. C. Bauer Oil Co.; Athletic, W. E. Finney, Goodyear Tire & Rubber Co.; Legislative, E. S. Marvin Imperial Oil Co.; Resolutions, Dr. E. L. Epperson, Neustadt Auto & Supply Co.

The meeting was held at Kammerer's Grove, several miles from town and special arrangements were made to take all members there in cars. A boxing match preceeded the dinner. Three new members were admitted and J. I. Case of the J. I. Case Co. was named chairman of a committee to co-operate with the company giving the traction show here.

Montreal Show in January

MONTREAL, July 24—The Montreal Automobile Trade Association has selected Jan. 13 to 20, inclusive, as its show dates, thus avoiding a conflict with the Chicago dates as in the past few years.

Ohio State Is Gaining

COLUMBUS, OHIO, July 22.—Considerable activity is shown in the affairs of the Ohio Automobile Trade Association, despite the extreme warm weather which has made it difficult to get dealers and garagemen to attend meetings. F. T. Price, president and acting secretary of the organization, has a number of local organizations about ready to affiliate with the state organization.

A meeting was held recently at Springfield, Ohio, when steps were taken to bring the Springfield Automobile Trade Association into the state organization. H. S. Fritz is president and P. T. Rathbun is secretary. The membership is quite large.

The Chillicothe organization will soon affiliate with the state organization according to Walter C. Barrett, its president.

The state organization has several men working to get individual members and their work is bringing in quite a few. Considerable interest in the organization is shown in practically every part of the state.

Milwaukee Plans Booster Tour

MILWAUKEE, July 22.—The Milwaukee Automobile Dealers, Inc., this week completed the work of mapping out the route of the second annual "booster tour", a five-day sociability run which has as its primary object the promotion of publicity for the big motor show to be conducted by the M. A. D. in connection with the Wisconsin State Fair. Not only the show is advertised, but the fair proper is given state-wide publicity of the most direct kind.

The tour this year will start Monday, August 28, and continue until Friday, September 1, as at present outlined. The route is now being scheduled from data obtained this week by Pathfinders B. J. Ruddle and W. W. Rowland. From now until August 28, the entire state will be flooded with literature advertising the fair and motor show, which will be held during the week of September 10.

The M. A. D. has again obtained the exclusive right to the use of the mammoth concrete Machinery hall in the state fair grounds at West Allis, about six miles from the city hall, and will put on a car and truck display rivalling the annual Auditorium show in size and quality. A small admission fee is charged, and this year the receipts of a certain day will be turned over to the newly formed Good Roads Association of Wisconsin to swell the fund being raised to promote the construction of continuous trunk highways across Wisconsin.

The state fair motor show is in charge of a committee of the M. A. D., comprising Edgar F. Sanger, Stearns-Knight and Hupmobile, chairman; W. L. Rafter, manager of the Winton branch, and Harry Newman, Chalmers.

St. Louis Plans 3 Shows

ST. LOUIS, MO., July 22.—St. Louis dealers discussed three exhibit weeks at the meeting of the St. Louis Automobile Manufacturers' and Dealers' Association Thursday afternoon.

One was the Automobile Show, probably in January, second the Locust Street Automobile Carnival during the Veiled Prophet Festivities in October, the date of former automobile shows, and third exhibits at the Maxwellton Fair, which is an old fashioned agricultural fair promoted by the Business Men's League. H. F. Fahrenkrog was named chairman of a committee to arrange for the dealers to take part in the Fair if it is held.

The other two exhibit weeks are certainties. Notice was given that all firms that will be entitled to share in a refund from the automobile show must become members of the Association by August. Three new members were admitted. William O. Hardin, secretary for two years, resigned. R. E. Lee, secretary of the Motor Accessory Trade Association, is spoken of as Hardin's successor. The directors will fill the vacancy.

To Hold Another Truck Run

LOS ANGELES, July 22.—Southern California is to have another commercial car reliability tour. Frederick Pabst acting for the Motor Truck Dealers' Association of Los Angeles, has made application to the Contest Board of the A. A. A. for a sanction for a commercial car run Oct. 22 and 23.

The success of the run from Los Angeles to San Diego, staged last week under the auspices of the Motor Truck Dealers' Association has assured the success of the next run, which is to be a much harder and longer run. It is planned to have the trucks leave Los Angeles and go out across the desert to Palmdale, then to Victorville and Barstow, the first day, making Barstow the night control. The second day the run would be from Barstow to San Bernardino and then into Los Angeles over the boulevards.

This run would be approximately 400 miles and the course would include every road condition to be encountered by the motor truck in operation in the Southwest.

Tippecanoe County Organizes

LAFAYETTE, IND., July 22—The Tippecanoe County Automobile Dealers and Garage Owners Association has been organized and has affiliated with the National Automobile Trade Association. The officers are: President, Forest Stockton; vice-president, John Opp; secretary, Clinton Anderson; treasurer, Carl Rhyan. Directors, John Opp, Charles Shambaugh, Earl Martens, William Kann and Walter S. Crowe. The next meeting will be held July 28. The membership is composed of the Columbia Tire & Auto Co., William Kann & Son, D. R. Craig Garage, Auto Tire Shop, Main Street Auto Co., Charles Shambaugh, Peter Anderson & Son, Lafayette Welding Co., West Side Auto Co., Auto Company Stand, Paige Auto Agency, Lafayette Auto Co., Gibson Co., Morgan, Torrenga & Snoddy, and the Opp Hardware Co.

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Falls Motor Reincorporates

MILWAUKEE, July 22.—A well-defined report from Sheboygan Falls, Wis., says that the Falls Machine Co., Sheboygan Falls, a large manufacturer of small, high speed gasoline engines for car builders, has passed into the control of a syndicate represented by Andrews & Co., bankers, Chicago. It is stated further that the company will be reincorporated as the Falls Motors Co., under the laws of Virginia, with a capital stock of $1,500,000. The company has made extensive additions during the last eight or ten months and at this time is still further enlarging the capacity. One of its largest contracts is that for all motors for the Grant six, Findlay, O.

New Buildings for Oakland

PONTIAC, MICH., July 17.—The Oakland Motor Co. plans to expand its plant and operations will begin as soon as the buildings on the old Studebaker site have been removed.

In addition to the four-acre site, formerly a part of the old Studebaker works, negotiations have just been completed for the annexation of the solid block extending from Oakland Avenue to Howard Street, fronting on Baldwin. The new buildings will be occupied by a machine shop and additional assembly departments. At the close of business July 1, the Oakland company was several thousand cars ahead of the last fiscal year.

Miller Employees Have Holiday

AKRON, OHIO, July 22.—The employees of the Miller Rubber Co. held their annual outing and picnic at Silver Lake July 15.

Resta Far in the Lead

NEW YORK, July 24—The 150-mile race at Omaha on July 15 was the sixth event selected by the contest board of the American Automobile Association to count in its designation of the 1916 champion automobile race driver. Dario Resta now leads his nearest competitor, De Palma, by 730 points. Eddie Rickenbacher is third, 900 points behind De Palma. The standings follow:

Driver	Points
Dario Resta	2400
Ralph De Palma	1670
E. V. Rickenbacher	770
Ralph Mulford	595
J. Christiaens	540
W. D'Alene	510
Pete Henderson	432
J. Devigne	320
John Aitken	320
Thomas Milton	260
Ira Vail	220
E. O'Donnell	185
Dave Lewis	110
F. Galvin	100
C. J. Devlin	90
B. Oldfield	80
Mel Stringer	55
George Adams	55
Earl Cooper	55
H. Wilcox	40
Billy Chandler	40
Bert Watson	35
M. Sorenson	35
Charles Johnson	30
Jack Gable	30
F. McCarthy	25
Ora Haibe	20
W. J. Muller	20

Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

William L. Colt of the Colt-Stratton Co., New York, has been made eastern district sales manager of the Cole Motor Car Co., Indianapolis. Colt will retain the presidency of the New York company. Capt. Harry Stratton, who has been associated with Colt, will now assume the duties of general manager, formerly exercised by Colt.

Don M. Ferguson has resigned as consulting engineer for the General Motors Co., Detroit. His future plans have not yet been announced. Previous to his connection with the General Motors, Ferguson was chief engineer for the Studebaker Corp.

Frank L. Newton, who has been assistant sales manager of the Jackson Automobile Co., Jackson, Mich., for the past 5 years, has severed his relations with that concern to become general sales manager for the Lewis Spring & Axle Co., Chelsea, Mich., manufacturer of the Hollier eight.

E. B. Jackson, who left the Packard New York branch to go with the new Willys-Overland branch, has been made assistant to C. A. Earl, vice-president of the Willys-Overland Co.

George H. Bowler has been appointed sales and advertising manager of the H. A. Lozier Co., Cleveland, Ohio.

T. S. Johnson, for the past two years branch manager for the Oakland Motor Car Co. branch in Philadelphia, has been appointed eastern distributer by the Monroe Motor Co., Pontiac, Mich., with headquarters in Philadelphia.

E. E. Thompson, at present connected with the branch of The Maxwell Motor Co., San Francisco, will return to Detroit in September to assume the duties of sales superintendent of the Maxwell Motor Co. for the Pacific Coast.

A. J. Pennington, six years general superintendent of the Lee Tire & Rubber Co., Coshocton, Pa., has been made factory superintendent of the Brunswick-Balke plant at Muskegon, Mich., which will make tires.

Fred H. Ayres, who has been with the Fisk Rubber Co., Chicopee Falls, Mass., for 13 years, and manager of the New England territory for several years, has been appointed general supervisor of all districts.

James Joyce, Jr., special representative of the George W. Houk Co., Buffalo, has resigned.

E. T. Backus has been appointed manager of the branch of the Ford Motor Co. in Baltimore, Md., which will be opened August 1.

H. G. McComb has resigned as engineer of the General Vehicle Co., Long Island City, to take up private engineering work and has opened offices at 1414 Times Building, New York City.

Clarence O. Sacks, for several years identified with motor car and accessory advertising, has organized an agency to be known as The Sacks Co., Inc., with offices at 171 Madison Avenue, New York. Until May, 1913, Sacks controlled a similar company, but sold his interests to accept the position of advertising manager for Gray & Davis, Inc., Boston.

A. A. Martin, vice-president and sales manager of the Burd High Compression Ring Co., Rockford, Ill., and who organized this company, will retire from that concern Aug. 1.

Ford Holidays for 30,000

DETROIT, July 20.—Notices are being given out to the workmen of the Ford Motor Co., that most of the 30,000 employed in the Detroit factories will not be required to be at work from July 25 to August 7, during which period a complete inventory of property valued at approximately $100,000,000 will be taken. The company's fiscal year ends July 31.

Monroe Body Growing

PONTIAC, MICH., July 20.—Work is about to begin on two new buildings for the Monroe Body Co., an office building and a pressed steel plant. The office building will be a brick structure 28 x 56 and one story.

The new factory building will front on the Michigan Air Line tracks a distance of 156 ft. The greatest depth will be 82 ft. The capital stock of the Monroe company has been increased to $150,000.

Jacox Gets New Building

SAGINAW, MICH., July 19.—The Jackson-Church-Wilcox Co., manufacturer of the Jacox steering gear, will erect an addition to its plant on North Hamilton Street. The addition, which will be of brick, one-story, and 208 x 120 ft., and will practically double the output. Eight hundred men will be given employment. With the proposed addition the next year's production of the company is expected to reach the half-million mark.

New Departure Needs Room

BRISTOL, CONN., July 24.—An addition is to be made to the factory of the New Departure Co., 300 ft. long and U shaped. This will be known as the ball department when it is completed. The company has acquired considerable other ground for enlargement of the factory.

Western Spring and Axle Enlarges

CINCINNATI, July 22.—Additions are now being made at three plants of the Western Spring and Axle Co. At the Hess Spring & Axle Co. plant, Cincinnati, a large new building will be used for automobile axles and spring making. At the J. B. Armstrong Mfg. Co., Flint, Mich., a new building will be used for heat treating and fitting and at the Cleveland-Canton Spring Co.'s plant, Canton, a large addition will be used for a stock room and finishing department.

C. A. S. Booked for Year

COLUMBUS, July 22.—The new plant of the C. A. S. Products Co., recently formed with a capital of $100,000 to manufacture the Foster gear, an invention of a Columbus man, has booked orders to keep the plant to capacity until June, 1917. C. D. Cutting of Detroit is president and general manager and A. W. Tyler is secretary and superintendent. The plant has 50,000 feet of floor and additions and extensions have been started. More than 150 men are employed.

Factory for Ford Truck Device

ECORSE, MICH., July 24.—The Robinson Machine Co. has purchased ground west of Mill Street, where a factory will be erected to manufacture its new Truckford, a device whereby a Ford is turned into a one-ton truck. Fifty men will be employed when the new factory is completed.

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Suit Against Faw Dismissed

NEW YORK, July 24—A patent infringement suit for a bulb reflector, brought by Nelson J. Quinn against J. H. Faw, Inc., has been dismissed in the United States District Court. The patent is No. 1,099,715. The construction in question is that of half the bulb being covered by a silver coating. The Faw device, the Lennon protector, is a detachable metal covering, and not a coating upon the glass. The element of adjustability also entered into the question.

Stewart-Warner Profits for 6 Months $1,275,000

CHICAGO, July 20—The Stewart-Warner Speedometer Corp. has declared regular quarterly dividends of 1½ per cent on the common stock, payable Aug. 1 to stock of record July 22. The corporation reports net profits of $1,275,000 for the 6 months ending June 30, a new high record. The net profits in the last quarter totaled $703,254, against $571,873 in the first quarter of the calendar year.

The balance sheet shows assets as follows: Real estate, buildings, machinery, etc., less depreciation, $1,720,774; patents, trade-marks and good-will, $9,096,967; inventories and receiveables, $3,454,008; deferred charges, $154,158; total assets, $14,425,908.

Liabilities: Preferred stock, $724,400; common stock, $10,000,000; current liabilities, $420,317; surplus, $3,281,191. Surplus includes $307,463 set aside to retire the preferred stock.

To Make Vulcanizers

GRAND RAPIDS, MICH., July 18—F. A. Whitten, Charles Palmer and Abe Lewis have organized a company in this city for the purpose of manufacturing vulcanizing machines.

Wichita Falls Plans to Expand

WICHITA FALLS, TEX., July 24—The Wichita Falls Motor Co. has increased its capital stock from $100,000 to $400,000. It has met with much success in manufacturing motor trucks at its plant here and it is stated that it plans to greatly enlarge the industry.

Sells Out Ziola Carbureter

MADISON, WIS., July 24—Henry A. Ziola, Madison, Wis., an inventor of electrical and carbureting devices for internal combustion engines, has sold all rights to the Ziola kerosene carbureter to a syndicate of St. Louis capitalists, headed by James B. Lloyd. It is said that Ziola received $30,000 for his patents. He is the inventor of an X-ray machine now being manufactured at Madison, and will devote his attention to that business hereafter.

2000 Canadian Chalmers For 1917

WALKERVILLE, ONT., July 24—Following the opening of the plant of the Chalmers Motor Co. of Canada, it is stated that the company will build 2000 cars its first year. The officers are: General manager, Harry S. Lee; sales manager, Louis Logie; eastern representative, R. C. Miquelon; western representative, E. J. Parker; production manager, Hugh W. Buchanan; service manager, Mossom I. Reid; chief accountant, Egbert S. Jackson.

Factory News of the Week

Canadian Ford Earns $5,000,000

WALKERVILLE, ONT., July 24—The net earnings of the Ford Motor Co. of Canada, Ltd., for the current fiscal year of 10 months ending July 31 show approximately $5,000,000, which would be equivalent to about $70 a share on the $7,000,000 outstanding capital. From these earnings, however, will be deducted the Canadian war tax.

The company has spent $2,750,000 in erecting four new assembling plants and other extensions to the Ford, Ont., plant, which additions give 160,000 sq. ft. more floor space.

The new Canadian assembling plants are located in Montreal, Toronto, London and Winnipeg.

The net earnings have increased from $1,065,000 in 1912 to the estimated net of $5,000,000 this year.

No dividends have been declared on the present $10,000,000 capital, which reached its present size by the declaration of a $6,000,000 stock dividend late in 1915.

The estimated Canadian production for the next fiscal year has been placed at 60,000 cars.

Sewell Wheel Enlarges Service

DETROIT, MICH., July 18—The Sewell Cushion Wheel Co., this city, shows an increase in business for the first quarter of its fiscal year of 300 per cent over the same period last year.

Plans are now being formulated for establishing service stations in connection with the company's branches in Buffalo, Boston, New York City, Philadelphia, Baltimore, Minneapolis, Rochester, Cleveland, St. Louis, Pittsburgh, Los Angeles, Seattle and Chicago. A service station is maintained at the factory.

Westcott Moves to Richmond

SPRINGFIELD, OHIO, July 24—The Westcott Motor Car Co. has removed its office and factory from Richmond, Ind., to Springfield, Ohio.

Alvin Forms Truck Company

JOLIET, ILL., July 24—Forrest J. Alvin, in the accessory field for a number of years and who has more recently been president of the New Era Engineering Co., has organized a truck company in Joliet to market a truck of light capacity.

Grossman Salesmen in Conference

BROOKLYN, July 22—The annual sales conference of the Emil Grossman Mfg. Co. was held last week. The meeting included several sessions and a dinner at Brighton Beach. The product and policies for the coming season were formulated at this early date in order that information may be given to jobbers by Oct. 1, a recommendation made at the Hot Springs meeting of the National Association of Automobile Accessory Jobbers.

Argo Is Now Hackett

JACKSON, MICH., July 24—The Argo Motor Co. has been changed to the Hackett Motor Car Co., following the entry into the business of Mansell Hackett. The car will be called the Hackett, and the new Hackett four, to be brought out soon, will sell for less than $1,000.

Stromberg Incorporates in New York

NEW YORK, July 24.—The banking interests which recently incorporated the Stutz Motor Car Co. are interested in an incorporation in New York state of the Stromberg Carbureter Co. of America. Representatives of these interests decline to state whether any mergers are intended. The banking interests are headed by Allan A. Ryan & Co. The directorate of the new company includes William Rand, E. F. Meniken and K. R. Howard, the first two being connected with the law firm of Jerome, Rand and Kresel, 37 Wall street. The company has issued 50,000 shares of stock of no par value and will do business on $250,000. The stock has been listed on the curb and when traded in last Thursday on a "when issued" basis, changed hands at 42. Before the close of trading, it was announced that the stock had been oversubscribed.

Standard Welding Not In?

CLEVELAND, July 24.—Failure of interested parties to agree on terms of sale has, it is said, resulted in a breakoff of negotiations to sell the controlling interest of the Standard Welding Co. to the United Motors Corp., of New York. Negotiations have been going on for several weeks. It is understood that a difference of $7,000,000 stood between the prospective purchaser and the Standard's price when negotiations were first opened.

Sulzberger Becomes Wilson & Co.

CHICAGO, July 22.—Sulzberger & Sons Co., packers, which has developed a considerable business in Wilson's sterilized curled hair for automobile upholstery, has changed its name to Wilson & Co. Thomas E. Wilson is the new president. B. H. Blocksom continues in charge of the curled hair department.

Firestone Holiday Next Saturday

AKRON, July 24.—The annual employees outing of the Firestone Tire & Rubber Co. will be held Saturday, July 29, at Silver Lake Park. It is expected that 25,000 will attend.

Wayne Pump Increases Capital

FORT WAYNE, IND., July 24.—The Wayne Oil Tank & Pump Co., has increased its capital from $500,000 to $700,000. Among the plant additions, will be a factory building nearly 400 ft. long.

Invents Six-Wheel Automobile

PATERSON, N. J., July 20.—W. A. Arnold, a silk dyer, and W. H. Fletcher, both of this city, and R. A. Greene, of Passaic, have purchased all the rights of M. A. Mackay, a Maine backwoodsman, to an automobile chassis he has invented. This chassis has three axles, six wheels and a 200-in. wheelbase. It will make a complete turn in a space of 32 ft. Both front and rear wheels are controlled by the steering gear and the center wheels are fixed.

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1916 MOTOR WORLD GUIDE

SPECIFICATIONS OF LEADING AMERICAN CARS BROUGHT UP TO DATE

Model	Motor	S.A.E. Rating	Ignition	Carbureter	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
ABBOTT-DETROIT													
6-44	6-3¼x4½	25.3	Remy	Zenith	Remy	P	3	122	32x4	S S	1195	*1195	1195
8-80	8-3¼x5	33.8	Remy	Zenith	A-Lite	D	3	121	35x4½	S S	1950	....	1950
ALLEN													
...	4-3⅝x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	S S	795	795	....
ANDERSON													
...	6-3½x4½	25.4	Wsths	Zenith	Wsths	P	3	...	.....	.....	1250	....	1250
APPERSON													
6-16	6-3½x5	29.4	Remy	Rafid	Bijur	P	3	130	34x4	S S	†1750	....	1750
8-16	8-3½x5	31.2	Remy	Rafid	Bijur	P	3	130	35x5½r	S S	†2000	....	2000
ARBENZ													
25	4-3¼x5	16.9	Conn	Carter	Apico	C	3	108	30x3½	C	....	675	....
ARGO													
...	4-3½x4	15.6	Conn	Mayer	Disco	C	3	103	30x3	C	455	....	....
...	4-3½x4	15.6	Conn	Mayer	Disco	C	2	96	30x3	C	405	....	....
AUBURN													
4-36	4-3⅝x5	24.0	Conn	Rafid	A-Lite	C	3	114	33x4	S S	895	895	....
6-38	6-3 x5	21.6	Remy	Rafid	Remy	C	3	120	34x4	S S	1065	1065	....
6-40A	6-3½x5	29.4	Delco	Rafid	Delco	C	3	127	35x4½	S S	1375	....	1375
BELL													
A-16	4-3½x5	19.6	A.Kent	Carter	Disco	C	3	112	31x4	C	775	775	....
BIDDLE													
D	4-3⅝x6½	22.5	Dixie	Zenith	G & D	P	4	121	32x4	Q D	1800	1865	†1850
BREWSTER													
...	4-4 x5½	25.6	Bosch	Zenith	U S L	C	3	125	34x4½	S S	Chassis		5000
BOUR-DAVIS													
17	6-3¼x4½	25.3	Remy	Stmbg	W.Lnrd	P	3	118	32x4	S S	....	1250	....
BRISCOE													
1916	8-3 x3½	28.8	Remy	Zenith	Apico	C	3	114	32x3½	C	‡985	985	....
4-38	4-3 7-16x5¼	18.9	Remy	Mayer	Apico	C	3	114	32x3½	C	‡785	785	....
34	4-3¼x5¼	15.6	Remy	Mayer	Apico	C	3	104	30x3½	C	....	625	....
BUICK													
D-44 and 45	6-3¾x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	S S	985	....	1020
D-34 and 35	4-3⅝x4¾	19.2	Delco	Marvel	Delco	C	3	106	31x4		650	665	....
CADILLAC													
53	8-3½x5½	31.2	Delco	Own	Delco	D	3	122	36x4½	S S	2080	2080	2080
CAMERON													
...	6-3 x5	21.6	G & D	Stmbg	G & D	C	3	122	32x4	S S	1065	1065	....
CASE													
T	4-3⅝x6	21.0	Wsths	Rafid	Wsths	C	3	120	34x4	Q D	‡1090	....	1090
CHALMERS													
M-6	6-4 x5½	38.4	Bosch	Rafid	Ents	D	4	132	36x4½	S S	....	2175	2175
6-48	6-3½x5½	29.4	A.Kent	Rafid	Ents	D	3	126	34x4½	S S	....	....	1550
6-40	6-3½x5	23.4	A.Kent	Rafid	G & D	D	3	124	34x4	S S	‡1450	....	1450
6-30	6-3¼x6½	25.4	Remy	Stmbg	Wsths	D	3	115 122	32x4	S S	1050	1050	1290
CHANDLER													
16	6-3⅝x5	27.3	Bosch	Rafid	G & D	P	3	123	34x4	S S	†1295	....	1295
CHEVROLET													
F	4-3 11-16x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	S S	860	860	....
490	4-3 11-16x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½r	C	....	550	....
COLE													
8-60	8-3½x4½	30.2	Delco	Stmbg	Delco	C	3	127	35x4½	S S	†1595	....	1595
CROW													
C.E.35	4-3½x5	19.6	Conn	Zenith	Dyneto	P	3	112	32x3½	S S	....	795	....
DANIELS													
8	3-3¼x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	Q D R	‡2800	2700	2800
DAVIS													
6-E	6-3½x5¾	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	.....	....	....	1495
F & G	6-3¼x4½	25.3	Delco	Stmbg	Delco	C	3	120	34x4	.....	....	1250	....
DETROITER													
F	4-3¾x4¼	22.5	Dixie	Shblr	Dyneto	D	3	112	33x4	S S	....	985	....
6-45	6-3¼x4½	25.3	Conn	Ball	A-Lite	D	3	118	32x4	S S	†1098	1098	....
DISPATCH													
G	4-3¾x5	22.5	Bosch	Rafid	U S L	G	G	120	36x3½	.....	1135	1210	....
DIXIE FLYER													
...	4-3¼x5	16.9	Conn	Carter	Dyneto	C	.	112	32x3½	S S	795	795	....
DODGE BROS.													
...	4-3⅞x4½	24.0	Elsmn	Stwrt	N E	C	3	110	32x3½	S S	785	785	....
DORRIS													
I-B-6	6-4 x5	38.4	Bosch	Stmbg	Wsths	D	3	128	36x4½	S S	2475	....	2475
DORT													
5-A	4-3¼x5	16.9	Conn	Carter	Wsths	C	3	105	30x3½	Q D C	....	665	....

* 6-passenger; † 4-passenger; ‡ 3-passenger.

ABBREVIATIONS—"G & D" Gray & Davis, "Spldf" Splitdorf, "A-Lite" Auto-lite, "Wsths" Westinghouse, "Shblr" Schebler, "Elsmn" Elsemann, "Rafid" Rayfield, "A.Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brlng" Berling, "Kngstn" Kingston, "Natnl" National, "W.Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Stwrt" Stewart, "Nwcmb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O M" Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Titn" Tillottson, "Atzr" Atomizer. Clutches: "C" Cone.

Model	Motor	S.A.E. Rating	Ignition	Carbureter	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
DREXEL													
...	4-3½x5	19.6	Dixie	Stmbg	Bijur	C	3	112	32x4	.....	855	855	....
ELCAR													
...	4-3½x5	19.6	Delco	Carter	Dyneto	C	3	114	32x3½	S S	....	795	....
ELGIN													
...	6	...	Delco	Rafid	Dyneto			114	32x3½		‡845	845	....
EMPIRE													
45	4-3⅞x5	24.0	Conn	Shblr	A-Lite	C	3	116	33x4	S S	‡935	935	....
60	6-3¼x4½	25.6	Conn	Shblr	A-Lite	C	3	120	34x4	S S	....	1095	....
ENGER													
12	12-2⅝x3½	33.0	Remy	Zenith	Wsths	D	3	115	32x4	S S	....	1095	....
FIAT													
55	4-5½x6¾	42.0	Bosch	Own	Own	D	4	128	37x5r	Q D C	‡4950	4950	4950
56	6-4 2-5x6	46.6	Bosch	Own	Own	D	4	135	37x5r	Q D C	‡5350	5350	5350
FORD													
T	4-3¾x4	22.5	Ford	Holley Kingston	.....	D	2	100	30x3½r	C	390	440	....
FOSTORIA													
....	4-3 x4½	14.4	Remy	Zenith	.....	D	3	108	30x3½	C	....	735	....
FRANKLIN													
9	6-3¼x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4½	S S	1800	1850	....
F. R. P.													
45	4-4 3-5x6¾	33.8	Bosch	.....	Bosch	C	4	110 140	36x4	C	Chassis 5000		
GLIDE													
6	6-3½x5	23.4	Wsths	Rafid	Wsths	D	3	119	34x4	S S	....	1125	....
GRANT													
V	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	.....	‡835	835	....
H. A. L.													
...	12-2⅞x5	39.5	Remy	Stmbg	Wsths	D	3	135	34x4½	S S	2100	....	2100
HALLADAY													
S	6-3 x5	21.6	A-Lite	Own	A-Lite	D	3	118	33x4	S S	‡1065	....	1120
R	6-3 x5	21.6	Wsths	Stmbg	Wsths	P	3	122	34x4	S S	‡1265	1265	....
R'mer S.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	122	34x4	.....	1800	....	....
HARVARD													
4-20	4-3 x4¼	14.4	A.Kent	Zenith	Wagner	D	3	100	28x3	Q D	750	....	....
HAYNES													
36	6-3½x5	29.4	Remy	Rafid	L-N	P	3	121	34x4	S S	‡1485	1485	....
37	6-3½x5	29.4	Remy	Rafid	L-N	P	3	127	35x4½	S S	....	....	1535
40	12-2¾x5	36.3	Delco	Rafid	L-N	P	3	121	35x4½	S S	1885	1885	1945
41	12-2¾x5	36.3	Delco	Rafid	L-N	P	3	127	35x4½	S S	....	....	1945
HERFF-BROOKS													
4-35	4-4 x4½	25.6	Dixie	Stmbg	Apico	C	3	110	33x4	S S	895	895	....
H6-50	6-4 x4½	38.4	Dixie	Stmbg	Apico	C	3	120	34x4	S S	1095	1095	....
HOLLIER													
...	8-3 x4¼	28.8	A.Kent	Stwrt	Apple	C	3	114	34x4	S S	....	1185	....
HUDSON													
Super-6	6-3½x5	29.4	Delco	Own	Delco	D	3	125½	35x4½	S S	†1475	....	1475
HUPMOBILE													
...	4-3⅝x5½	22.5	A.Kent	Zenith	Wsths	D	3	119 134	34x4 35x4½r	S S	1185	1185	*1340
INTER-STATE													
T	4-3½x5	19.6	Remy	Shblr	Remy	C	3	110	32x4	S S	850	850	....
JACKSON													
34	4-3½x5	19.6	Conn	Shblr	A-Lite	C	3	112	32x4	S S	....	985	....
348	8-2⅞x4¾	36.4	Conn	Shblr	A-Lite	C	3	112	32x4	S S	....	1195	....
68	8-3½x4½	39.2	Conn	Shblr	A-Lite	C	3	124	34x4½	Q D	....	....	1685
JEFFERY													
Four	4-3⅝x5½	22.5	Bosch	Stmbg	Bijur	P	3	116	34x4	S S	1095	1095	1120
...	6-3½x5¼	29.4	Dixie	Stmbg	Bijur	P	3	121	35x4½	S S	....	....	1460
JORDAN													
...	6-3½x5¼	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	.....	1650	....	1650
KING													
D	8-2⅞x5	28.4	A.Kent	Zenith	W.Lnrd	D	3	113	33x4	S S	‡1150	1150	....
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	D	3	120	34x4	S S	‡1350	....	1350
KISSEL													
100-pt.	6-3¼x5	25.3	Remy	Stmbg	Kissel	C	3	117	32x4	S S	1095	1095	....
6-42	6-3⅝x5½	31.5	Elsmn	Stmbg	Kissel	C	3	126	35x4½	S S	1650	1650	1750
KLINE													
6-36	6-3¼x4½	25.3	Wsths	Rafid	Wsths	P	3	120	34x4	S S	1095	1095	....
LAUREL													
35	4-3⅝x4¼	33.8	Dixie	Shblr	Disco	P	3	112	32x3½	Q D	850	850	875
LENOX													
O	6-3½x5¼	29.4	Elsmn	Zenith	Wsths	D	3	128	34x4½	Q D	....	1985	....
D	4-4¼x5½	28.9	Elsmn	Own	Wsths	C	3	118	34x4½	Q D	1900	....	....
M	6-6¾x5	33.8	Elsmn	Own	Wsths	C	3	130	34x4½	Q D	....	2465	....

* 6-passenger; † 4-passenger; ‡ 3-passenger.

"P" Plate, "D D" Dry Disk, "D P" Dry Plate, "D" Disk, "G" Gearless, "F" Friction Rims: "Q D" Quick Detachable, "S S" Straight Side, "C" Clincher, "Q D B" Quick Detachable Reversible, "Q D C" Quick Detachable Clincher.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 37x5½ and the front are of smaller dimension.

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Model	Motor	S.A.E. Rating	Ignition	Carbureter	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
LEXINGTON													
6-C	6-3½x4½	25.9	Conn	Shbir	Wsths	DD	3	116	32x4	S S	....	1075	....
LIBERTY													
...	6-3½x4½	23.4	Delco	Shbir	Delco	DD	3	115	32x4	....	....	1095	....
LOCOMOBILE													
M-7	6-4½x5½	48.6	Elsmn	Dwn	Wsths	DD	4	142	37x5	Q D C	....	*5400	5400
E-7	6-4½x5	43.3	Elsmn	Own	Wsths	DD	4	139	37x5r	Q D C	....	†4750	4800
LOZIER													
84	4-4½x6½	28.9	Bosch	Stwrt	G & D	D	4	120	36x4½	S S	....	....	1595
82	6-3½x6	28.0	Elsmn	Rafid	G & D	D	3	133	36x4½	S S	....	....	2775
6-50	6-3½x5¾	39.4	G & D	Rafid	G & D	D	3	120	36x4½	S S	....	1875	....
LUVERNE													
700	6-4 x5	38.4	Bosch	Shbir	Apleo	D	3	130	36x4½	S S	....	....	2000
MADISON													
T	6-3½x5	23.4	Remy	Rafid	Remy	D	3	115	34x4	S S	....	1050	....
T-7								124			....	....	1150
MARION-HANDLEY													
6-40	6-3½x5	23.3	Wsths	Zenith	Wsths	D	3	120	32x4	S S	†1185	....	1185
6-60	6-3½x5¼	29.4	Wsths	Zenith	Wsths	D	3	125	33x4½	S S	....	....	1385
MARMON													
34	6-6⅝x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	Q D	†2950	2900	2950
MAXWELL													
...	4-3⅝x4½	21.0	Simms	K-D	Simms	C	3	102	30x3½	C	580	595	....
McFARLAN													
127	6-4½x6	48.0	Wsths	Stmbg	Wsths	P	3	136	35x5	Q D R	....	....	3200
McINTYRE													
25	4-3½x5½	19.6	Bosch	Stmbg	G & D	C	3	106	32x3½	.....	....	950	....
6-40	6-3½x4½	29.4	Briggs	Stmbg	Briggs	D	3	120	35x4	.....	....	1275	....
MECCA													
30	4-3¾x4¾	22.5	Dixie	Shbir	Disco	D	3	104	30x3½	C	695	695	....
MERCER													
Spdstr	4-3¾x6¾	22.5	Bosch	Zenith	.....	D	4	115	32x4	Q D C	2750	....	....
22-72	4-3¾x6¾	22.5	Bosch	Zenith	U S L	D	4	130	34x4½	Q D C	....*†3000	....	
METZ													
25	4-3⅞x4	24.0	.....	A W T	G & D	F	.	108	32x3½	C	600	600	....
MITCHELL													
8	8-3 x5½	28.8	Conn	Zenith	Wsths	C	3	125	34x4	S S	‡1450	1450	1450
6 of 16	6-3½x5	29.4	Conn	Rafid	Wsths	C	3	127	34x4	S S	‡1335	1325	1360
MOLINE-KNIGHT													
50	4-4 x6	25.6	Bosch	Shbir	Wagner	C	4	128	36x4½	S S	2500	2500	2540
40	4-3¾x5	22.5	Conn	Shbir	A-Lite	C	3	118	34x4	S S	1450	1450	....
MONARCH													
...	8-3 x5	38.8	A.Kent	Zenith	.....	D	3	125	35x4½	.....	....	1800	....
MONITOR													
C & E	4-3⅝x4¼	22.5	Spldf	Shbir	Disco	D	3	106	32x3½	S S	795	795	....
N	6-3½x5	23.4	Spldf	Shbir	Disco	D	3	115	33x4	S S	....	895	....
MONROE													
M-2	4-3 1-16x3¾	15.0	Conn	Zenith	A-Lite	C	3	96	30x3	C	495	....	....
MOON													
6-66	6-3½x5¼	29.4	Delco	Rafid	Delco	P	3	125	35x4½	S S	†1575	....	1575
6-43	6-3¼x4½	25.3	Delco	Rafid	Delco	P	3	118	33x4	S S	‡1250	1250	....
MORSE													
D	4-4⅝x5	34.2	Elsmn	Stmbg	G & D	D	4	127	36x4½	.....	3000	3000	3700
NATIONAL													
Hgy	12-3⅜x4¾	36.3	Dixie	Rafid	Wsths	C	3	128	34x4½	Q D R	†2150	....	2150
Hgy	6-3½x5¼	29.4	Dixie	Rafid	Wsths	C	3	128	34x4½	Q D R	†1750	....	1750
OAKLAND													
20	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	34x4½	S S	....	....	1585
22 6-2	13-16x4¾	18.9	Remy	Marvel	Delco	C	3	110	32x3½	S S	795	795	....
OLDSMOBILE													
43	4-3½x5	19.6	Delco	Marvel	Delco	C	3	120	33x4	S S	1095	1095	....
44	8-2⅞x4¾	28.4	Delco	Johnsn	Delco	C	3	120	33x4	S S	1195	1195	....
OVERLAND													
85-4	4-4½x4½	27.2		Titan	A-Lite	C	3	112	33x4	S S	....	795	....
85-6	6-3¼x3½	25.3		Titan	A-Lite	C	3	116	32x4	S S	....	....	925
75-B	4-3¾x5	18.2		Titan	A-Lite	C	3	104	31x4	C	620	635	....
OWEN													
I	6-3⅝x5½	33.7	Bosch	Master	O M	O M		136	35x5	Q D C	*3750	....	3750
PACKARD													
I-25	12-2 x5	43.2	Delco	Own	Bijur	DP	3	125	37x5r	Q D C	2750	2750	2750
I-35	12-3 x5	43.2	Delco	Own	Bijur	DP	3	135	37x5r	Q D C	....	3150	3150
PAIGE													
6-46	6-3½x5¼	29.4	Remy	Rafid	G & D	D	3	124	35x4½	S S	1375	....	1375
6-38	6-3¼x5	23.4	Remy	Rafid	G & D	D	3	117	33x4	S S	1070	1090	....
PARTIN-PALMER													
22	4-3½x5	19.6	Conn	Shbir	Disco	D	3	110	32x3½	C	....	695	....
8-45	8-3¼x4	31.2	Conn	Rafid	Remy	D	3	115	33x4	C	....	....	*1195
20	4-3½x4½	15.6	Conn	Shbir	A-C	D	3	96	29x3½	C	495	....	....
PATERSON													
6-42	6-3¼x4½	25.2	Delco	Stmbg	Delco	C	3	117	32x4	S S	....	995	1060

Model	Motor	S.A.E. Rating	Ignition	Carbureter	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
PATHFINDER													
Le8	12-2½x5	39.6	Delco	Stmbg	Delco	D	3	130	35x5	S S	2900	....	2750
PEERLESS													
...	8-3½x5	33.8	A.Kent	Special	G & D	D	3	125	35x4½	S S	‡1800	....	1800
PIERCE-ARROW													
38C4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	Q D C	4300	4300	....
48B4	6-4½x5½	48.6	Bosch	Own	Wsths	C	4	142	37x5	Q D C	4900	4900	5000
66A4	6-5 x7	66.0	Bosch	Own	Wsths	C	4	147½	38x5½r	Q D C	5900	5900	6000
PILOT													
6-55	6-3⅝x5¼	36.3	Delco	Stmbg	Delco	C	3	126	34x4	S S	1685	....	1685
6-75	6-4½x6	48.6	G & D	Stmbg	G & D	C	3	132	37x4½	S S	2400	....	2485
6-45	6-3 x5	21.6	Delco	Zenith Rafid	Delco	P	3	119	32x4	S S	†1100	1100	....
PREMIER													
6-56	6-3⅝x5½	27.3	Delco		Delco	D	3	125½	35x4½	S S	....	....	1685
PULLMAN													
Jr	4-3⅝x4¼	22.5	Dixie	Stmbg	Apleo	D	3	114	31x4	S S	....	....	740
6-48	6-3⅝x5¼	33.7	Simms	Stmbg	Wsths	D	4	134	36x4½	S S	....	....	....
REGAL													
F	8-3 x4½	28.8	Conn	Stwrt	Dyneto	C	3	115	33x4	S S	1200	1200	....
REPUBLIC													
E	6-4¼x5	43.3	Delco	Rafid	Delco	C	4	123	36x4½	S S	....	†2950	2950
REO													
M	6-3 9-16x5¼	30.4	Remy	Johnsn	Remy	D	3	126	34x4½	S S	....	....	1250
B	4-4½x4½	27.2	Remy	Johnsn	Remy	D	3	115	34x4	S S	....	875	....
RICHMOND													
4-35	4-4 x4½	25.6	Dixie	Stmbg	Apleo	C	3	110	33x4	.....	750	750	775
H6-50	6-4 x4½	38.4	Dixie	Stmbg	Apleo	C	3	120	33x4	.....	900	900	925
ROSS													
C	8-3¼x5	33.8	A.Kent	Zenith	.....	P	3	130	34x4	S S	....	....	1550
SAXON													
14	4-2¾x4	12.1	A.Kent	Mayer	.....	D	3	96	28x3	C	395	....	....
S-2	6-2⅞x4½	19.8	A.Kent	Rafid	Wagner	D	3	112	32x3½	S S	....	815	....
SCRIPPS-BOOTH													
C	4-3 x4¼	14.4	Remy	Zenith	Wagner	D	3	110	30x3½	C	‡825	....	....
D	8-2⅝x3¾	23.0	Remy	Zenith	Wagner	P	3	120	32x3½	S S	....	†1175	....
SPAULDING													
H	4-4½x5½	28.9	Simms	Rafid	Entz	C	3	120	36x4	.....	1250	1250	....
A	4					C	3	110	30x3	.....	750	750	....
SIMPLEX													
Crane	6-4⅝x6¼	46.9	Bosch Elsmn	Nwcmb	Rshmr	D	4	143½	37x5r	Q D C	....	....	....
SINGER													
Six	6-4 x5½	38.4	Bosch	Rafid	Wsths	D	4	138	35x5	Q D	‡3500	3500	3500
STANDARD													
8	8-3½x5	33.8	Spldf	Zenith	Spldf	D	3	127	35x4½	.....	1850	....	1900
6	6-4 x5½	38.4	Spldf	Rafid	Wsths	D	3	126	36x4½	.....	‡2100	2100	....
STEARNS-KNIGHT													
L-4	4-3⅝x5⅝	22.5	Remy	Shbir	Wsths	C	3	119	34x4	Q D C	....	1445	....
S-K-6	6-4½x5⅝	43.3	Bosch	Stmbg	G & D	D	4	134 (49)	37x5	Q D C	....	....	....
S-K-8	8-3½x5	33.8	Remy	Rafid	Wsths	D	3	123	35x4½	Q D C	....	....	2100
STEWART													
T	6-3½x5	29.4	Bosch	Rafid	Wsths	D	3	127	34x4½	S S	‡1950	....	1950
STUDEBAKER													
4	4-3⅝x5	24.0	Remy	Shbir	Wagner	C	3	112	34x4	S S	‡850	....	875
6	6-3⅞x5	36.0	Remy	Shbir	Wagner	C	3	123	34x4	S S	‡1060	....	1085
STUTZ													
New C	4-4⅝x5½	36.1	Bosch	Stmbg	Remy	C	3	120	34x4½	S S	2000	†2250	....
C	4-4⅝x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	S S	†2550	*2300	....
SUN													
17	6-3½x5	23.4	Remy	Rafid	Remy	P	3	116	34x4	S S	†1095	1095	1145
VELIE													
28-40	6-3¼x4½	25.3	Remy	Stmbg	Remy	D	3	115	32x4	S S	1045	1065	†1065
15-45	6-3½x5¼	29.4	A.Kent	Stmbg	G & D	D	4	124	34x4	S S	*1450	1400	....
WESTCOTT													
51	6-3½x5¼	29.4	Delco	Rafid	Delco	D	3	126	35x4½	S S	‡1595	....	1595
41	6-3¼x4½	33.7	Delco	Rafid	Delco	D	3	121	34x4	S S	‡1295	‡1295	....
43	6-3½x5¼	29.4	Delco	Rafid	Delco	D	3	121	34x4	S S	....	1445	....
WHITE													
LAH	4-3¾x5½	22.5	Bosch	Own	Own	P	4	115	32x4	Q D C	†2650	2700	....
GED	4-4½x6⅜	28.9	Bosch	Own	Own	P	4	133½	36x4½	Q D C	‡3750	....	3800
WILLYS-KNIGHT													
84-B	4-4½x4½	27.2	Dixie	Titan	A-Lite	C	3	114	34x4	S S	1095	1125	....
WINTON													
22	6-4¼x5½	48.6	Bosch	Rafid	Bijur	D	4	138	37x5	Q D	3500	3500	3500
22A	6-3¾x5¼	33.7	Bosch	Rafid	Bijur	D	4	128	36x4½	Q D	2485	2485	2535

* 6-passenger; † 4-passenger; ‡ 3-passenger.

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Ford Takes Over St. Joseph Dealer

ST. JOSEPH, MO., July 24—This place becomes a more important distributing point for Fords through the taking over by the Ford Motor Co. of the Farmer Auto Co., formerly dealer under the Kansas City Ford branch. E. C. Schumann, formerly manager of the branch in Milwaukee, has been made manager of this new branch. S. R. Farmer, formerly president of the Farmer Auto Co., continues the independent companies of which he is president, the Diamond Motor Co., agent for the Dodge Bros. and Hudson, and the Farmer Auto & Supply Co., dealer in accessories. The Farmer Auto Co. had been agent for the Ford in St. Joseph since 1908.

New Ford Branch in Dallas

DALLAS, TEX., July 24—Aug. 1 Fort Worth will become a distributing point and direct factory branch of the Ford Motor Co. for all the territory included in mid-northern Texas. This will open a new field for the Ford branch at Fort Worth, as heretofore these supplies have been furnished out of Dallas. Fred H. Jones will continue as manager. F. H. Johnson of Dallas will become his assistant.

Dealers Protest at Fees

SPRINGFIELD, MO., July 24—Dealers and garagemen have filed a protest against the license fees exacted of them. They have to pay $12 a year for handling the specialties of the business, whereas hardware dealers and others who handle many lines, including accessories, pay only $13 a year. The complaint of the dealers was presented to the City Council by Granville P. Evans, president of the Evans Motor Co.

Newman Adds Tire Service

MILWAUKEE, WIS., July 24—Harry Newman, Inc., Milwaukee, Chicago and Springfield, Ill., since July 1 one of the largest distributers of Chalmers cars in the country, has established tire service departments in the three branch houses, and Chalmers owners will not only get car service through the Newman organization, but all tire service will be handled through the house. The service department of the Newman organization is one of the main features of the development of the business.

Oil Developments in Texas

HOUSTON, TEX., July 24—That The Texas Co. plans to build another oil refinery here or make extensive improvements of some other character is indicated by its recent purchase of a tract of 29 acres of land, situated within the city limits and fronting upon the International & Great Northern Railroad. According to one report, the company intends to build large machine shops upon the land for the purpose of manufacturing and handling its own field equipment.

The Sour Lake oil field has been given a new lease of life by the discovery and development of the deeper producing sand. The area of the proved producing district has been widened considerably since the days of its boom. The daily production of the field is now about 15,000 barrels, and this promises to be greatly increased during the next few months. One of the largest developments will be upon an 80-acre lease, in which the Gulf Production Co. recently purchased a one-half interest for $200,000 cash. The other one-half interest in the lease is owned by the Humble Oil Co. At present there are nine producing wells upon this tract. Adjoining this land is an 800-acre tract that is under oil lease to the Texas Co.

Coming Events

General Events

September .....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12..... Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Races, Contests and Tours

July 29.....Newark, N. J.; track race, Olympic Park Auto Racing Assn.

Aug. 5.....Tacoma; speedway races, Tacoma Speedway Assn.*

Aug. 11-12.....Pikes Peak, Col.; hill climb, Pikes Peak Auto Highway Co.*

Aug. 12.....Portland, Ore., track race, Hiller-Riegel Co.

Aug. 17.....Boise, Idaho; track race, North West Auto Assn.

Aug. 26.....Kalamazoo, Mich.; 100-mile track race.

Sept. 1-2.....New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. L., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25..... ....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

July 24-28.....Hutchinson, Kan.
July 31-Aug. 4...St. Louis, Mo.
Aug. 7-11.....Fremont, Neb.
Aug. 14-18.....Cedar Rapids, Iowa.
Aug. 21-25.....Bloomington, Ill.
Aug. 28-Sept. 1...Indianapolis.
Sept. 4-8.....Madison, Wis.

Shows

Aug.2-9 .....Hollywood and West End, N. J.; show, Atlantic Exhibition Co.

Aug. 28-Sept. 1...Des Moines, Iowa, show, State Fair.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 4-11.....Indianapolis, Ind., show, Indiana State Fair, Indianapolis Automobile Trade Assn.

Sept. 11-16.....Milwaukee, Wis, second annual Fall show, Milwaukee Automobile Dealers, Inc.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Motor Car Securities Quotations

	July 22, 1915 Bid	July 22, 1915 Asked	July 22, 1916 Bid	July 22, 1916 Asked
Ajax Rubber Co., new	..	..	65	67
J. I. Case T. M. Co., pfd	70	79	78	88
Chalmers Motor Co., com	89	92	175	180
Chalmers Motor Co., pfd	95	98	98	103
*Chandler Motor Car Co	..	..	107½	108½
Chevrolet Motor Co	..	..	210	215
Fisk Rubber Co., com	..	..	..	160
Fisk Rubber Co., 1st pfd	..	..	114	120
Fisk Rubber Co., 2d pfd	..	..	120	..
Firestone Tire & Rubber Co., com	506	512	915	930
Firestone Tire & Rubber Co., pfd	109	111	111	115
*General Motors Co., com	179½	181	495	515
*General Motors Co., pfd	105	107	110¾	114¾
*B. F. Goodrich Co., com	50	51	73⅝	74½
*B. F. Goodrich Co., pfd	104½	106	113	115
Goodyear Tire & Rubber Co., com	269	272	222	226
Goodyear Tire & Rubber Co., pfd	105	106½	106	108¾
Grant Motor Car Co	..	..	9	11
Hupp Motor Car Co., com	..	..	6½	7
Hupp Motor Car Co., pfd	..	..	80	100
International Motor Co., com	17	19	5	10
International Motor Co., pfd	40	44	17	25
*Kelly-Spgfld. Tire & Rubber, com	165	168	70½	71
*Kelly-Spgfld. Tire & Rubber, 1st pfd.	86	87	95	96
*Lee Tire & Rubber Co	..	..	43¾	43¾
*Maxwell Motor Co., com	35½	37	79⅝	80
*Maxwell Motor Co., 1st pfd	84	86¾	87	87½
*Maxwell Motor Co., 2d pfd	31	33	88¾	89⅜
Miller Rubber Co., com	198	199	200	215
Miller Rubber Co., pfd	94	96	104	106
Packard Motor Car Co., com	110	115	168	173
Packard Motor Car Co., pfd	97	..	100	105
Paige-Detroit Motor Car Co	..	..	45	50
Peerless Truck & Motor Corp	..	..	23	25
Perlman Rim Corp	..	..	..	..
Portage Rubber Co., com	36	38½	113	116
Portage Rubber Co., pfd	92	95	115	117
Regal Motor Car Co., pfd	..	..	17	20
Reo Motor Truck Co	15½	..	37⅜	38⅜
Reo Motor Car Co	30	31	43¾	44¼
Saxon Motor Co	..	..	74	78
Standard Motor Co	..	..	5	6
Stewart-Warner Speed. Corp., com	65½	66½	101	102
Stewart-Warner Speed. Corp., pfd	105	107	..	..
*Studebaker Corp., com	81½	83	125⅝	129
*Studebaker Corp., pfd	99	101	109	111
Swinehart Tire & Rubber Co	77	78	95	97
United Motor Corp	..	..	89	89¼
*U. S. Rubber Co., com	43½	45	52	53
*U. S. Rubber Co., pfd	102	104	108	111
White Co. (new)	99	103	53¾	54
*Willys-Overland Co., com	132	133½	63¼	64
*Willys-Overland Co., pfd	102	103¾	105¼	105¾

*At close July 22, 1916—Listed N. Y. Stock Exchange.

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The "12" Is a Complete Success

—and the dealer who does not yet realize it is only cheating himself.

The Six was popular—the Twelve is a landslide. The V-Type Twelve was inevitable. If there was any doubt in your mind last year it gives away today to irrefutable conviction.

National built America's first Stock Sixes. National was a Twelve pioneer. National sales increased last year 300%. Merit did it.

The Twelve is basically correct. It out-performs on hills and straightaways; for quick getaway; thru mud; in congested traffic; in emergencies.

This Season National Highway Twelve and National Highway Six-cylinder cars will be furnished with distinctive styles of open touring cars and roadsters, also with luxurious closed coupe and convertible touring sedan bodies.

Highway Six $1750. **Highway Twelve $2150.**

SIXTEENTH SUCCESSFUL YEAR

National Motor Vehicle Co. Indianapolis.

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RAYFIELD CARBURETORS

Economy and efficiency have so characterized Rayfield performance that motor owners generally have automatically and universally classified it as

"The World's Best Carburetor"

From the car owners' standpoint its value is fixed and appreciated for its guaranteed saving of from 20 to 50 per cent in fuel cost;—its power and high efficiency.

It is a common custom for informed owners to substitute a Rayfield where it is not included in regular equipment.

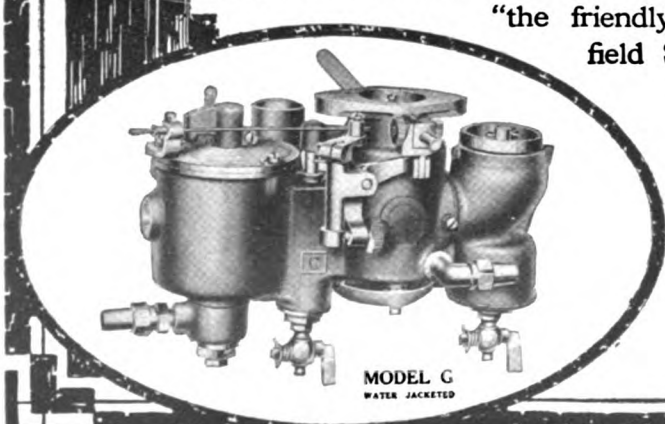
In demonstrating and service cars dealers have found it advisable also to substitute Rayfields as a measure of economy, as well as for better service.

"Absolute satisfaction or money back" is assurance for every buyer.

THE FRIENDLY SIGN



Tourists and motorists generally are familiar with "the friendly sign" indicating Rayfield Service, and competent general service as well. They are found wherever good roads lead.



Findeisen & Kropf Mfg. Company
2101 Rockwell Street, Chicago

BRANCHES:
1140 Michigan Ave. CHICAGO
1902 Broadway NEW YORK
1191 Woodward Ave. DETROIT

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"Is there a clock on this car?"

The automobile salesman is asked this question every day. If he is forced to answer "no"—and then explain—he has cause to feel uneasy. He knows that his most successful competitors call a car "completely equipped" only when it carries an automobile clock.

Waltham
—the only
Automobile Clock
that keeps accurate time all the time



There could be no better proof of the Waltham's accuracy and beauty of appearance than the fact that these cars include it in their regular equipment:

Brewster	Franklin	Marmon	Rauch & Lang
Cadillac	Haynes	Owen Magnetic	Rolls-Royce
Cole	Locomobile	Packard	Simplex
Crane	Lozier	Pierce-Arrow	Stearns
Detroit Electric			Winton

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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From Commercial Vehicle July 15, 1916.

For the greatest market, a small truck is needed, a fast truck, a simple one, and one to sell at a low price.

That the need is here and the buyers ready to purchase is indicated by the great success which the Ford adapters are meeting.

—And Here It Is!

The big money maker for dealers helped by a generous policy that gives you a chance to make the very MOST of it!

The Internal-Geared RAYFORD

A FORD + $300

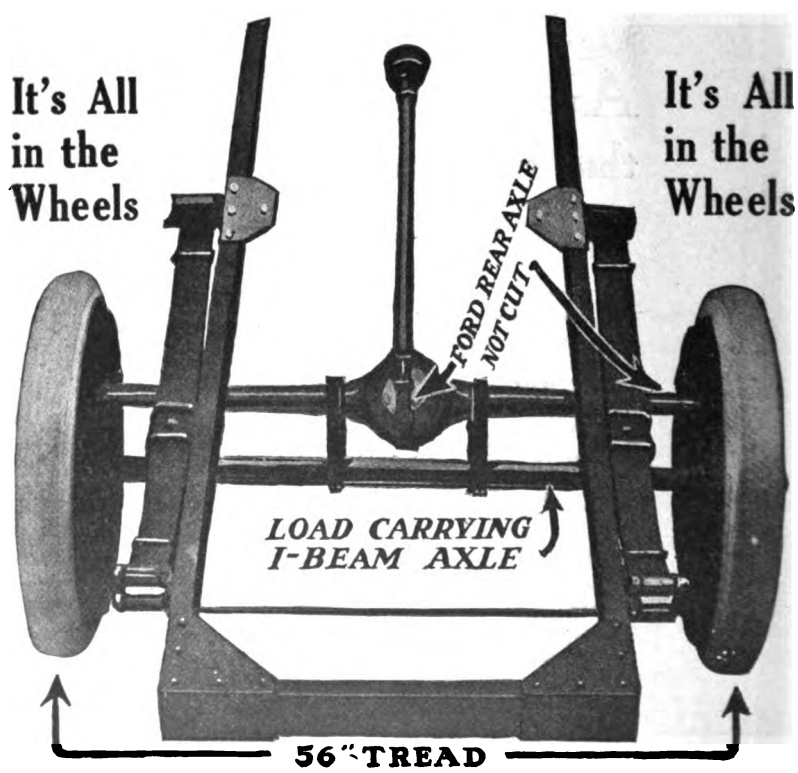
Fills this want as none other can, because at the lowest price it embodies the staunchest design and the latest development in final drive, combining the good points of both chain and worm.

Your Customers Know

This drive, and they know the Ford. They will buy this as something known and proved. And ***Look at the Price!*** Actually ***lower*** than the others. It really has no logical rival!

Exclusive Territory
Immediate Deliveries

RAYFORD COMPANY
PALETHORP and INDIANA AVES.
PHILADELPHIA, PA.



Rayford Company,
Palethorp and Indiana Aves.,
Philadelphia, Pa.

Dear Sirs:—
Kindly send me details regarding your Unusual Distributor's proposition.

Name.....

Address.....

When writing advertisers please mention Motor World

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U.S.

BALL BEARINGS

In Four Years

It has taken just about four years of actual manufacturing and selling to bring the U. S. Ball Bearing Manufacturing Company from an obscure concern to one of the largest manufacturers of high grade ball bearings in the country.

Back of this four years of rapid and comprehensive growth, however, lies four more years of experimentation and investigation before the first U. S. Ball Bearing was produced.

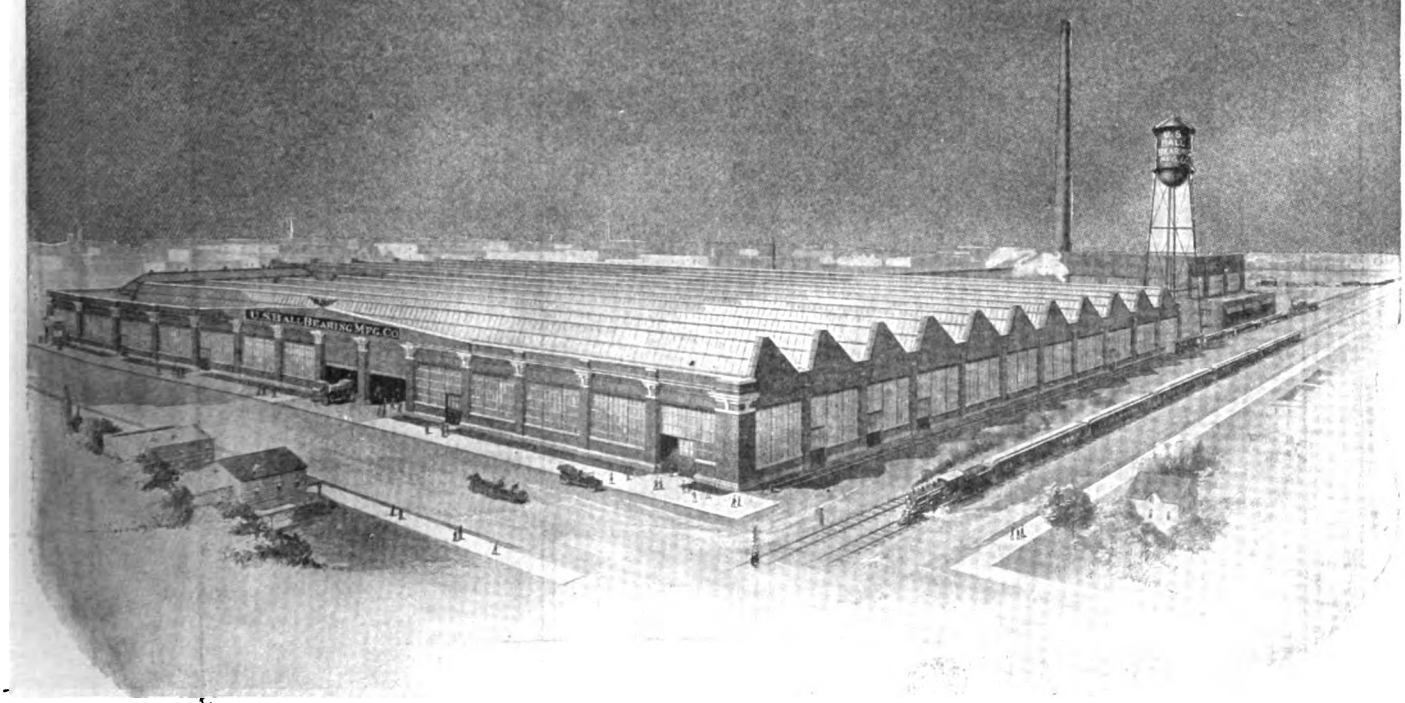
Illustrated, herewith, is our new factory, just occupied, which has a manufacturing capacity of more than 10,000 high quality ball bearings per day.

Attention is called to the fact that the product of the U. S. Ball Bearing Manufacturing Company is "quality" only, and no cheap bearings either in design or construction are produced.

U. S. Ball Bearing Manufacturing Co.

(Conrad Patent Licensee)

Palmer St. and Kilmar Avenue, Chicago



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SHELDON



Ninety-three truck manufacturers are using worm drive. More than half of 1916 trucks are worm driven. Nearly half of all 1916 models are worm driven.

¶ The worm gear axle manufacturers cannot begin to meet the demand. In fact, it is the overflow demand for worm gear driven axles that has supplied a great many orders for other types of final drive.

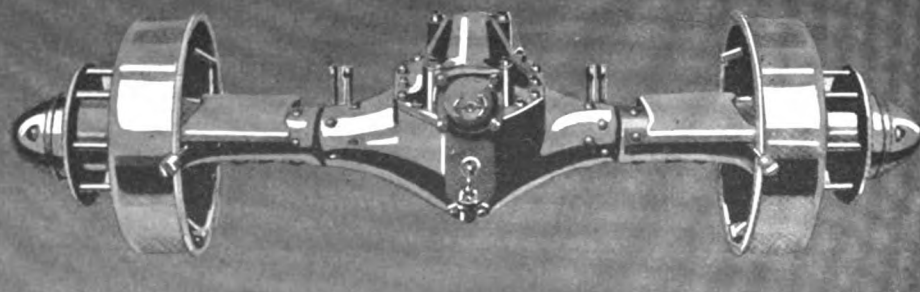
¶ There is nothing surprising in this situation, for from the standpoint of efficiency a worm gear type of drive represents the highest development yet recorded in truck manufacturing practice.

¶ The operator of a worm gear driven truck will get the lowest ton mile haulage cost, in so far as his drive and rear system are concerned, that is possible of attainment—much lower than is possible with any other type of driving axle.

THE SHELDON AXLE AND SPRING COMPANY

Manufacturers of Springs and Axles for more than 50 Years

Wilkes-Barre, Pennsylvania



When writing advertisers please mention Motor World

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HOW IS YOUR TIRE BUSINESS? ARE YOU GETTING FULL RETURNS OUT OF IT? ARE YOU FREE TO PUT YOUR FULL STRENGTH BEHIND IT—AND DOES IT PAY YOU?

"CARSPRING" DISTRIBUTORS ARE FREE AGENTS—THEY ARE BUILDING UP THEIR OWN BUSINESS—AND BUILDING IT TO STAY—FOR THEIR OWN GREATER PROFIT, NOW AND IN THE FUTURE.



¶ "CARSPRING" methods are doing the trick. They are putting the Dealer on the highest plane of business independence and individuality. They are giving him poise and confidence. They are making him a Winner and giving him what he has won.

¶ We want MEN to represent us—not automatons, or names or stores—men of individuality, independence, and even acquisitiveness—we like you to want money and to want it for yourself—and we see that you get it.

¶ If your vision reaches beyond your own front door and beyond the confines of your own narrow street—if you are one of those who wants to be known far and wide as the most successful business man in his vicinity—we are here to help you realize on that idea.

¶ Come in with us, appoint your own subdealers, enjoy the latitude in making adjustments and serving your customers which will best promote your own business and reputation.

¶ "CARSPRING" Tires will actually live up to the reputation you make for them and instantly respond, in additional profits and growing good will, to every blow you strike in their behalf.

If you are not already a "CARSPRING" Dealer, we advise you to wire or write us at once to see whether or not your territory has been allotted. Applications are coming very fast.

NEW JERSEY CARSPRING & RUBBER CO.
JERSEY CITY, N. J.

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Every Motorist Needs a Vulcanizer to Stop Tire Troubles and Increase Mileage



Every Shaler Vulcanizer You Sell Sells Others—Increasing Sales and Profits

Every Shaler user boosts the use of a vulcanizer and makes more business for the dealer. Vulcanizing is more or less of a mystery to one who has never tried it, and when he finds that it is a success he brags about it to his friends, and many of them buy, too.

SHALER Vulcanizer

They are made in a great variety of sizes and types—Electric, Gasoline, Alcohol and Steam, for every requirement of public and private garages. Shaler Tube-Kit (for vulcanizing tubes), $2. Ford-Kit (for Ford owners), $2.75. Vul-Kit (to carry in tool box for roadside repairs to tubes and casings), $3.50. Electric equipment for private garages, $12.50. Public Garages and Repair Shops, Electric or Steam, $60.

They will repair any cut, rip, tear or hole in either casing or tube, in a few minutes, and make the repair the strongest part of the tire. The Shaler is the only vulcanizer that has Automatic Heat Control. Impossible to undercure or overcure a tire.

WRITE FOR CATALOG AND TERMS

Send today for complete catalog showing every Shaler model with complete descriptions—dealers' discounts, terms, etc.

C. A. Shaler Co.

424 Fourth St. Waupun, Wis.

Canadian Distributors—John Millen & Son, Limited, Toronto, Winnipeg, Montreal, Vancouver.

Mail Coupon for Catalog!

C. A. SHALER CO.
424 Fourth St., Waupun, Wis.
Please send me new Catalog Shaler Vulcanizer—Dealers' Prices, Terms, etc.

.....

.....

.....

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Tire Luxury—at a popular price

IN performance this new *"Speedway Type"* tire is distinctly better than other tires at anywhere near the price.

This is a broad statement to make—it includes a great many different makes and kinds of tires.

Yet it is a claim convincingly proven by the universal experiences of the small army of motorists who have tried them.

Say what you will in type about the merits of any tire, performance alone is the acid test of its real merit.

And REDWALL tires outstrip other tires in performance and all round satisfaction regardless of the moderate purchase price involved.

We were right, months ago, when we predicted that there would be a tremendous demand for this new tire, for at no time since its introduction have we been able to catch up with deliveries.

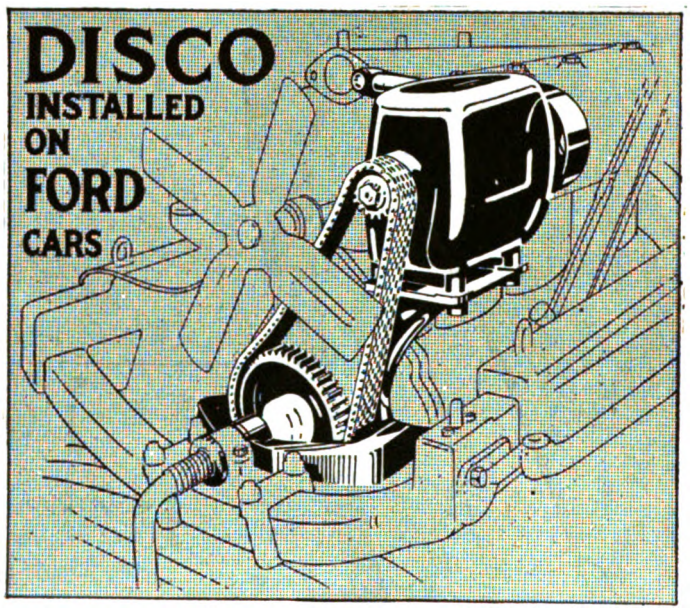
This is soon to be remedied, for within another 60 days the huge addition to our present plant, which has been under construction for over six months, will be in operation.

In the meantime we would urge dealers and jobbers who have commenced to consider their next season's requirements to test out a few of these tires in actual service—to put our claims to the acid proof of performance. We have an exclusive proposition much better than the ordinary to offer. Details forwarded upon application.

NATIONAL RUBBER COMPANY, Pottstown, Penna.

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DISCO



It SPINS the Motor

$75 Complete

"Can I Come to You?"

"If I were an owner of a starterless Ford car, could I buy a Disco dependable starter from you?"

Owners of Ford cars are not only beginning to appreciate the immense value of starters on their cars—they are demanding starters that are reliable. **And they are becoming more and more acquainted with the Disco Starter.** Their friends use them and are recommending them highly. If you handle the Disco, there is no reason why every Ford owner in your territory will not be a prospective customer. The Disco operates on a 12-volt current, is a simple and dependable transmission of power, and its installation interferes in no way with the easy accessibility to any part of the Ford Motor. Our dealers' proposition is liberal and assures large profits.

Write for Particulars to the

DISCO ELECTRIC STARTER CORPORATION

DETROIT, U. S. A.

Pioneer Builders in the Starter Field

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"CAPITAL"

Factory and Garage Brush

Takes out the dirt Other Brushes Swish Over —Good Profits For Dealers

Ordinary brushes with an ordinary push, leave more dirt on garage floors than they brush off. To be in any way thorough requires going over the same space more than once.

Your patrons have neither time nor inclination to spend all their leisure sweeping out—but a clean garage floor is a recognized necessity for safety, health and convenience, and you can count on every motorist for from $1.50 to $2.00 to insure absolute neatness in his garage, with minimum effort.

3 SIZES

No. 170—$1.50
16 inches long

No. 171—$1.75
18 inches long

No. 172—$2.00
24 inches long

Guaranteed

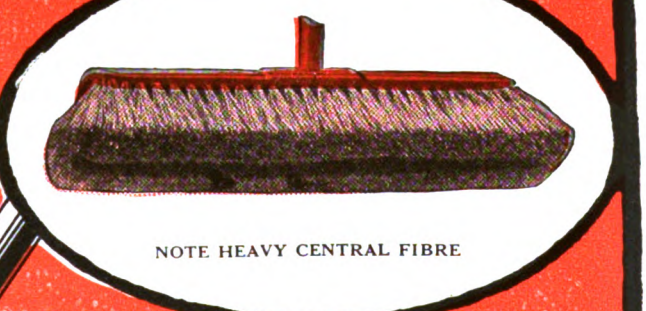
The CAPITAL Factory and Garage Brush **cleans clean the first time.** Instead of bristles the center of the CAPITAL Brush is made from imported fibre that **cuts dirt loose, and wears like wire.** The outside is tampico fibre that removed the finest surface dirt.

Made on hard-wood, mahogany finished block, with 2 handle holes and a 5-foot polished handle. Each brush neatly packed in a separate carton. Specially equipped for sweeping factories, garages, cement or rough wood floors, sidewalks and drive ways. **Pays for itself in labor saved. Sells fast to thousands of prospects.** Use one in your own garage.

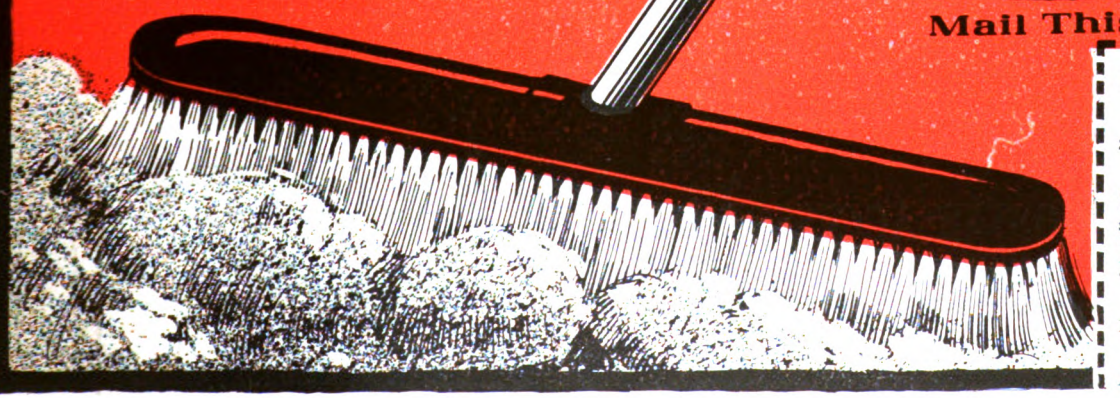
Mail the coupon, attached to your letter-head, for free literature and special liberal discounts.

Indianapolis Brush & Broom Mfg. Co.
Incorporated
26 BRUSH ST., INDIANAPOLIS, IND.

Liberal Dealer's Discounts



NOTE HEAVY CENTRAL FIBRE



Mail This Coupon

INDIANAPOLIS BRUSH & BROOM MFG. CO.
Incorporated
26 Brush St.
Indianapolis, Ind.

Send me at once free illustrated literature describing CAPITAL Factory and Garage Brush. Also state special liberal discounts.

Name .....

Address .....

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The Patented FOSTER Universal Swivel is an Exclusive Selling Feature

We Are Swamped With Orders at the New Price

A stampede to the OWL LIGHT followed the announcement that it had been reduced in price from $7.50 to $5.00. A steady stream of orders and re-orders have been pouring in from OWL LIGHT dealers in all parts of the country.

FOSTER OWL LIGHT



Always a leader, always the searchlight that the man who knew most about searchlight construction wanted, the OWL LIGHT now at $5.00 not only outclasses but is outselling any searchlight on the market.

The Foster OWL LIGHT today is a QUALITY searchlight selling at a quantity price. In many respects it is superior constructionally to the famous $7.50 model.

It still retains the patented Foster Universal Swivel Bracket—an exclusive feature which made the OWL LIGHT famous. Remember the OWL LIGHT is the only searchlight which can use this remarkably effective swivel construction. And consider that car owners can obtain this Universal Swivel only through purchasing the OWL LIGHT of an OWL LIGHT dealer.

This swivel sells OWL LIGHTS and keeps them sold, for it is guaranteed to hold the searchlight in any position you put it. It turns in any direction, prevents the searchlight from toppling over just when you need it most—will not rattle, loosen nor bind.

The new OWL LIGHT at the new price is the most powerful searchlight made. A new and specially designed reflector enables it to outdistance even the most powerful headlights.

These features, coupled with the tremendous increase in demand for the OWL LIGHT at its new price, makes our dealers' proposition exceedingly interesting. Wire or write today for full particulars. Address

C. H. FOSTER ACCESSORIES CO.
2303 Michigan Avenue Chicago, Illinois

NOW ONLY $5

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The Allen Classic

Something Different

to meet Your Demand

—*and*

CLASSIC is the name of *all* names for this truly distinctive car.

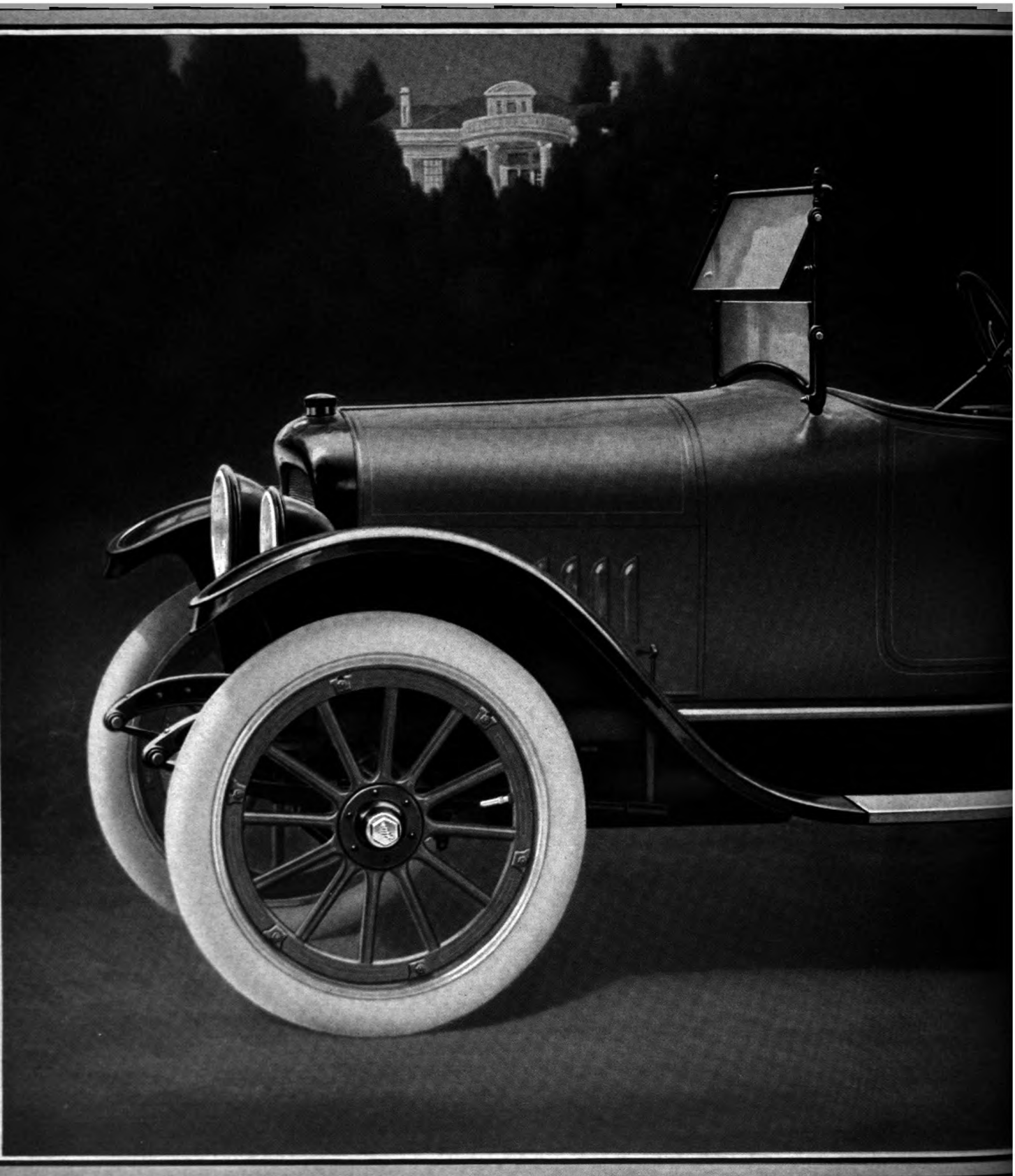
Find, if you can, more beauty of line and finish than is embodied in this aristocrat of cars, as faithfully illustrated on the next two pages.

There are discriminating buyers in your town who will be delighted with this masterpiece of automobile design and finish—a combination which has no equal.

$850 F.O.B. FOSTORIA, OHIO.

The Allen Motor Co.

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The Allen Classic

A handsome, distinctively finished, well built motor car

"*Beautiful*"—with emphasis. That's what everybody say when they see this car.

And then, when they have finished admiring its *outward* appearance, they find equal satisfaction in its mechanical construction and performance.

While the Allen Classic was primarily designed with an idea of producing a strikingly handsome car, at the same time bear in mind that in this instance, beauty is more than skin deep.

The same chassis, the same powerful motor, the same long underslung rear springs, the same simplicity and sturdiness that have made an enviable name for the Allen 37, are embodied in the Allen Classic.

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Beautiful, comfortable, efficient
The height of motor car value

F. O. B.
Fostoria, Ohio

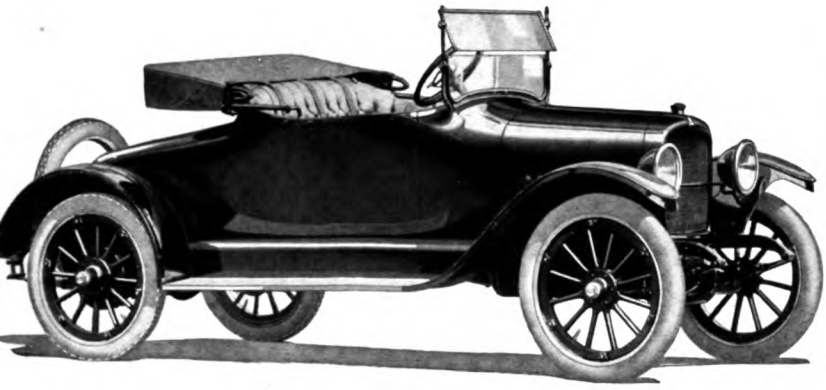
$850

While beauty in a motor car is a great source of satisfaction, it cannot be complete unless there be an abundance of comfort and uninterrupted service.

And in *these* days, to have comfort it is not necessary to buy high-priced cars. Scientific balancing of parts, proper spring suspension, correct body building and upholstering, have most to do with comfort.

In the Allen Classic you find these essentials combined in an unusually efficient manner, with the result that comfort is a big part of the value in this splendid car.

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The Allen Classic Roadster

Low-priced roadsters with good body lines are few. Just a glance at the Classic Roadster is sufficient to establish it as a car sure to find favor among professional men and others to whom a good roadster is a necessity.

The gracefully curved rear deck is provided with a long door hung with concealed hinges and flush water-proof joints, giving an unusually neat appearance. The compartment has plenty of room for two or three extra casings or suit cases.

Summing it all up the Allen Classic possesses in full measure: Distinctive beauty, abundant power, unusual comfort, ample room, exceptional economy, light weight, sturdiness and durability, and is backed by a strongly financed company of twenty-five years' standing and high credit rating.

The Allen Classic is now being delivered to Allen dealers throughout the country. Due to our recent big increase in production, there is an opportunity for a few more live dealers to secure the Allen line where it is not already represented.

The Allen Motor Company

207 Allen Bldg., Fostoria, Ohio, U. S. A.

High Spots

in the

Allen Classic Specifications

—

Powerful four-cylinder motor, cast enbloc, 3¾ x 5 inches, 37 H. P.

Two-unit electric system for starting, lighting and ignition

Easy working clutch, smooth in action

Over-size bearings throughout

All moving parts enclosed

55-inch underslung rear springs

Full floating pressed steel rear axle

112-inch wheel base

Boat-shaped body with ample leg room front and rear

Spanish brown upholstering

Smoke brown finish on body, hood and wheels; fine gold striping.

This smoke brown finish is not only exceedingly beautiful and distinctive, but very practical, as it does not show dust and dirt as readily as the darker colors.

Leak-proof top material

32 x 3½-inch tires non-skid in rear

Weight, 2300 pounds

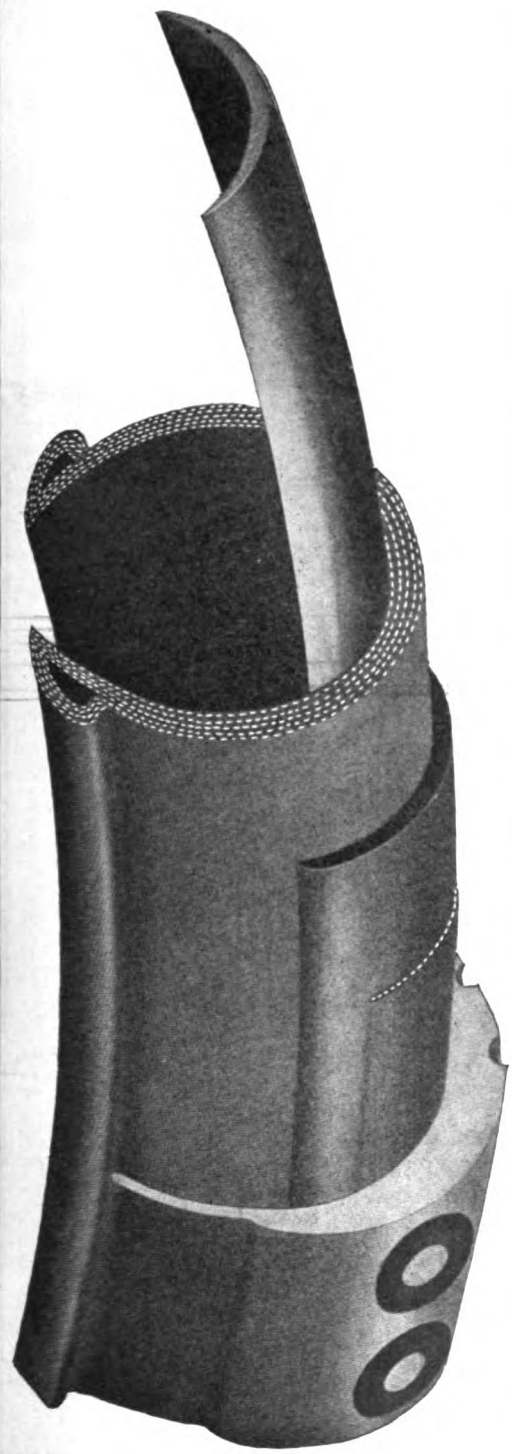
Equipment, high grade and complete

Send for complete literature on this and other models

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MAKE MORE MONEY

Woodworth "Live Long and Serve Well" Tubes are made of tough, elastic, live rubber, of the highest quality. There are none better made.



—and at the same time hand your customers something that will **make good with them.**

Ours is a REAL GUARANTEE.

We know that the Woodworth Trouble-Proof Tire will travel day in and day out without any sign of puncture or blow-out, so we **promptly and cheerfully pay up** when the very extraordinary thing happens and we are called upon to make good.

Entirely apart from its puncture-proof addition, the Woodworth is a tire of extremely high quality. The finest material is used, expert workmen are employed and the greatest care is exercised in its manufacture.

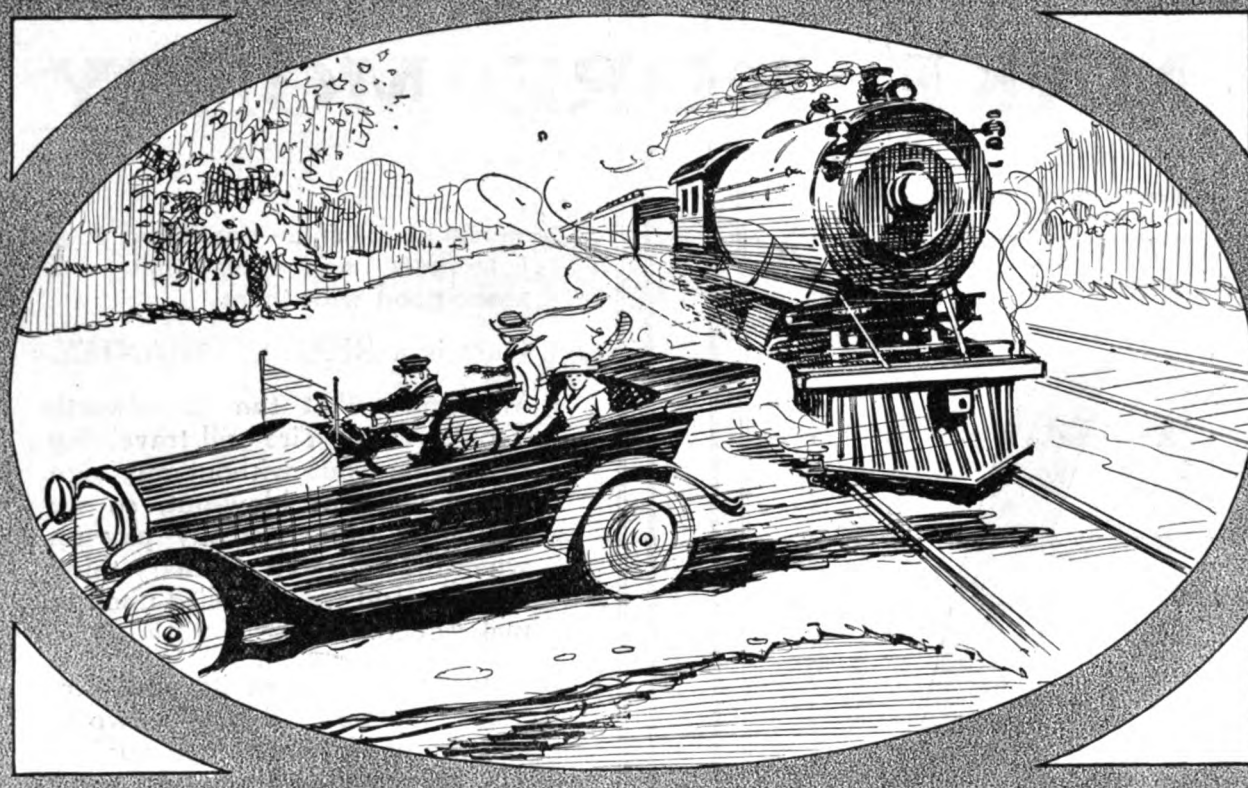
WOODWORTH TROUBLE-PROOF // TIRES //

The Woodworth is not a freak—it's qualities of general wear and resiliency are equal or superior to those of any other tire on the market—and the puncture proofing is provided by a strip of non-heating chrome leather, placed on the inner side of the casing **after the tire proper is finished.**

Our Dealer Proposition will vitally interest you. Write for it at once while some good territory is still available.

The
Leather Tire Goods Co.
Niagara Falls, New York

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"The Quick 'Pick-Up' Saved Us!"

When a fraction of a second is all-important, when the motor *must* respond *instantly*—then Eisemann Ignition shows its superiority most plainly!

EISEMANN
MAGNETOS

give a sure, hot spark *even at extremely low speed*. Powerful, durable, dependable, they guarantee maximum motor efficiency—ready responsiveness, power, gas economy!

THE EISEMANN MAGNETO CO.

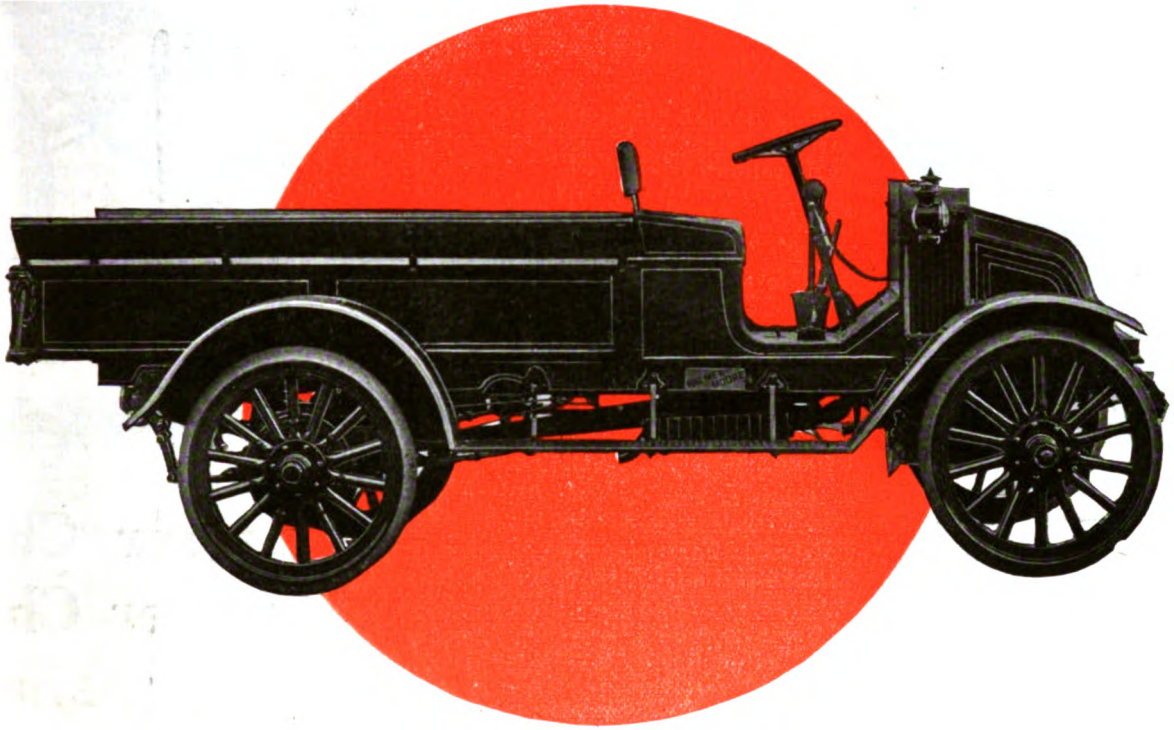
Sales and General Offices:
32-33rd Street Brooklyn, N. Y.

Indianapolis, Ind.
415-417 N. Capitol Ave.

Detroit, Mich
802 Woodward Ave.

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PALMER SERVICE PM DEPENDABILITY MOORE TRUCKS



The Light Truck with the Heavy Sale

The Palmer-Moore Truck is **specially adapted** to the service it is called upon to perform. Built and engined in accordance with the lessons taught by years of experimentation, it now holds first place as the standard light truck.

No effort has been spared to attain the highest degree of strength, endurance and ease of operation, in the Palmer-Moore.

Each unit of its make-up spells Quality:

Buda Motor	Parish & Bingham Frame	Borg & Beck Clutch
Bosch Magneto	Ross Steering Gear	Covert Transmission
Spicer Joints	Sheldon Front Axle	

Celfor Internal Gear Drive Rear Axle

In addition to its general excellence and harmony of design, the Palmer-Moore has an **Exclusive Rear Spring Suspension** which insures perfect and continuous traction for the rear wheels, saves wear on the tires, safeguards the most fragile load, and positively prevents the rear of the vehicle from springing up and bouncing its load off the floor.

This special adaptability and general excellence is recognized by merchants everywhere who are expressing their appreciation of its worth in large and rapidly-increasing orders. Dealers throughout the country are cashing in on this rare opportunity which exists for you right now.

Not only are Truck Dealers profiting by this; but Pleasure Car Dealers are finding in the Palmer-Moore the ideal vehicle for their successful entrance into the truck field.

We desire to assist live dealers in progressive communities to grasp and profitably follow up the opportunity now at hand, and should be pleased to correspond with you toward this end.

Model K Chassis, Capacity ¾ Ton, Price, $1150 **Model M Chassis, Capacity 1 Ton, Price, $1350**

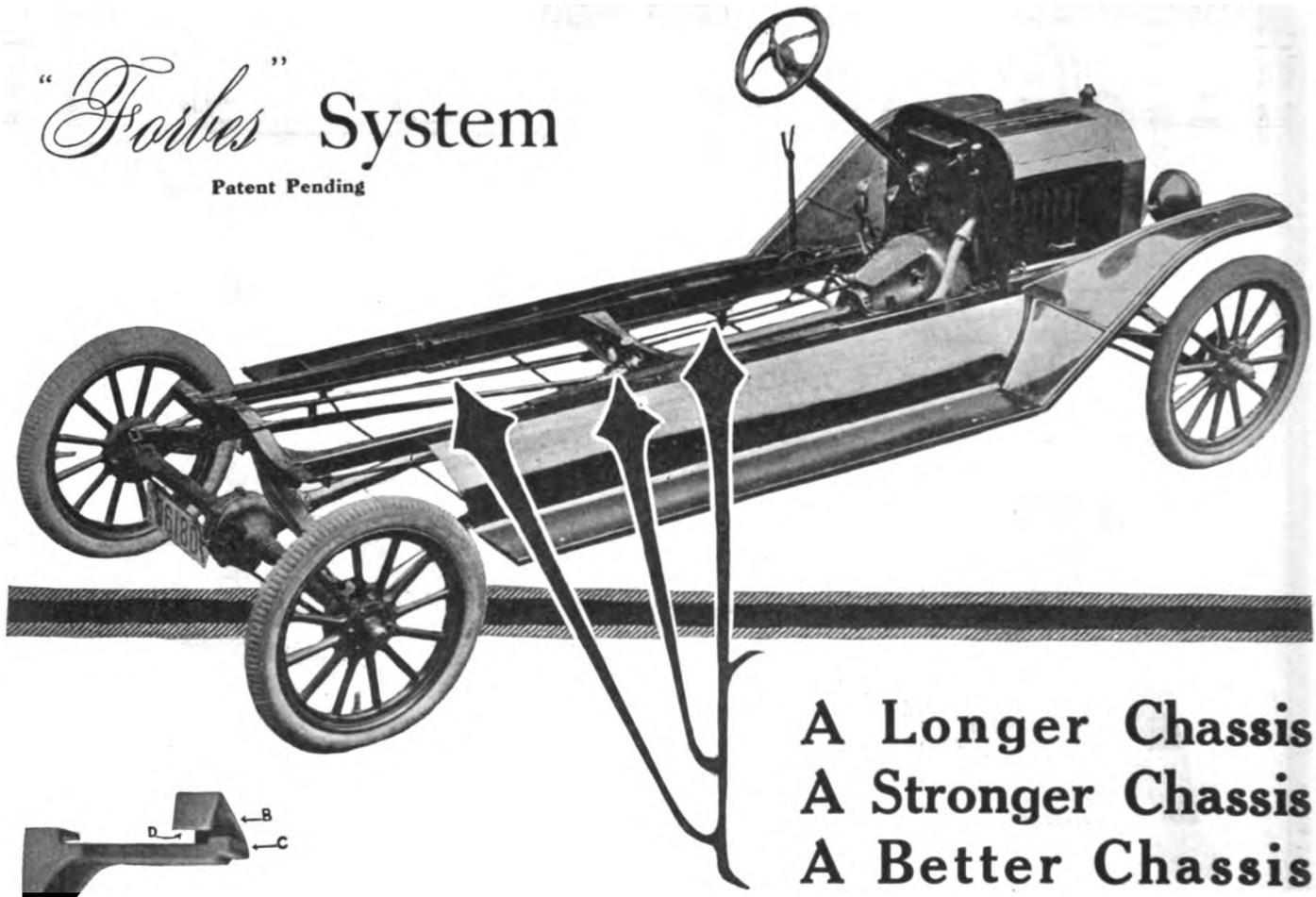
PALMER-MOORE COMPANY

100-120 North Geddes Street **Syracuse, N. Y.**

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"Forbes" System

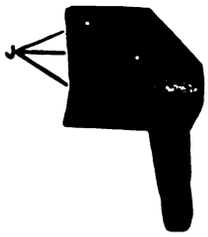
Patent Pending



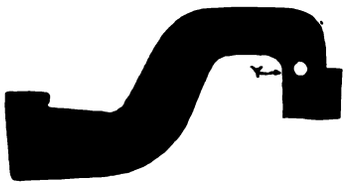
A Longer Chassis
A Stronger Chassis
A Better Chassis



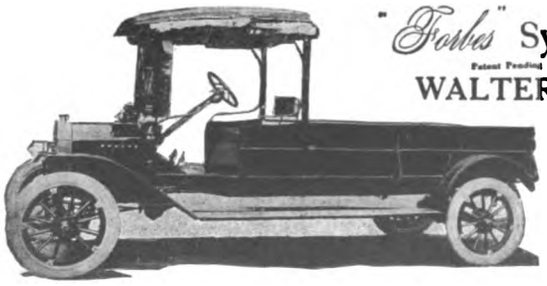
Rear Truss Bracket



Truss Brace



Front Truss Bracket



"Forbes" System will surprise you.

WALTER J. FORBES

243 Columbus Ave.

BOSTON, MASS.

results from applying the "Forbes" System to Ford cars, lengthening the chassis for commercial purposes without in any way reducing the simplicity and efficiency of the original construction.

The "Forbes" System is an *addition* to the chassis—*not* an *alteration* of it. Any garageman carrying Ford parts can make all repairs or adjustments on lengthened Fords with the same ease and promptness as on the model as it came from the factory.

In the "Forbes" System each side of the extension section is made of steel channel and between them a *cross member* of cast steel carries the *thrust* of the drive shaft, allowing the motor to deliver its full power to the driving wheels.

Each side of the frame is trussed through its entire length and the brackets supporting the ends of the truss rods clamp round the frame making it

UNNECESSARY TO BORE ANY HOLES IN THE FRAME

The intermediate shaft floats between the motor drive plate and the universal and transmits a direct, positive drive.

We supply *every* part, every nut, every bolt and rod with complete instructions so that any mechanic can make the whole addition with despatch.

THE BEST PROOF

of the thorough effectiveness of the "Forbes" System is the repeat orders received from concerns after they have tested them in their own every day service.

We use only the highest grade material obtainable, and positively guarantee results.

We have a highly interesting proposition for distributors. Send for it today. The demand for the

Please send me full details of the "Forbes" System

Name .....

Address .....

.....

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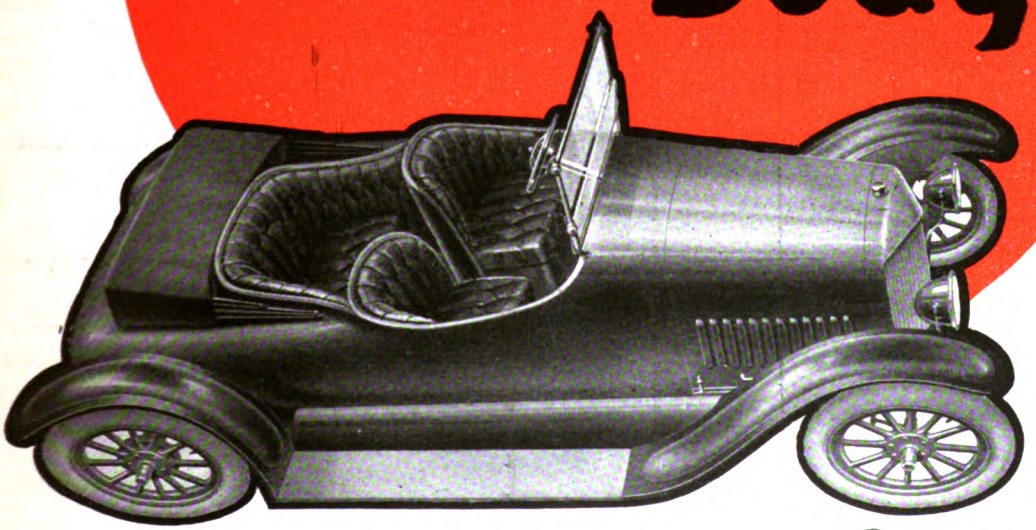
$1000 Style for Your Ford

You can dress your Ford in $1000 style with this beautifully designed, graceful lined Amesbuilt Cloverleaf body and thereby make it the classiest car on the road—an object of admiration and envy—

Note Why

20 gauge cold rolled, stretcher sheet steel. Ample leg room. Pure stream lines.
Selected hardwood frame, substantial, reinforced and ironed by hand.
Nicely hinged doors, entrance from both sides.
Upholstered extra quality imitation leather stuffed with natural curled hair.
One-man top, highest-grade silk mohair with Jiffy curtains and dust hood.
Cowl fitting windshield, folding, rain vision, ventilating windshield.
Gasoline tank, filler pipe and cap, also gasline furnished. Tank carried in rear.
Graceful streamline hood and bull nose radiator, shell, with special dash ledge.
Linoleum covered running board, aluminum bound.
Crown fenders of 20 gauge fender steel, cold rolled and finished in high glass enamel, thoroughly baked, no bottom rattling; 9 inches wide. Skirt in rear to cover rear axle.
Standard colors, deep Brewster green, or a very glossy black. Any other color $10.00 extra and three weeks' delivery.
All necessary attachments bolts, nuts, etc., for you to mount on Model T chassis, yourself.

The Amesbuilt Cloverleaf 3-Passenger Roadster Body



$175 F.O.B.

F. A. Ames Co. Owensboro Kentucky

INCORPORATED

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"Burford"

Internal-Gear-Drive Two Ton Chassis, $2250.00

Sheldon Worm Drive Four Ton Chassis, $3600.00

MOTOR TRUCKS

Standardized as to Parts—Perfected as to Workmanship



FOUR-TON WORM DRIVE

Burford Designed—These commercial vehicles embody principles of construction that deliver the road service the successful business man today demands.

Some Two-Ton Units—Buda Motor—Warner Transmission—Ross Steering Gear—Eisemann Magneto—Zenith Carburetor—Firestone Tires—Burford Internal Gear Drive.

Some Four-Ton Units—Waukesha Motor—Sheldon Axles—David Brown Worm Drive—Perfection Springs—Brown-Lipe Transmission—United States Tires.

A Real Distributor's Proposition For Real Distributors

— Wire or Write —

THE BURFORD MOTOR TRUCK CO.

General Offices: 351-359 Spitzer Bldg. - - Toledo, Ohio

FACTORY: FREMONT, OHIO

W. M. LEACH—Director Of Sales

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WE HAVE A SPECIAL OFFER TO MAKE TO A FEW GOOD DEALERS

SPECIAL OPPORTUNITY COUPON

It is the same remarkable offer we have been making during the last six months—the same offer which has established hundreds of dealers in one of the newest, biggest and most successful branches of the automobile accessory business.

For instance, a number of W'RIGHT dealers who never sold more than a dozen old style piston rings in their life until they heard of the W'RIGHT special offer are now selling from 300 to 500 sets of W'RIGHT Compression Tight Piston Rings a month—at exceedingly interesting profits. They had a gold mine in their shop and didn't know it.

Our dealers report that W'RIGHT Alloy Aluminum Pistons are another selling sensation.

Motorists everywhere are equipping their old cars with W'RIGHT Alloy Aluminum Pistons—putting them in the up-to-date class, ensuring greater power, economy, quicker pickup and all 'round motor efficiency at exceedingly nominal cost.

W'RIGHT Alloy Aluminum Pistons fitted with complete sets of W'RIGHT Compression Tight Piston Rings are unquestionably the most popular addition to the accessory line made in the past year. Dealers report a record-breaking business from all quarters of the country.

W'RIGHT Pistons are adapted to Ford, Overland, Maxwell, Studebaker, Chevrolet, Hupmobile and other makes of cars. We can convince you by referring to the records of the average W'RIGHT dealer that if you are not handling W'RIGHT Products you are overlooking one of the really worth-while accessory lines. ACT NOW. The coupon will bring you a proposition that will surprise you. No offer similar to ours has ever been made.

"W'RIGHT" ALLOY ALUMINUM PISTONS

These dealers have no real competition in the piston ring field. They get the volume of trade because W'RIGHT Piston Rings cost the user just about half what other multiple type piston rings cost. At the same time, W'RIGHT Piston Rings are guaranteed to excel the best piston rings on the market, regardless of price—to be not only better made, but to make for far better results in the hardest usage over extended periods of time. Any piston ring is efficient when new, but it takes the W'RIGHT to retain its initial efficiency throughout years of service.



Our advertising in leading motor car publications is having a marked influence in directing sales the W'RIGHT dealer's way.

"W'RIGHT" COMPRESSION TIGHT PISTON RINGS

At unparalleled prices we have also a line of spark plugs, shock absorbers, equalizing springs, power tire pumps, electric starters and generators, storage batteries and annular ball bearings, every one bearing the Longaker guarantee.

If you are the kind of dealer who can handle a high-grade line of accessories, we want to get in touch with you. Use the coupon for special offer—today.



Pat. applied for

THE V. A. LONGAKER CO.
443 N. Capitol Avenue Indianapolis, Indiana

Wire or Use This Coupon

The V. A. Longaker Company
448 N. Capitol Avenue, Indianapolis, Ind.

Kindly send me full details regarding W'right dealers' proposition.

Name .....

Address .....

Pin coupon to letter head.

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Logical Construction Has Won Marvelous Increase for Internal Gear Drive

The giant strides made by Internal Gear Drive—its eager adoption by manufacturers and dealers throughout the country—stand unparalleled in the history of the truck industry.

Speaking editorially in the issue of May fifteenth, The Commercial Car Journal estimates that out of the total number of trucks built this year, **25.9%** will be equipped with Internal Gear Drive.

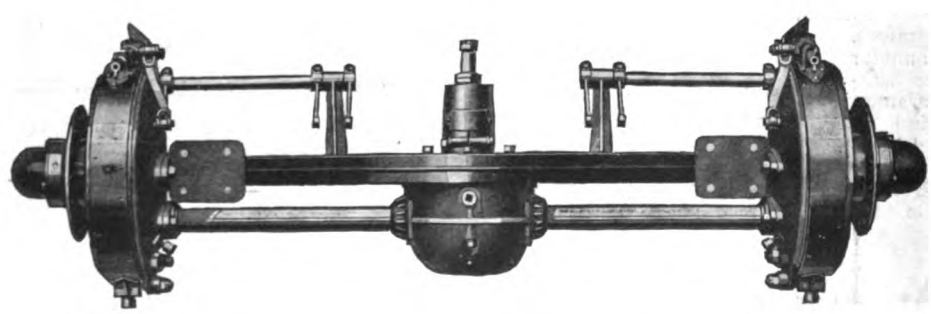
TORBENSEN DRIVE

This Journal—standing in the truck field as an undisputed authority—says further, "The Internal Gear Drive has made a remarkable advance during 1916—undoubtedly the most rapid increase in the use of any one type of final drive made this year."

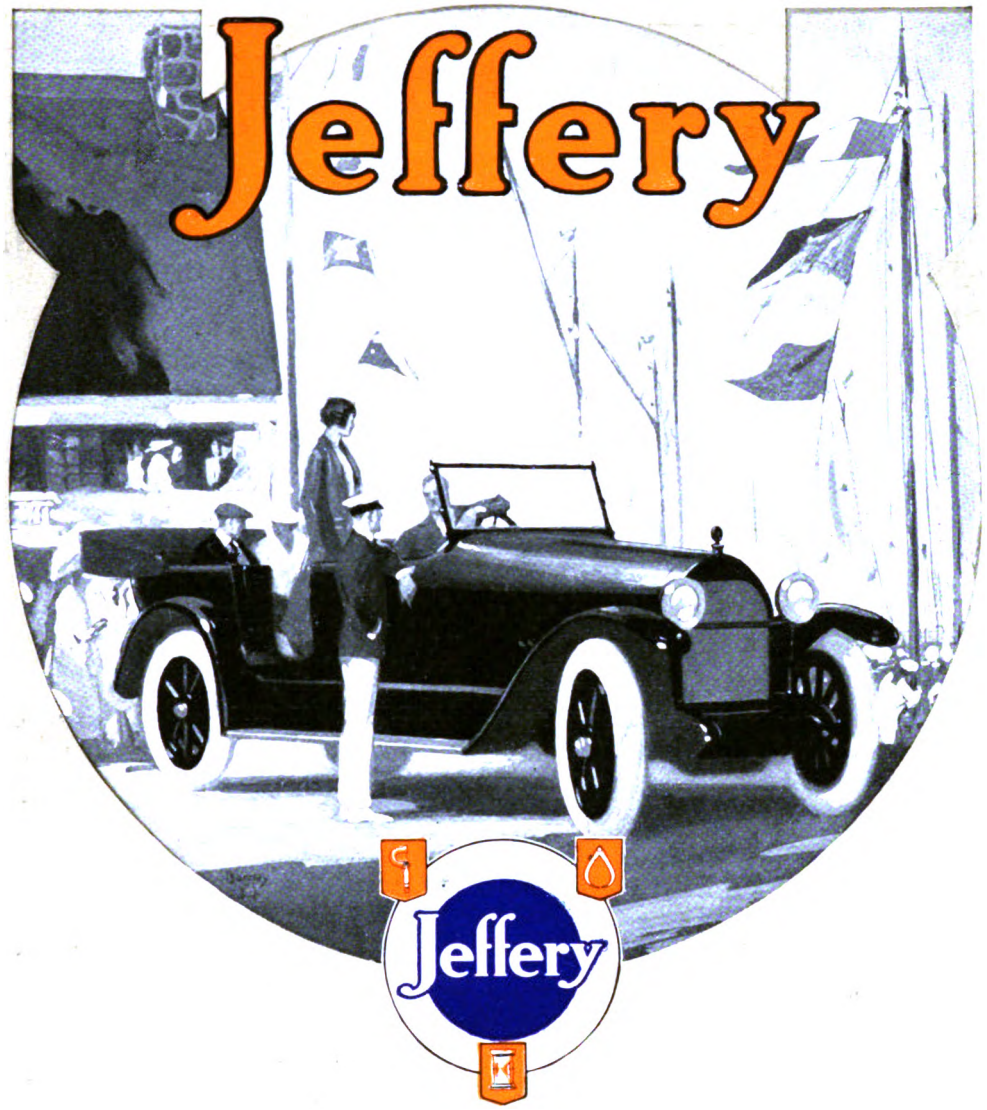
The most successful manufacturers in the industry are incorporating Torbensen Drive in their vehicles. And the success of these manufacturers can but be the reflection of the success of the dealers who sell trucks equipped with Torbensen Drive.

From the manufacturers', dealers' or users' standpoint Torbensen Drive is the logical form of rear drive for all commercial cars. Full information will be sent on request.

Torbensen Gear and Axle Co.
Cleveland, Ohio



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Announcing the New Jeffery Six

A Triumph of Precision and Exquisite Performance

In this new Jeffery Six are crystallized the ideals and traditions of two generations of accuracy.

Like its predecessors it embodies those refinements of design and construction which mark it as a car of exceptional merit.

Its dominant features are a long, low, hammock-swung body and amazingly smooth performance.

The lowness of the body with its underslung springs, gives the car a phenomenal ability to cling to the road at high speeds.

The oversized, inherently balanced crankshaft, with extra large bearings, is chiefly responsible for the fact that the motor is absolutely free from vibration at ALL speeds.

A beautiful car. The new, low, graceful lines and superb finish mark it as the greatest achievement of Jeffery coach builders.

The simplicity of the chassis and the performance of the motor are in a class by themselves.

Yet the price is lower by $85.00 than that of its spectacular predecessor — the direct result of increased production and the Jeffery policy of manufacturing rather than assembling its cars.

$1365

The New Jeffery Symbol

Upon each new Jeffery Six there appears the Jeffery device, shown above. It is more than a hall-mark—more than a trade-mark. It is the symbol of mechanical precision and refinement. It tokens the ideals of accuracy of the Jeffery organization. And as such it is the owner's guaranty of inherent worth, just as is the hall-mark upon the finished product of a maker of instruments of precision.

(Continued on other side)

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(Continued from previous page)

While other makers are compelled to meet raised costs in parts buying, the Jeffery Company, which makes its parts themselves, is in a position to offer a greater value than ever at a lower price.

The wheel-base is 125 inches—it looks a foot longer. Running board only fifteen inches from the ground—yet with ample clearance. Rear springs are underslung, and extra long and flat. Drives through rear springs, eliminating torque and radius rods. Emergency brake on propeller shaft. This Jeffery construction means the absence of parts which rattle and detract from the complete joy of motoring.

Extremely low gasoline consumption and a remarkable economy on tires.

Jeffery built through and through. More than a fine automobile—the embodiment of a high ideal.

A Motor Without Vibration at ANY Speed

The inherently balanced, oversized crankshaft—an exclusive development of Jeffery engineers—is largely responsible for the wonderful softness of the New Six motor. It makes possible, to an even greater degree, the liquid-like speed modulations which have always delighted the Jeffery owner. This remarkable motor, without vibration at *any* speed, is the result of the company's home-construction policy which actually confines 93 per cent of parts-building to the Jeffery factory.

Dealer Co-operation

The Jeffery policy always has been to see selling problems from the viewpoint of the dealer. Which means that Jeffery co-operation with the dealer is a real factor—always.

To the Jeffery Company, shipping and billing a car to a dealer does not constitute a sale. Jeffery interest goes far beyond this—it extends to the actual sale of the car to the user.

We do not believe in "hurrah" methods which only load down dealers. We indulge in no "mob" sales. Each dealer decides for himself. We show him the car and the contract. He takes his own good time in deciding what is best for him.

He must *sell himself* on the Jeffery. After he has done that he will continue to be sold—on the car itself as well as on the helpful co-operation which is always his. When a dealer signs a Jeffery contract he becomes a real and active part of the Jeffery organization.

Territory Allotment

The Jeffery Company uses the utmost care in the selection of dealers who will handle the Jeffery car.

The demand for Jeffery cars, helped by an aggressive sales and advertising policy, is such that only a limited number of dealers will be added this year.

As a result, and because of doubled production, every Jeffery dealer is assured ample delivery.

Dealers must be up to the Jeffery standard—live business men capable of giving the high-grade representation the car deserves.

If you come within this classification write today for further particulars of the Jeffery dealer co-operation plan.

Or, better still, wire!

The Thomas B. Jeffery Company

Kenosha, Wisconsin, U. S. A.

Models:

SIXES:		FOURS:	
Seven-Passenger Touring	$1365	Seven-Passenger Touring	$1095
Seven-Passenger Sedan	1530	Seven-Passenger Sedan	1260
Roadster	1335	Roadster	1065

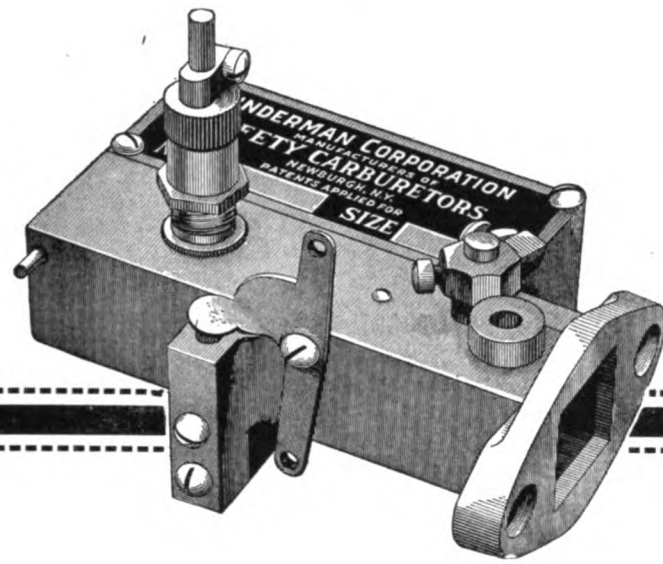
F. O. B. Kenosha



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$5.00 f.o.b. Newburgh

With Elbow $6.50



$5.00 f.o.b. Newburgh

With Elbow $6.50

Marshalltown, Iowa,
June 28, 1916.

Sunderman Corporation
Detroit, Michigan

Dear Sirs:

Carburetor received Saturday, and am more than pleased, and it is more than I expected. I have had several different makes on my Ford, but the Sunderman Safety has them all beat. I never would believe that a Ford engine could develop so much power till I used the one I have on now.

Everybody is interested in it and I believe I could sell quite a few in this County, so please send me your County right proposition.

Yours for an immediate reply.

Yours truly,
(Signed) N. J. Rodennel,
108 East Webster,
Marshalltown, Ia.

SIZE F

Dimensions 4½"x2½"x1⅞".
Suitable for any engine up to 45 H. P.
Subject to different size nozzle according to bore and stroke of motor.
Weight: 1¾ lbs.

A Sunderman Safety Carbureter properly installed and adjusted increases the mileage of any car, of any make, of any number of cylinders

Can be installed within an hour.

"Ford" installation can be made within 30 minutes.

Will decrease your gasoline bill from one-third to one-half.

Has no wearing part, thereby saving all troubles of replacements.

Simplicity itself. Composed only of 24 parts, while all other carburetors have from 50 to 140 parts.

Produces a pure dry gas, leaving no carbon deposit, eliminating valve grinding, gas pound and foul spark plugs.

THIS IS A CARBURETOR, NOT AN ATTACHABLE GAS OR AIR RECTIFIER.

PALMETTO WAGON WORKS

North Augusta, S. C.,
July 7, 1916

Sunderman Corporation
Detroit, Michigan

Gentlemen:

We received yesterday afternoon the carburetor we ordered from you a few days ago, and installed it this morning on a Ford car, and we are frank to say, "it beats anything we have ever seen in the shape of a carburetor." We gave five demonstrations and received four orders up to the writing of this letter.

Yours truly,
PALMETTO WAGON WORKS
(Signed)
By T. L. Foreman

SUNDERMAN
SAFETY CARBURETOR

FEATURES:

Enormous Gasoline Saving
Greatly Increased Mileage
More Power
Great Flexibility
Fast Get Away
Quick Pick-up
Easy Starting
Positively No Backfiring
Absolute Simplicity
Adjusted to all Climatic Conditions.
SPEED
A wonder for Fords—Does great work on big cars

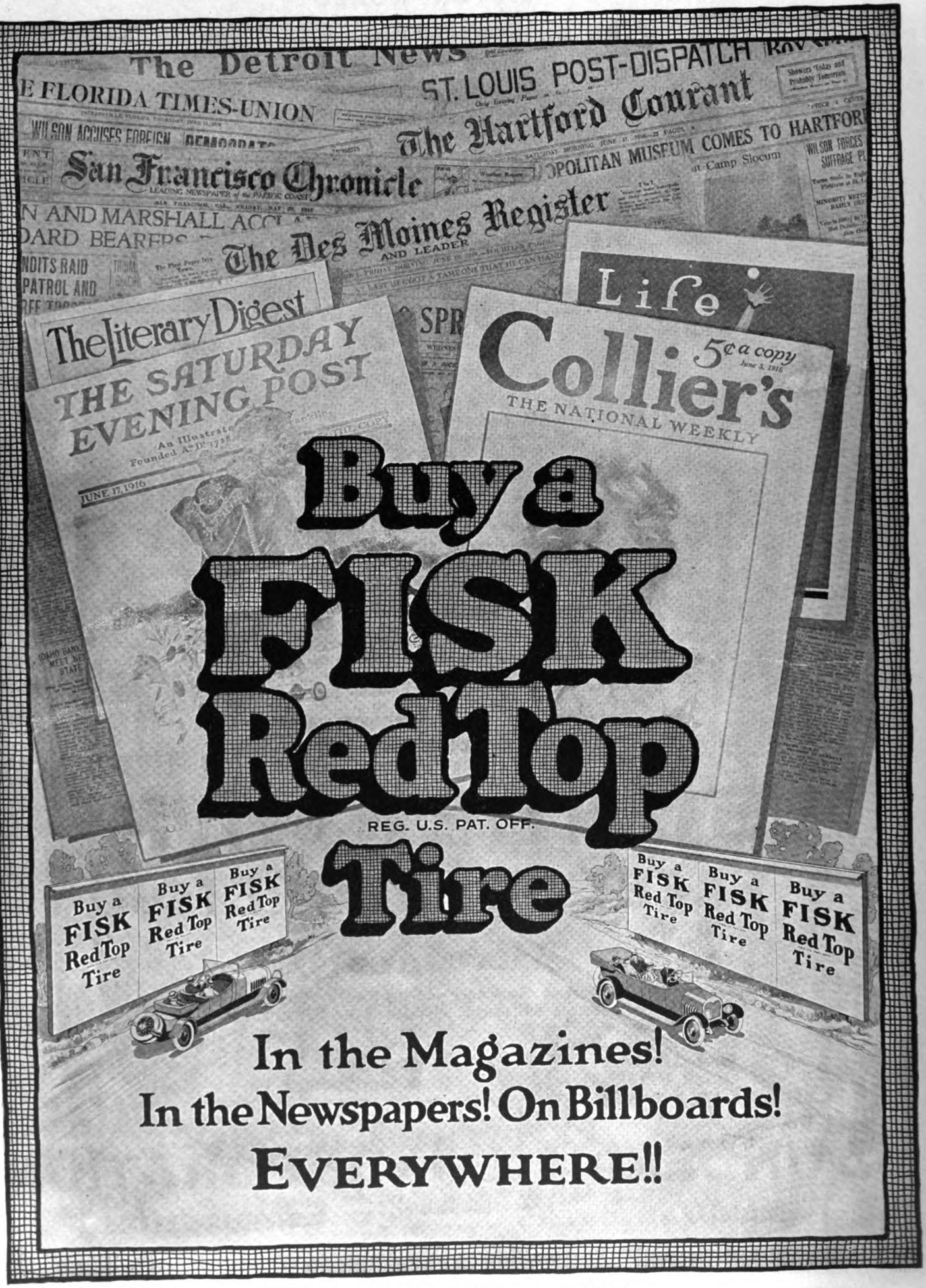
SUNDERMAN CORPORATION

MANUFACTURERS OF SAFETY CARBURETORS

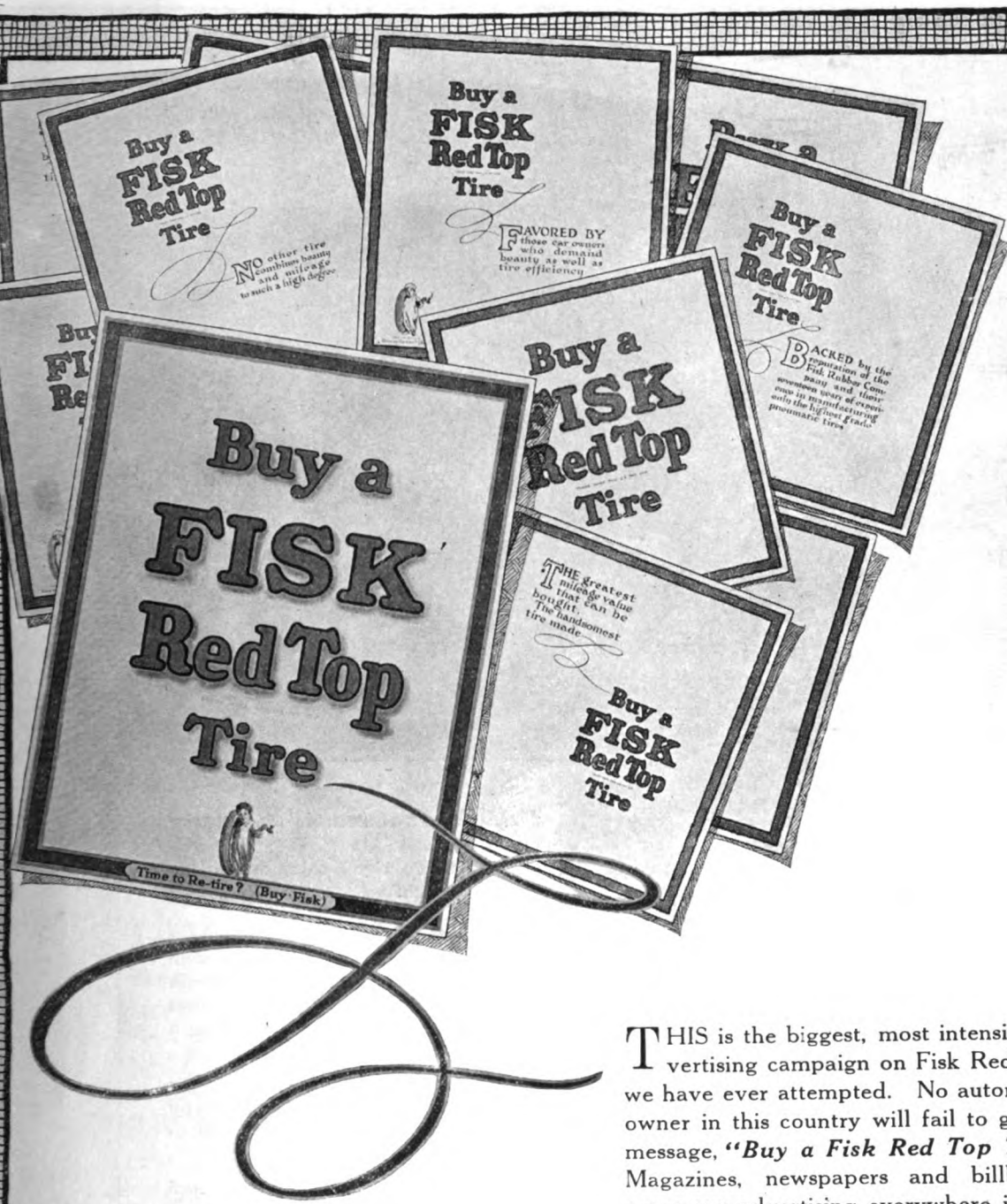
NEWBURGH, N. Y.

When writing advertisers please mention Motor World

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Time to Re-tire?
(Buy Fisk)

THIS is the biggest, most intensive advertising campaign on Fisk Red Tops we have ever attempted. No automobile owner in this country will fail to get our message, ***"Buy a Fisk Red Top Tire."*** Magazines, newspapers and billboards carry our advertising everywhere in July and August. Our advice to you also is, ***"Buy Fisk Red Top Tires."*** Buy enough to take care of the enormous demand for Red Tops that this advertising is creating. Get in touch with the nearest Fisk Branch and place your Red Top order immediately—***now***. Get your share of Red Top profits.

THE FISK RUBBER COMPANY
of N. Y.

Chicopee Falls, Mass.

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Free! Free!



Free—This Handsome Accessory Show Case!

Quality accessories well displayed are half sold. That's why we want dealers to take advantage of our **free** accessory show case offer.

What You Get

We furnish **Free** this $10.00 cabinet show case. Made of 20 gauge, cold rolled art metal steel. Outside of case finished in deep rich mahogany and gold. Size 26″ high, base 12″ x 24″. Has **two** shelves for displaying accessories. Lower **half** of cabinet used for stock cupboard.

How You Get It

To each dealer who sends us an introductory order for Miller Quick Selling Accessories regularly priced, we will send this $10.00 case free. Value of accessories and case is $40.55. Our introductory price is so low you save 25%.

Regular assortment consists of such fast sellers as Pluggum, Cementless Patches of various **kinds**, Hook Hold, Clincher and Lace Hold boots; Reliners, Hand-i-Kits; Tape, Cement, etc.

Motorists are buying accessories. Have what they want—accessories of Miller Quality. **Get** this business, make the regular profit and in addition get the extra 25% profit this **offer** gives you.

These cases can't last long. When they're gone we may not be able to get **more.**

Order yours now—today. **Use the Coupon.**

MAIL THIS COUPON!

The Miller Rubber Co.,
Akron, O.

Gentlemen:—Please send me full particulars as to how I can get one of your $10.00 Accessory Show Cases Free.

Name .....
Street .....
City .....
State .....

THE MILLER RUBBER CO.

AKRON, OHIO, U. S. A.

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The right name—

Important!

The right tonnage—

Vital!

The right name plus the right tonnage

Garford

A manufacturer's known integrity and experience are among his dealers' biggest assets. They are the best warranty that his product is right.

And we are increasingly proud of the fact that Garford reputation for business stability and success is an important factor in Garford sales.

But here's another point—and one that's most important.

The best one-ton truck in the world is the worst truck in the world for the business that actually needs a vehicle of two or three tons' capacity. The opposite also is true.

The wrong truck means greater operating cost or faster depreciation—heavy gasoline bills or heavy repair bills—one or the other, sure.

Our knowledge of traffic problems is gleaned from the experience of many years in the motor truck business.

And the practical, scientific application of this knowledge—combined with engineering foresight and skill—has resulted in the completeness and unusual adaptability of the present Garford line.

There is a Garford Motor Truck exactly suited in design, capacity and power to the needs of any American business, large or small. There is a Garford that any business can use with economy and profit.

Garford dealers are not forced to sell a prospect a truck of any one size—whether it fits or not.

Our complete line of styles and sizes assures easy sales—contented and enthusiastic owners.

We have room for good wide-awake dealers. Wire or write us to-day. Please address Dep't. 104.

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of
Trucks of 1, 1½, 2, 3½ 5 and 6 ton capacity
Tractors of 5, 7, and 10 ton capacity

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STRENGTH—ECONOMY—SERVICE

These three words constitute the pledge the Saxon Motor Car Corporation makes Saxon owners.

They are to this corporation all that "*his word of honor*" is to a man of fine character.

They typify the essential characteristics of Saxon Cars. They epitomize the Saxon idea—the idea that brought the Saxon Motor Car Corporation into being, and that is the cornerstone of its success. It is not merely an advertising slogan but a business ideal—an ideal that is given concrete expression in Saxon cars.

The word, STRENGTH, implies not alone the ability to carry a certain load but the ability to carry it indefinitely under all conditions and with ease. It embraces the quality of endurance.

ECONOMY, as used here, refers to both first and last cost. In the case of the former, the latest manufacturing and marketing methods, the ablest engineering skill, and the advantages of big output have been combined to bring the first cost of Saxon cars to the lowest limit compatible with their character.

In the case of the latter, skilled design and fine quality materials have produced a car which will give the greatest number of miles of safe and comfortable travel at least expense.

SERVICE means day in and day out availability to the owner. It means square dealing on the part of the Saxon Motor Car Corporation and every dealer in its organization. It means absolute satisfaction to the man who pays his money for a Saxon. No car can give more. No car can give less and long retain the respect of the motor car purchasing public.

Saxon "Six" Touring Car, $815; Saxon "Six" Roadster, $815; Saxon "Four" Roadster, $395.

SAXON "SIX"

A big, roomy, lightweight, 5-passenger touring car, yacht-line design; lustrous finish of lasting newness; 112-inch wheelbase; light-weight six-cylinder high-speed motor, of Saxon design manufactured to Saxon specifications by the Continental Motor Company, of marked power on minimum gasoline consumption; 2⅞-inch bore x 4½-inch stroke; 32-inch x 3½-inch tires; two-unit electric starting and lighting system by Wagner; Timken axles and full Timken bearings throughout the chassis; Rayfield carburetor; helical bevel gears; linoleum covered, aluminum bound running boards and floorboards; demountable rims; and a score more of further refinements.

SAXON ROADSTER

A handsome, rugged, powerful roadster; stream-line design; 96-inch wheelbase; 28-inch x 3-inch tires; 15 h. p. L-head, high-speed motor of unusual power, smoothness, quietness, flexibility, operative economy and coolness under all conditions; four cylinders cast en bloc; crank case integral; 2¾-inch bore x 4-inch stroke; 40-inch seat; three-speed sliding gear transmission (only standard roadster under $400 with three-speed transmission); Timken axles; Hyatt quiet bearings; honeycomb radiator; dry-plate clutch; ventilating windshield; signal lamps at side; adjustable pedals; vanadium steel cantilever springs; and fifteen additional improvements.

Write for interesting booklet "Saxon Days." Address Dept. N.

SAXON MOTOR CAR CORPORATION, DETROIT

THE SAXON MOTOR CAR CORPORATION DOES NOT ANNOUNCE YEARLY MODELS

(495)

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G-P Muffler Cut-Out *"Tells The Motor's Secrets"*

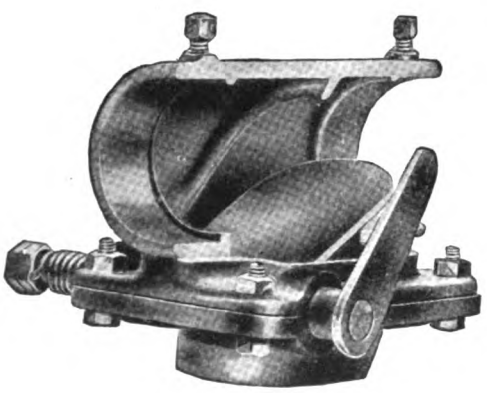
Patented June 24, 1913

The smooth, quiet operation of the modern, high-speed motor makes a muffler cut-out a necessary economy.

Without a G-P Muffler Cut-Out on his car, even an expert finds it almost impossible to tell whether his motor is hitting on all cylinders.

Every miss means a cylinder full of gas wasted. Rather costly today!

To say nothing of the irreparable harm that may be done by running with one or more cylinders missing. The G-P Muffler Cut-Out, when opened, absolutely cuts off the muffler.



Sectional View

It deflects the exhaust gases freely, without even the suggestion of back-pressure. This results in immediate and complete relief to the motor, with a distinct and intensified sound of each explosion.

An attractive shelf article—packed in individual wood boxes. Why not sell the best?

DEALERS—Send Today for Complete Table of Exhaust Pipe Sizes of All Cars

Special G-P Muffler Cut-Out for the Packard Twin Six— the only one on the market. Write us for information.

Manufacturers
THE G. PIEL CO., Inc.

Sales Managers
EDWARD A. CASSIDY CO., Inc.
30 East 42d Street, New York City

Special Outfit for Ford Cars consisting of G-P Muffler Cut-Out, Pedal and Chain and complete instructions for installing. Write for information.

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The Badger Jack Family

They're a lively crew, this Badger Jack Family.

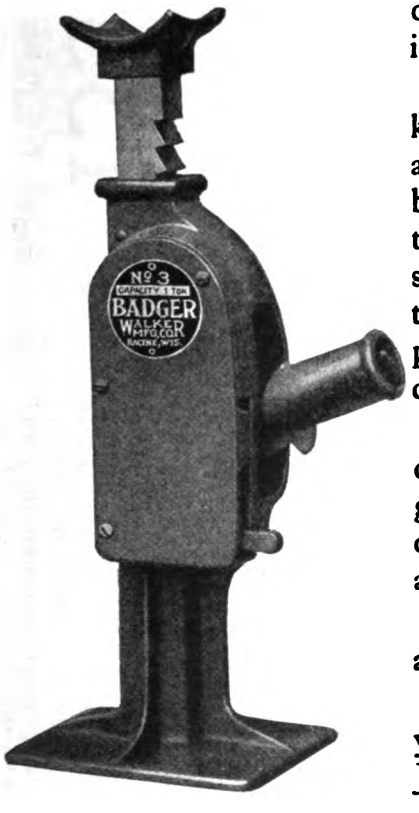
You never saw eight youngsters with more "pep" in them.

They're itching for something to do, all the time.

They'll tackle anything from a built-for-two bicycle car to a five-ton truck. The tougher the job the better they like it.

You can't make a Badger Jack whimper. He'll stand up under any load you want to put on his stiff, sturdy shoulders. If he can't, he's got a big brother that can.

And he doesn't leave much work for you to do, either. All he asks of you is a place to put his foot, a fair chance at your axle, and he'll hold your car on three legs till doomsday, if you don't let him know, by a kick on the reversing lever, that you're through.



Badger Jacks are cheery-hearted, well-knit lads, made of the soundest kind of iron and steel. There's been no skimping in their bringing up. They're made to be useful. And they go through a course of training on a special machine before they leave home that's three times as hard on a jack as anything life puts them up against. It would crumble the ordinary junk-jack like half dried mud.

So you can't blame them for having a certain pride in themselves and for being glad that they've put 200,000 junk-jacks out of business in the last year. There won't be a junk-jack left in a few years more.

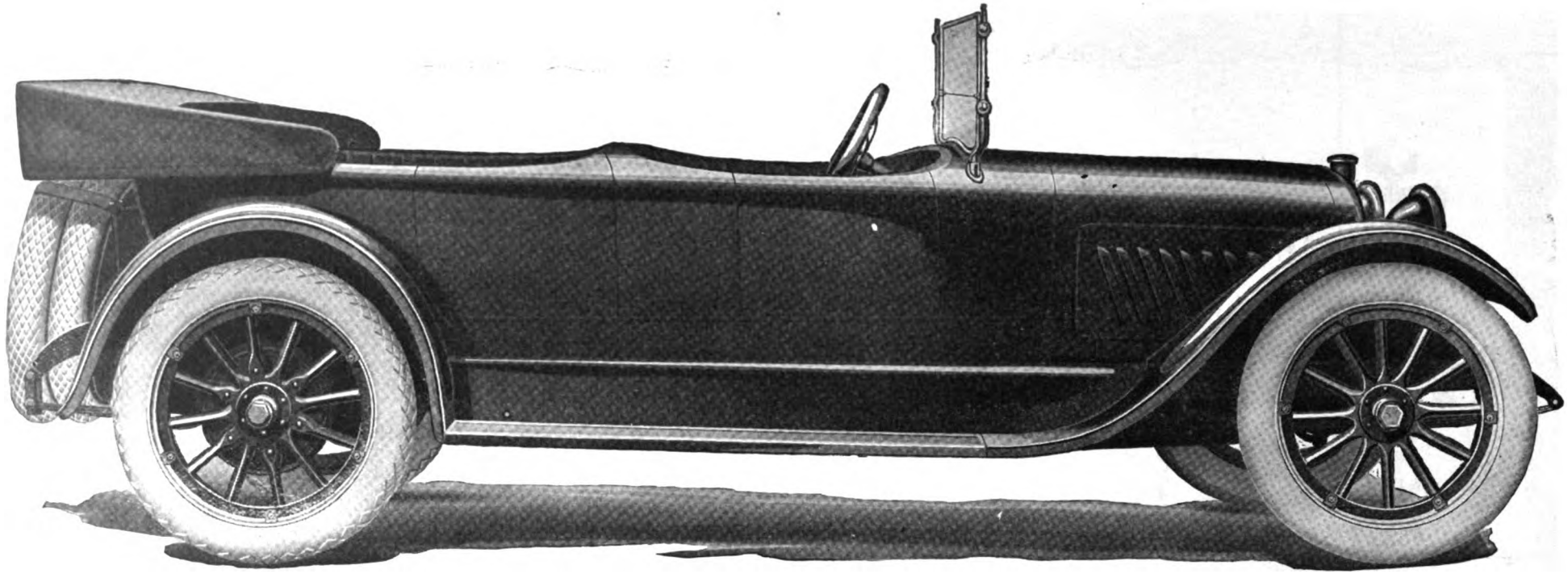
Junk yours now, and begin life over again with Badger Jack.

There is a book about this family that you'll find worth reading—"The Story of a Jack." Send for it.

Walker Manufacturing Company
386 Wisconsin Street, Racine, Wis.

(20)

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ROSS EIGHT

$1350

F. O. B. Detroit

Manufactured by

ROSS AUTOMOBILE COMPANY

DETROIT, MICHIGAN

WHEN you consider that the Ross Eight has an eighty-two horsepower, eight cylinder Herschell-Spillman motor—the finest type of eight cylinder construction extant—

And that it has a wheelbase of 130 inches, providing the length that means maximum ease of riding and unusual roominess of body for seven passengers,

And, that in spite of its high power and luxurious roominess, it weighs only 3180 pounds, you begin to have a rough mental outline of the qualities that entitle this car to your careful consideration.

We might go on and enumerate *all* the details but, you know that any manufacturer with twelve years' experience building good cars is going to see that every detail of construction is in harmony with this brief outline.

There is no better way to get a positive, concrete idea of Ross Eight ability, Ross flexibility, Ross uniqueness of quality for the price, than to get a ride in the Ross Eight.

Dealers who ponder over the four facts mentioned, the high powered motor, the long wheelbase—the light weight—the generous roominess of body—and the price, $1350, must inevitably conclude that here is a car whose value is so clearly and distinctly apparent that it will sell on sight—and it does. Write at once to ROSS AUTOMOBILE CO., Detroit, Michigan

When writing advertisers please mention Motor World

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Ease of Operation

The Detroit Gearless Tire Pump takes the last bit of hard work out of motoring. The pump is carried in the tool box with tube and gauge attached. It is attached to the crankshaft when it is to be used and this operation requires but a half minute.

The pump is strongly and sturdily built, and can't get out of order. It is made like your motor, the downward stroke of the piston drawing in the air, and the upward stroke forcing it through the tube to the tires.

It is recognized as standard in the trade, and is unqualifiedly endorsed by the engineering department of every company to whose product it can be attached.

GEARLESS DETROIT MOTOR-DRIVEN TIRE-PUMP
PATENTED AUG. 24, 1915

Offers the dealer maximum profits with minimum labor. If you sell a gear-driven pump your profits are eaten up in the labor costs of installing it.

But with the Detroit Pump, you simply hand it over the counter and pocket your profit on the sale.

An important fact is that one sold makes money. We have many letters from dealers who say that one pump sold in a neighborhood leads to other sales.

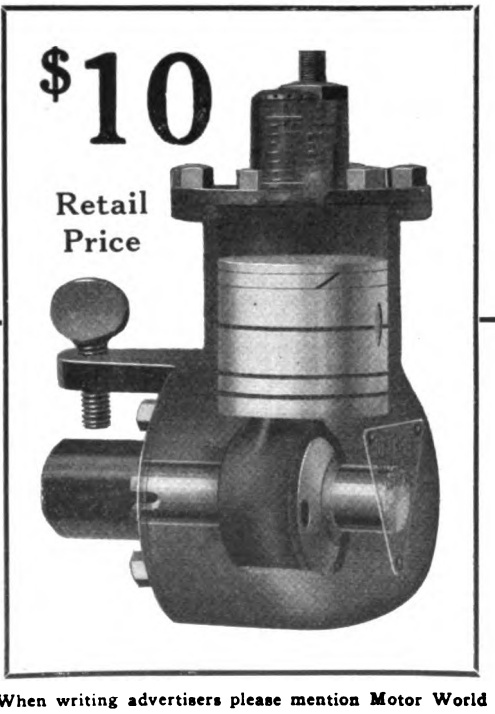
Order one, at once; try it out and then show it to your trade. You'll be surprised to see how easy it will be to sell a large number.

Ready for Reo, Chandler, Saxon Six, Dodge Brothers, Studebaker 1914-1915-1916, Overland 75-83-84, and Hudson Super Six.

Detroit Accessories Corporation

519 Hillger Avenue **Detroit, Mich.**

Note—Beware of pumps infringing the basic patents of the Detroit Gearless Pump.



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Champion
"TOLEDO MADE FOR THE WHOLE WORLD'S TRADE"

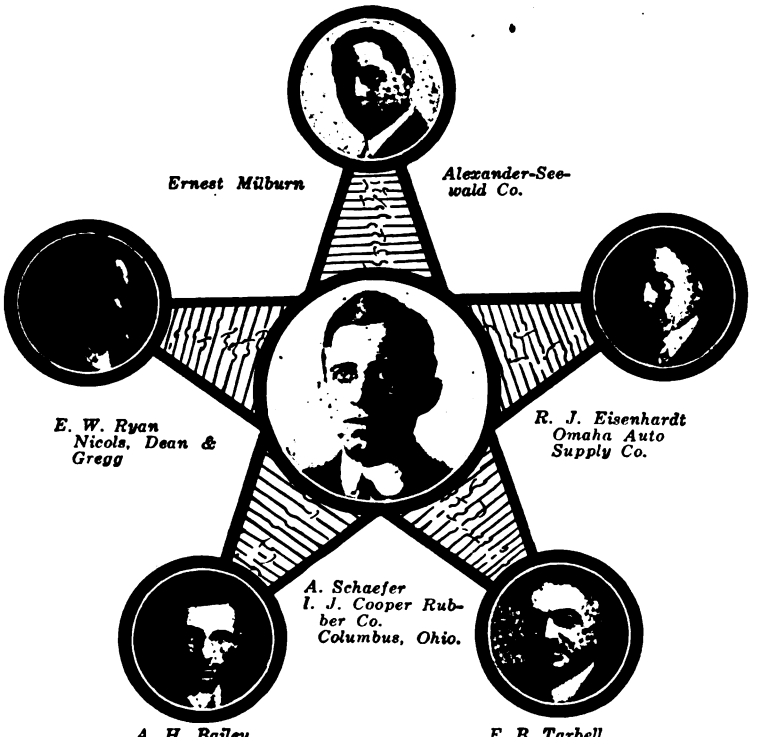
PROFIT SHARING WINNERS, 1915



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Harry McCullough
J. H. McCullough & Son

These are the men who sent in the largest number of Profit Sharing Certificates during 1915, that were completed. We expected to be able to make this announcement in February, but the large number of Agreements coming in at the last moment made it impossible to make a correct tabulation sooner.

The hundred names we print below are those who were next in rotation up to 100, who receive McClure's Magazine free for one year, as a result of their work and to show our appreciation of their activities.

The location of the winners in this contest shows the wide-spread distribution of Champions.

We congratulate the winners and the firms who employ this bunch of live ones.

Myron Nussbaum, Automobile Supply Co., Chicago.
E. T. French, Herring Motor Co.
H. M. Death, J. H. McCullough & Son.
P. O. Fiedler, Toledo Rubber Co.
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How do you stand in the 1916 Profit Sharing Contest?

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PROTECTION for the car and for the people who ride in the car, protection for the dealer and for the owner—this is the basic idea that underlies our business. You must pay a big premium for protection from fire, burglary, accident and liability. But you secure protection from wear and tear and rapid depreciation at very low cost when you buy

WARNER AUTO UPHOLSTERY COVERS

FIT LIKE A GLOVE

DUST-PROOF WEAR-PROOF

We honestly believe that there are no auto upholstery covers manufactured in America that represent better values, better materials, fit and workmanship than those which we manufacture and sell under our own name. You will realize the truth of this assertion from the moment you snap a set of these covers over your automobile seats. They are especially designed for the car you drive, and are readily attached by means of instantaneous fasteners.

We know that our proposition is better for the dealer because we manufacture exclusively **for** the trade, and sell exclusively **through** the trade; our list prices are fair, our discounts are liberal, our service is prompt and reliable and we guarantee price protection to September first, 1916, to all dealers under contract with us.

The cost of everything that enters into the manufacture of Warner Auto Upholstery Covers is advancing by leaps and bounds. If you have not already received our catalog, price-list, swatches, display hanger and dealer contract, write today.

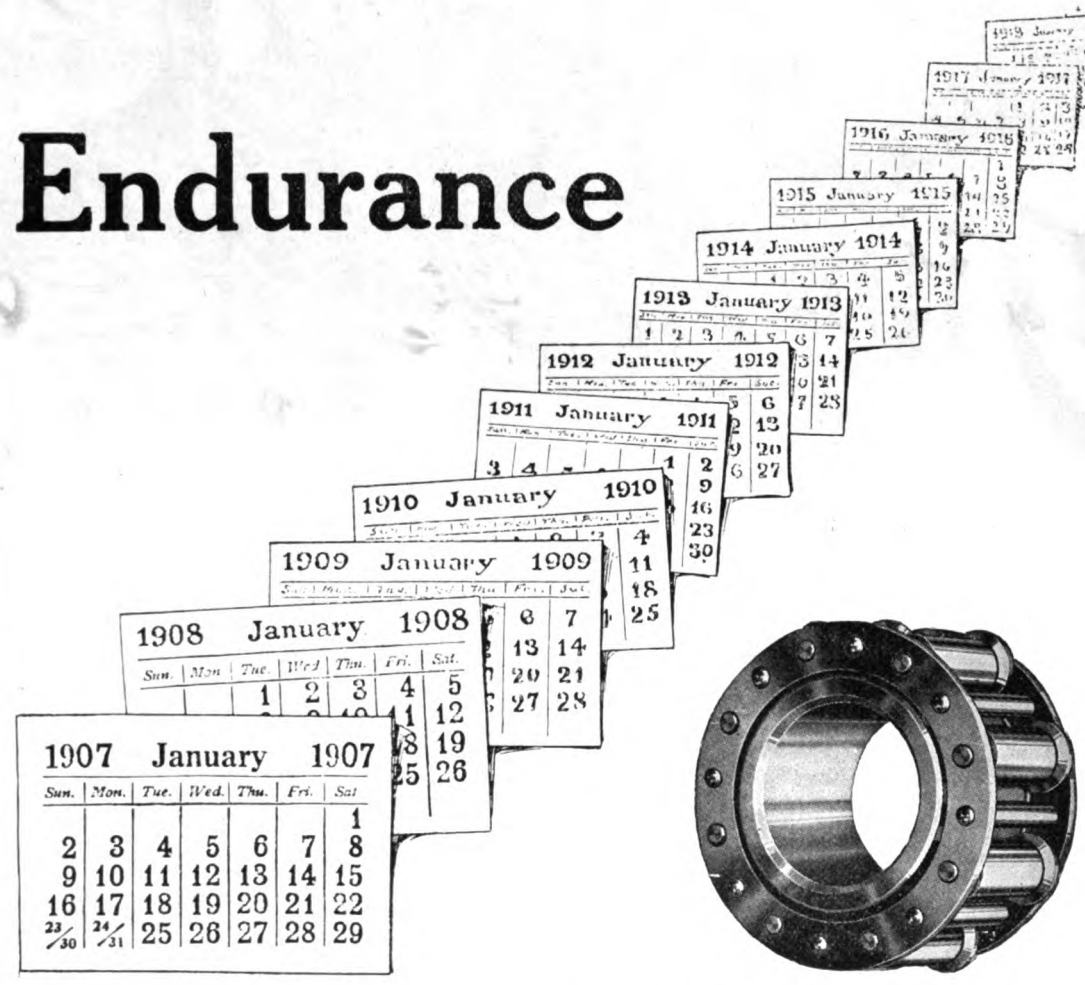
THE WARNER AUTO TOP COMPANY

1640-1644 Central Avenue **Cincinnati, Ohio**

Established Thirty Years

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Endurance



The construction of Bower Roller Bearings assures extraordinary endurance. They consist of a cylindrical roller with a flanged head at one end. The flange takes care of the end thrust. The constant radial load is supported along the whole length of the cylindrical roll. Bower rollers and race-ways are always parallel. Therefore, a maximum diameter of roll can be used. The bearing is moreover self-aligning and with proper lubrication will last indefinitely.

Bower

Roller Bearing Co.

Detroit - - - - - Mich.

BOWER SAVES POWER

BOWER SAVES POWER

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Backed by Prest-O-Lite Service



The Beginning of the End of Your Battery Troubles

The excellent performance of the Prest-O-Lite Storage Battery in the hands of thousands of users everywhere is the result of years of test and effort and unlimited expenditures to produce a battery of distinctly superior qualities.

And back of this battery stands a SERVICE which insures you expert, universal battery service—a service that will greatly increase your storage battery satisfaction.

There is a Prest-O-Lite Battery of correct shape, size and capacity for every make and model of car, and for every starting and lighting system which is or ever has been in general use.

The Prest-O-Lite Co., Inc., maintains more Direct Factory Branches than all other battery makers combined. They form the nucleus for the largest amount of actual service obtainable in the storage battery field.

Every automobile dealer—whether he can repair and charge batteries or not—should know the details of the Prest-O-Lite Storage Battery proposition. Write for it today.



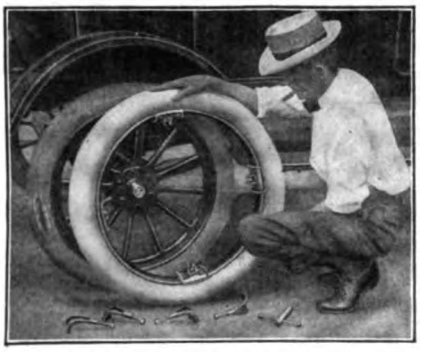
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Each of these Factory Branches is fully equipped for Battery Repairs and Service.

The Prest-O-Lite Co., Inc.

902 Speedway : Indianapolis, Ind.

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METHOD OF MOUNTING

TWIN-RIM

PATENTED FEB., 1916

A Demountable Rim for FORD CARS

AND ALL OTHER 30″x3½″ OR 30″x3″ CLINCHER RIMS

IN CASE OF TIRE TROUBLE the Twin-Rim with inflated tire is placed beside the damaged tire, the four bolts tightened and you are ready to run again. Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is "They would not be without the TWIN-RIM."

You Don't Have to Remove Damaged Tires

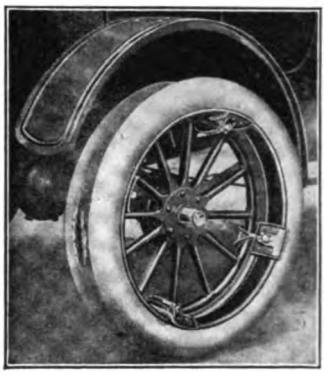
It is strong and durable; looks well on your car. Fits either front or rear wheels. An absolute necessity for Doctors, Salesmen, Tourists, Taxicabs and Deliveries.

TWIN-RIM $5.00
SPECIAL TIRE HOLDER FOR $2.00

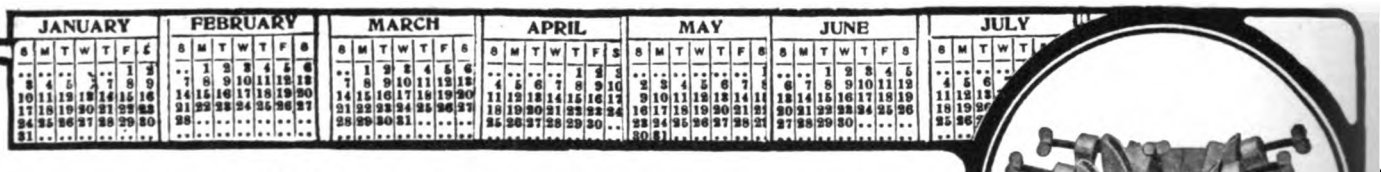
DEALERS—Through our advertising campaign we are reaching the Ford Car Owners all over the United States. Get your share of this business. Write now for our dealer proposition.

TWIN-RIM CO., INC.

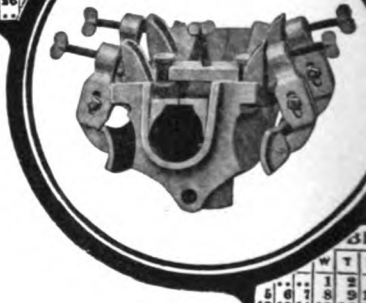
103 Massachusetts Avenue **Boston, Mass.**



MOUNTED READY TO RUN



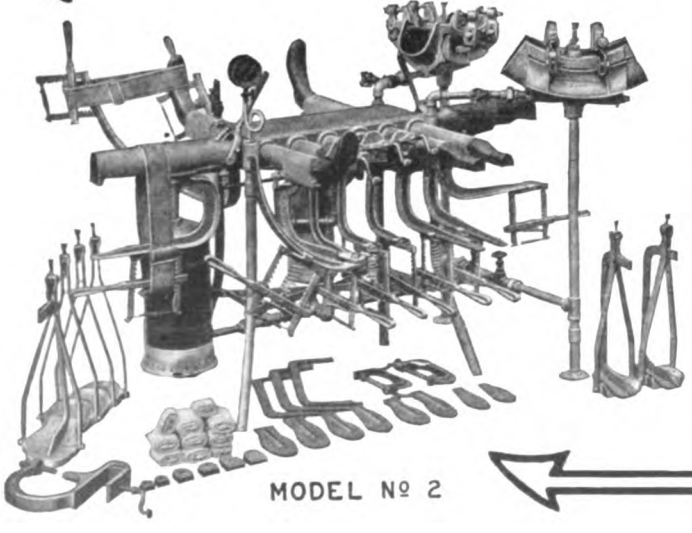
AN ALL YEAR VULCANIZING BUSINESS



The ARTHUR VULCANIZER has advanced vulcanizing from a mere one-season business to an ALL YEAR BUSINESS.

It secures repair work during even the months that were formerly the dull season.

No repair man can afford to close his shop part of the year.



MODEL Nº 2

THE ARTHUR MODEL No. 2 FOOTWEAR & TIRE VULCANIZER

is the outfit that has opened the way to success. It handles all kinds of repairs to rubber foot wear and repairs to inner tubes and casings.

Write for full information and catalogue.

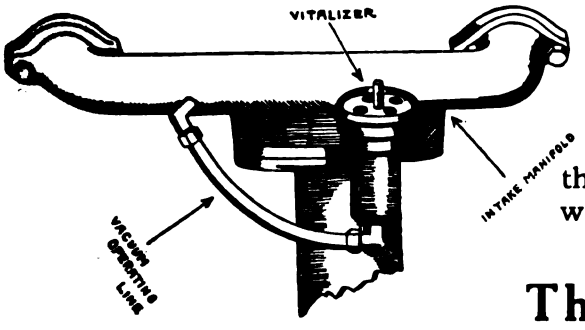
THE ARTHUR VULCANIZING MACHINE COMPANY

Griswold St. Warren, Ohio,

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No Sane Motorist Can Refuse This Offer



Use our Duplex Vitalizer on your engine for 10 days. If it does not give you MORE POWER—MORE MILEAGE and MORE EFFICIENCY (to your own satisfaction) than you had before from the same engine, we will return your money!

The DUPLEX VITALIZER

You can attach the DUPLEX VITALIZER yourself in a few minutes.

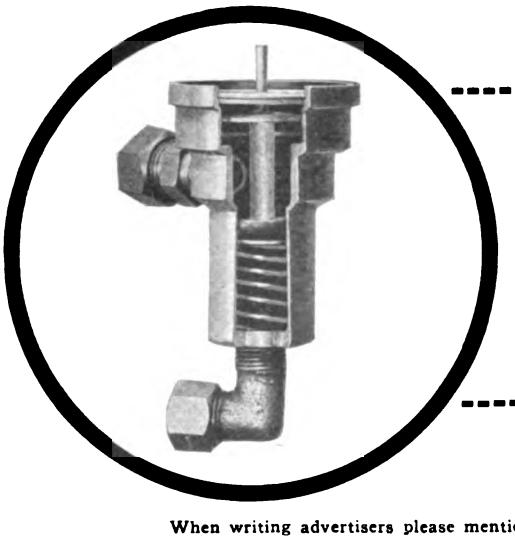
It will shortly save its cost in gasoline alone!

Your engine will pick up quicker, develop greater speed, climb hills easier, and last longer. By taking us up on this you can't possibly lose.

Use the coupon—NOW.

Dealers wanted everywhere. Wire or write.

DUPLEX VITALIZER MFG. CORP.
ELMIRA, NEW YORK



Duplex Vitalizer Mfg. Corp., Elmira, New York.

Send me full details about your 10-Day Money Back Trial.

Name .....

Address .....

.....

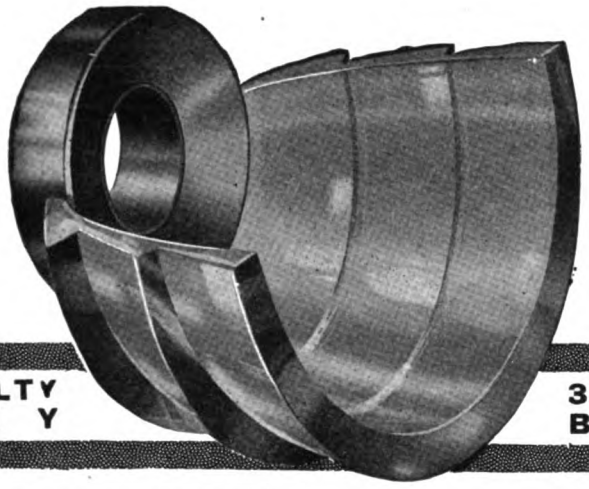
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"FRACTO"

SUNLIGHT ON THE ROAD—STARLIGHT TO THE EYE

"FRACTO" is making big money for dealers. Your customers will buy it in increasing numbers and our liberal policy assures generous profits.

"FRACTO" does not waste one ray of light—it simply directs them in the ways they should go to accomplish the purposes most desired—a full, clear light on the road, a soft, glareless light in the eye, sufficient illumination of overhead obstructions to make them easily distinguishable and avoidable. It is a 2-oz. glass, cup-shaped lens, attached under the bulb. It is easy to attach, strong, durable and steady—will not break the bulbs.



$2.75 PER PAIR

Write at once for our liberal proposition.

FRACTO SPECIALTY COMPANY

356 NEWBURY STREET BOSTON, MASS.

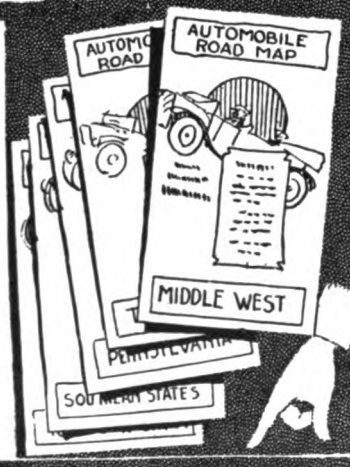
FREE ROAD MAPS

Check Maps desired and mail to

GULF REFINING COMPANY

Dept. 1879
Frick Annex

Pittsburgh, Pa.



MAIL THIS COUPON TODAY

Gulf Refining Co., 1882 Fricke Annex, Pittsburg, Pa.—Gentlemen: Please mail me FREE as per your special offer the maps as I have checked:

- ☐ Middle West
- ☐ Transcontinental
- ☐ New England
- ☐ New Jersey
- ☐ Pittsburg to Philadelphia
- ☐ Pittsburg-Buffalo
- ☐ Southern States
- ☐ Pennsylvania
- ☐ Texas
- ☐ Allegheny County

Name .....

City ..... State .....

Hotel Marie Antoinette

Broadway, 66th and 67th Sts.

NEW YORK CITY

SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

Restaurant of Unusual Excellence

H. STANLEY GREEN

Managing Director

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Alliance Tire "Adjectives"



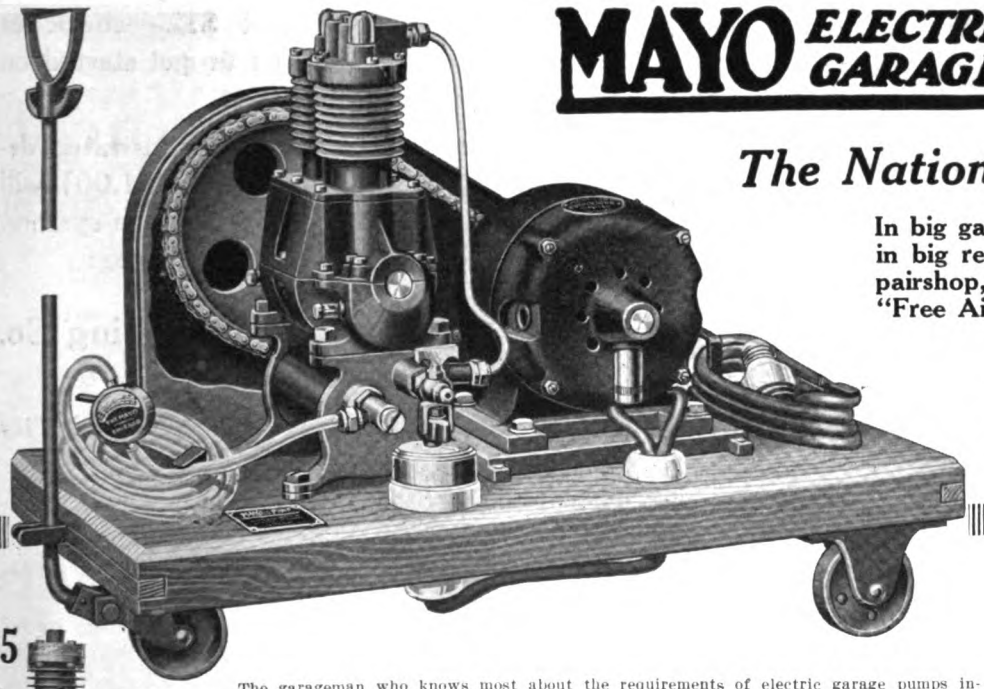
After you have read all the rest of the tire ads—after you have devoured the "Good," "Better," "Best," "Superior," "More Mileage" and all that sort of stuff—come back to the ALLIANCE "adjectives," reproduced herewith, and consider which you think means more money for the dealer.

ALLIANCE 5000 MILE Traction Tread Tires

back up their dealers with advertising of this kind in the name of the local dealer. The dealer is not required to pay for it, or for half of it, or for any of it. The Alliance Rubber Company pays for it and reaps its benefit in the prosperity of its individual dealers.

ALLIANCE RUBBER CO.
Alliance, Ohio

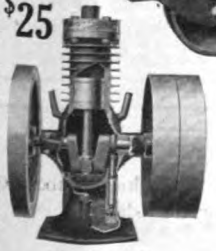
MAYO ELECTRIC GARAGE PUMP



The National Standard

In big garage and little garage, in big repairshop and little repairshop, you will find MAYO "Free Air" equipment dispensing satisfaction to customers who patronize only the garage or repairshop offering the up-to-datest service.

$25



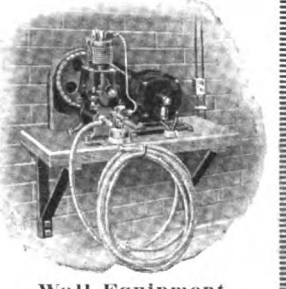
Mayo Air Compressor

The garageman who knows most about the requirements of electric garage pumps invariably chooses a MAYO against the field. Due to material, construction and an international reputation of years' standing for all that is best in design and structure, MAYO "Free Air" garage equipment has become recognized as the standard of the motor car trade.

The MAYO Electric Garage Pump—either portable or wall type—at $60 is the most popular electric garage pump on the market. It bears the MAYO Guarantee, and is sold on 30 days' trial.

This pump is exceedingly economical of current. In ordering state current and voltage used. Send for free folder.

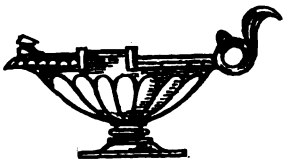
MAYO Air Compressor at $25 is especially made for tire filling purposes, meeting with wonderful demand. It delivers pure, clean air only to the storage tank. Pressure 200 lbs. guaranteed. Send for full particulars.



Wall Equipment

MAYO MANUFACTURING CO., 65 E. 18th St., Chicago

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"The Light That Failed"

Many dealers and garage owners throughout the United States have suffered defeat in business, because they did not adopt some adequate accounting system to direct them into profitable channels, and take them from the broad and too easily traveled path of loss—at the end of which was failure.

How much did you make in June?

Maybe you think so—but do you know?

How much will you make in 1916?

Does your repairshop gain or lose?

How much do you make when you charge a customer for an hour of labor?

How do your May and June collections compare?

If you don't know these things you are not on the road to business success. You should have an accurate and timely record of all parts of your business. You should have a simplified and easy to operate accounting system that will light up the dark corners of your business—that will make your business road safe to travel.

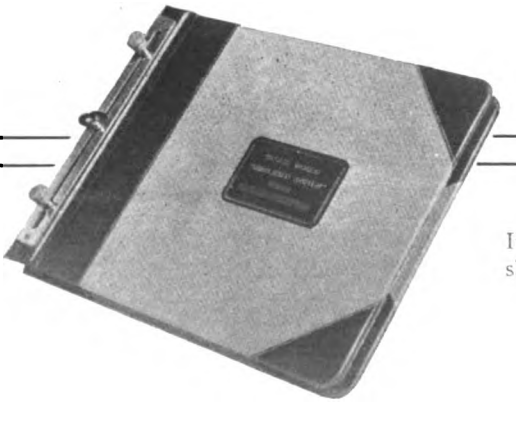
Motor World has devised such a system. It costs $12 complete. Everything in one book. We advise you to get SOME kind, whether it is Motor World's or some other. But if you want this one (which is designed by experts who have made a careful study of the various problems of YOUR business) send $12—check or money order—and plan to get started on the right track August 1st.

Booklet with a complete illustrated description of the system (price $1.00) will be sent complimentary with each system. Send your order at once. Address:

The Motor World Publishing Co.

System Department

239 West 39th Street New York City



This is the only book required—size 11 x 14 inches—canvas, leather corners.

Includes 100 income sheets—100 expense sheets—500 customers' sheets.

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This Is The Plug



These Are the Manufacturers Who Equip With

AC Spark Plugs

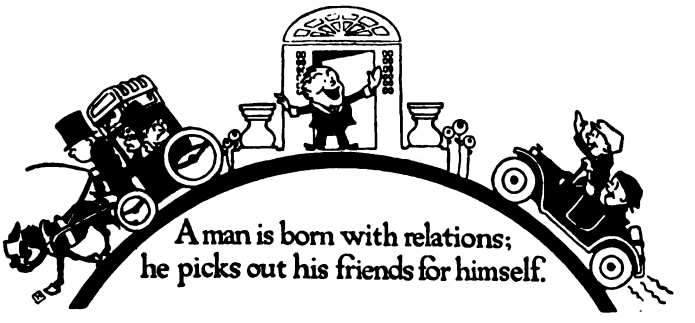
Packard	Buick	Enger	Knox
Pierce-Arrow	Oakland	Glide	Lambert
Cadillac	Oldsmobile	Lexington-	Maxwell
Marmon	Stearns-	Howard	McLaughlin
Hudson	Knight	Austin	(Canada)
Chalmers	Saxon	Brockway	Mercer
Hupmobile	Stutz	Truck	Monroe
Chandler	National	Case Tractors	Pilot
Haynes	Velie	Chase Truck	Sayers-Scovill
Chevrolet	Jackson	Daniels	Crane-Simplex
Dort	Apperson	Empire	Singer
Cole	Davis	Federal	Stephens
Dodge	Detroiter	G. M. C.	United Truck
Brothers	Paterson	Gramm	Wilcox Trux
Reo	Moon	Trucks	Palmer-Moore
Paige	McFarlan	Jeffery	Bour-Davis
Peerless	Westcott	Kissel Kar	Murray

No Greater Recommendation Can Be Given a Spark Plug

Champion Ignition Co. Flint, Mich.

Have You This Plug On Your Car?

Sold Everywhere



So with tires—the tires that are on a new car the car manufacturer selects.

When a car owner buys tires he selects them himself.

Nearly every Kelly-Springfield tire used is selected by the car owner.

Kelly-Springfield Automobile Tires—Hand Made

THERE is an important fundamental principle involved in this tire selection. You ought to understand it.

Few users buy Kelly-Springfield tires until after they have had experience with other tires. And fewer, having once used Kelly-Springfield tires, voluntarily discontinue their use. There is a reason for both conditions.

The reason few users try Kelly-Springfield tires first is that the initial selection of their tires is made by the manufacturer who equips the cars which they buy. And Kelly-Springfield tires cost more.

The manufacturer must put tires on the car he sells, but need not put on tires which give excess mileage. He is only obliged to equip with tires which yield the mileage most tire manufacturers guarantee. That is all the car buyer expects.

If the car manufacturer equips with a tire which gives a greater mileage than this, he has to pay the additional cost out of his own pocket—and why should he?

Considering proper manufacturing economies, he equips with tires which cost him least and yet give reasonable satisfaction. He equips his car with higher-priced tires only when he buys advertising value for his car, as well as tires.

Now we cannot meet the manufacturer's price requirements. Hand-made tires cost more to make and yield excess mileage. We cannot compete on price when the excess mileage doesn't count. So we rarely sell tires to car manufacturers.

Kelly-Springfield tires are sold almost exclusively to car owners who pay higher initial prices because they know they receive excess value. At present the demand is far in excess of our production.



The demand has been so great that owners order tires before they need them to get them when they need them.

It is important to you to know these conditions and to know true tire economy.

Kelly-Springfield Tire Co.

Factories in Akron and Wooster, O.

Executive Offices:
B'way & 57th St., New York

Send 10c. for the new game, "Going to Market"

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In the Preparedness run from Fort Miley, San Francisco, to Halfmoon Bay, recently made by the Thirteenth Company, Coast Artillery, U. S. A.

NEW DEPARTURE BALL BEARINGS

American Made for American Trade

played their silent part ▪

The Saurer truck which hauled the four and one-half ton howitzer on this trip, in record time, was equipped with New Departures.

While the demonstration thus made is of more than passing interest as a demonstration of motor truck efficiency, the great truth to be conveyed is, that this five-ton truck, its big and little brothers, which daily do their part of the world's work in peace and war, are rendered lastingly efficient by the installation of New Departure Ball Bearings.

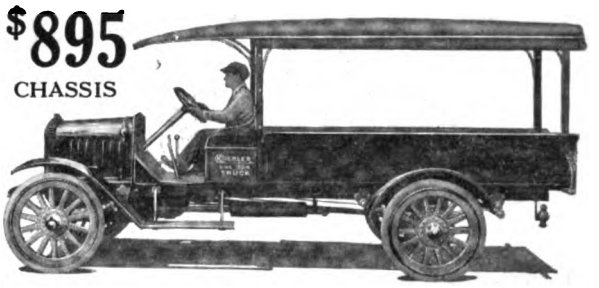


The New Departure Manufacturing Co.
Bristol, Conn., U. S. A.
Conrad Patent Licensee
Western Branch: 818-20 Ford Bldg., Detroit.
Distributors in Trade Centers Throughout the United States.
British Agents: Brown Bros., Ltd., London, E. C.
For Continental Europe: Jacob Holst, Copenhagen.

KOEHLER

ONE-TON TRUCK

$895 CHASSIS



Good dealers are making big money with the Koehler Agency—their competitors cannot offer the following:

1. **Overhead Valves** (Power and economy)
2. **Cast, Fin-Head** (built-up type) **Radiator**
3. **129 inch Wheelbase** (Good load distribution, good appearance)
4. **Internal-Gear Torbensen Rear Axle** (Uses least power, wears longest)
5. **Price Lowest in the World**

Send for details

THE H. J. KOEHLER S. G. CO.
Newark, N. J., U. S. A.

IF you are a Dealer, Jobber or Garage Owner, read MOTOR WORLD every week. It will help in the better conduct of your business. Send your subscription *NOW*.

Motor World, 239 W. 39th St., New York City:
Enclosed find Two Dollars for which please enter subscription to receive the next 52 complete copies of Motor World.

Name .....

Address .....

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.....

BENFORD GOLDEN GIANT SPARK PLUG

22 karat gold plate. **Price $1.**

BENFORD MANUFACTURING COMPANY
Mount Vernon, N. Y.

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KESTER



CRYSTAL-CORE SOLDER

Cuts Soldering Work and Time In Two

A seamless tube of solder, the core of which is filled with just the right amount of flux for every job. Does more than twice the amount of work in a given time, and gets neater, cleaner, quicker results. No time lost in preparing either flux or acid.

Use It In The Garage For—

Battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use.



Sold in coils of ½ or 1 pound, and on spools of 1, 5 or 10 pounds.

Order Today From Your Jobber

Manufactured by

CHICAGO SOLDER CO.
218 N. Union Ave., Chicago

STEVENS & CO. NEW Y

Every Repair Man

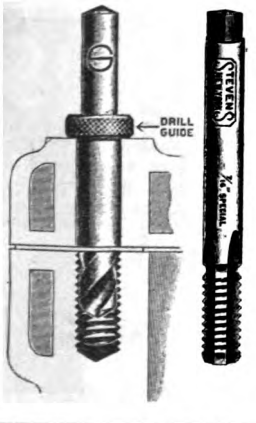
knows how difficult it is to remove threaded portions remaining in castings from broken cylinder head and water connection bolts.

You can take them out easily with this

CYLINDER TAP AND DRILL SET FOR FORDS

You don't have to remove the head of the motor.





Special drill bushing guides drill through center of broken bolt, so that only small section of threads remains. Hole is then cleaned out with tap and is ready for new bolt.

Bushing, Drill and Tap—packed in one box. List price $1.00

Ask your jobber for your discounts

STEVENS & CO.
375 Broadway
New York City

MANUFACTURERS OF
Automobile Parts & Accessories

We Know What the GASCO Will Do

—because we've tried it.

We know what it should **cost** because we make it.

And we want to tell you that it is **at least** the **equal** of any economizer on the market today.

Although its price is but $1.00.

Check Us Up On This Statement

Send for a GASCO ECONOMIZER, try it out at our risk and then

Sell your customers a **real economizer at a fair price.**

If they ask you what this difference in price means—between the GASCO and those costing them five times as much—tell them the truth, tell them that

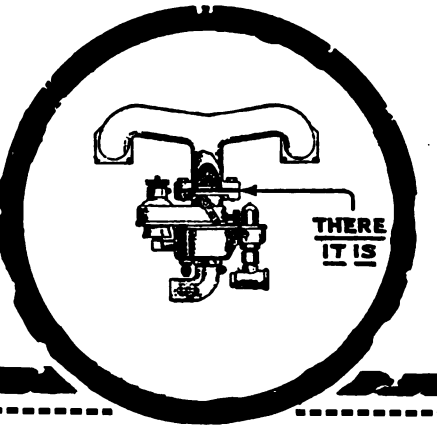
The GASCO costs very little to make, being the simplest and smallest of all, requiring no boring of holes in the intake manifold, nor embodying involved or intricate machinery.

It fits perfectly on the flange of the carburetor, is sufficient unto itself, requiring no pipes or valves; and

WHEN YOU ORDER A **GASCO** ON TRIAL, if you do not like it you can return it and get your money back without having to plug up any holes in your engine.

GASCO IF REMOVED LEAVES YOUR ENGINE JUST EXACTLY AS IT FOUND IT.

Gasket Supply Company
1772 Ludlow Street, Philadelphia, Pa.
Established 1894
Mfrs. of "Right" Gaskets, Gasco Packings, Washers, Shafting, Punches and Dies



GASKET SUPPLY CO., 1772 Ludlow Street, Philadelphia, Pa.

Dear Sirs:

Please let me know under what terms and conditions I may handle the Gasco Economizer.

Name .....

Address .....

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JUMBO SPARK PLUGS

are built to stay on the job under the hardest conditions. We show here our big leader

JUMBO "MOLITE"
Price, $1.25

Guaranteed for the Life of the Car. Other types for Fords and other cars. $0.75 and $1.00. Ask your dealer.

Gibson-Hollister Mfg. Co.
3380 Washington Street,
Jamaica Plain, Mass. 69-36



Settle the MILEAGE PROBLEM— Use

Miles Cheaper

Users Report Records of

8,000
10,000
12,000
15,000
Miles

Quaker City Rubber Co.
Philadelphia

Cementless Tube Patches

Easy to put on—and they stay put.
Reduce your tire trouble and cost generally with

Firestone

Accessories

The finest trouble-insurance for the car owner.
The finest trade-insurance for the dealer.
Send for full information.

FIRESTONE TIRE AND RUBBER CO.
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere

Little Tab Protects Muslin—Handy to Pull Off



Russel

Internal Gear Drive Axles

Let us send you the history of the Internal Gear Drive Axle and tell you how the RUSSEL has been a big factor in its success.



See our sample offer

BURNLEY
SOLDERING PASTE



THE *improvement* you need in your soldering jobs is in this perfect flux. Burnley can't spill out or drip away like a liquid; it can't flow off like rosin. It stays exactly where you put it and closely follows the hot iron. Try this free sample of Burnley—the best. ***Write for it today.***

The Burnley Battery & Mfg. Co.
North East, Pa.
WESTERN ELECTRIC CO., Distributors

★Hartford
SHOCK ABSORBER

Makes every Road a Boulevard



EDWARD V. HARTFORD, Inc.
Heretofore Known as Hartford Suspension Co.
142 Morgan St., Jersey City, N.J.
Branches: New York, Boston, Chicago
Distributors in Principal Cities, Dealers everywhere



ZENITH
CARBURETOR

KNOWN the world over as the zenith of simplicity and efficiency.

A precision instrument giving permanently, exact carburetion for your car.

Zenith Carburetor Co.
Detroit, Mich.

Mosler VESUVIUS Plug



PRICE $1.00 AT ALL DEALERS

Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
New schedule of trade prices.

A.R. Mosler & Co. New York, U.S.A.

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THE MANLEY "EVERY WAY" ENGINE STAND

supports the motor perfectly, while allowing the workman to reach every portion of it with ease and accuracy.

The "Every Way" can be adjusted to every position in a circle—100 positions if desired—but the three most convenient are the Horizontal Position for working on valve mechanism and generally around the engine; the 45-degree Position (shown in cut) for cleaning carbon, grinding in valves, etc.; and the Inverted Position for taking up crankshaft, connecting rod, bearings, etc.

In each position the engine is locked rigidly by two side braces. The "Every Way" supports the engine solidly. It will never become shaky, and should last a lifetime without repairs.

For the Factory motor assembly department no other stand has been brought out that can be compared to the "Every Way" for efficiency and convenience.

The United Engine & Mfg. Co.

"Pioneers in Garage Equipment"

Hanover, Penn.

THE Manley EQUIPMENT



Even the Cash Register Is Happy,—

Happy because **Dutch Brand** Products are sales repeaters. Sales repeaters insure quick turnover. And quick turnover spells more profit.

Auto Patching Cement for repairing tubes with patches that stay stuck—unaffected by friction, heat or carweight.

"2-In-1" Tread Filler—a Liquid Rubber for quickly filling small cuts and gashes in casings before they grow larger. For keeping out fabric-rotting water, oil, road tar and sand.

Radiator-Seal for effectively and quickly repairing damaged or leaky radiators.

Vulcanizing Cement for shop use or with small portable hand vulcanizers. Ensures a quick, even, durable cure.

Other **Dutch Brand** Products Rubber Seal, Varni-Brite, Carbo-Cide, Auto Top and Cushion Coating, Gasket Shellac, Rim-Coat, Black-the-Brass, Tire Talc, Friction Tape.

DUTCH BRAND

A Complete Standard Line

Dealers—Send for illustrated catalog and order a stock from your jobber.

VAN CLE BROTHERS

Manufacturers

The Rubber Cement and Auto Chemical Authorities

7711 Woodlawn Ave. CHICAGO



The Largest Gasoline Cars in the World are fired by Splitdorf Plugs

The 300-H. P., self-propelled, McKeen gasoline rail cars are used for most difficult service in Australia, Mexico and the United States. The high efficiency of these great gasoline cars is another testimonial for the

SPLITDORF SPARK PLUG

With the Green Hexagonal Jacket

Ninety per cent. of all engine troubles are due to faulty ignition. Seventy-five per cent. of them can be remedied at once and forever by the use of Splitdorf Plugs.

These plugs are practically indestructible, positively gas and oil tight. They are as nearly soot-proof as a plug can be. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned.

Made in all sizes and in types to suit every car, motorcycle, motor truck, motor boat, aeroplane, tractor, and stationary gasoline motor. Write for Splitdorf Directory which tells which plug to use in *your* motor.

Splitdorf Plugs sell for one dollar everywhere. If you can't get them from your dealer, send to us for them.

Splitdorf Electrical Co.

Newark, New Jersey



Quality, Service, Price

—are the distinguishing features of our methods, as well as our output.

Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.

Years of steady, unremitting effort have concentrated in

VULCAN QUALITY SPRINGS a Quality of material and workmanship seldom equalled.

Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.

Our determination to divide fairly with dealer and consumer alike has fixed our prices at the lowest level commensurate with good business practice.

Write us today for liberal proposition in territory still open.

Jenkins Vulcan Spring Co.

1402 Chestnut St., St. Louis, Mo

708 Commerce St., Fort Worth, Texas

29 Caldwell St., Sumter, S. C.



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FASCO RACING BODIES

Models
H $115.00
L $85.00
f.o.b. Peoria



"Fasco" Racing Bodies for Fords are what your customers want and will appreciate. Guaranteed workmanship and material, easily mounted, ride without noise. A good proposition waiting for you. Agent wanted in every town. Write for dealers' prices.

FRIED & STONIER CO.
Peoria Dept. 5 Illinois

BOSCH MAGNETO IGNITION

Should be on the engines of those who desire the utmost efficiency and the utmost reliability; also those who desire to be without the annoyance of constant battery attention.

Be Satisfied *Specify Bosch*

BOSCH MAGNETO CO., 224 W. 46th St., New York

Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high-grade welding apparatus for $60.00 (Canada, $75.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



THE PREST-O-LITE CO., Inc.
The World's Largest Makers of Dissolved Acetylene
287 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario

Swinehart



Every Garageman and Mechanic Needs This Book



5 big volumes in one. 512 pages. 217 illustrations, drawings, diagrams and charts. Everything about Parts of the Car; Materials and Supplies; Electricity; Electric Lighting, Engine Starting and Control, and Ignition Parts. Exhaustive 24-page index, listing 1,165 headings under every possible classification. Bound in Black Morocco with Flexible Covers, Gold Lettering and Polished Edges. Price, $2.50. Order yours now.

LAIRD & LEE, Inc.
1734 Michigan Ave. CHICAGO, ILL.

MUNCIE Inter-State INDIANA

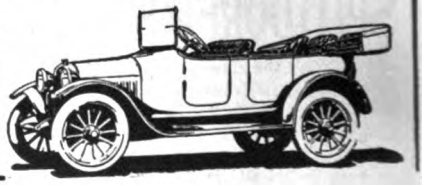
OWNER-PROVED VALUE

Every Inter-State has proved its value definitely and conclusively in the hands of owners.

If you want to know about *proved value* and *actual assets* for either the man who buys or sells cars, write to-day.

Powerful, high speed, long stroke valve-in-head motor. Beautiful streamline body, seating five passengers comfortably. Two unit Remy electric starting, Lighting and Ignition. Over-size tires, both front and rear. Aluminum running boards. Heavily braced crown fenders. The most accessible medium-priced car on the market.

Touring Car..... $850
Roadster $850



INTER-STATE MOTOR CO.
MUNCIE IND.



Ford
THE UNIVERSAL CAR

The best manufacturing methods, combined with the highest grade of materials and the services of specialist workmen, produce a better car at a lower price. Ford cars are built to serve and satisfy under all conditions.

The price of the Runabout, $390; Touring Car, $440; Coupelet, $590; Town Car, $640; Sedan, $740.

Ford Motor Company
Detroit, Michigan

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YOU NEED THIS

Gardner air pump in your garage. It is simple, durable and dependable. Lubrication by an automatic oil splash system. No oil or grease cups used.

The Gardner "Gee Gee" is completely described in booklet AC-15, as is the complete Gardner line of air pumping machinery. Ask for it today.

The Gardner Governor Company, 144 Williamson St. QUINCY, ILL.

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Fisher Bldg. CHICAGO · Singer Bldg. NEW YORK · 54 N. 6th St. PHILADELPHIA · 5 First St. SAN FRANCISCO · 120 E. 3rd LOS ANGELES



SOOTLESS SPARK PLUGS

Have records of a set used 6 years—a set used 48,000 miles.

Manufactured by

The OAKES & DOW CO.

BOSTON, MASS.

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PLUGS PUNCTURES AUTOMATICALLY

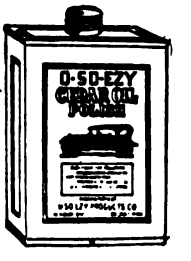
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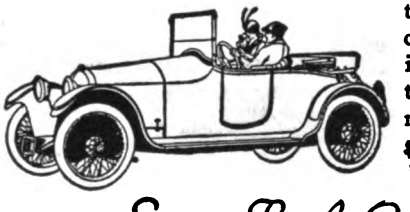
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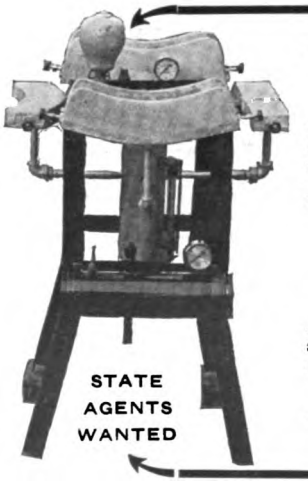
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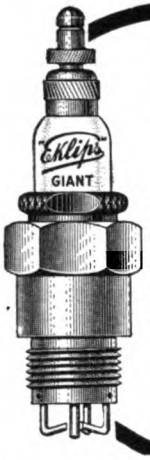
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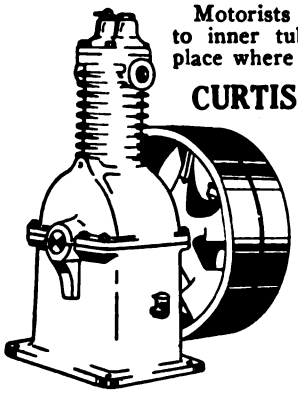
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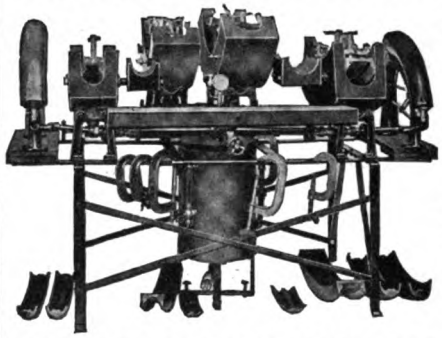
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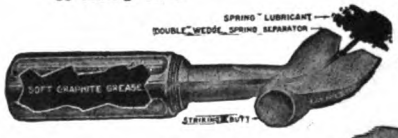


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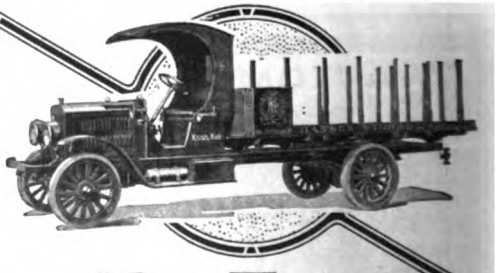
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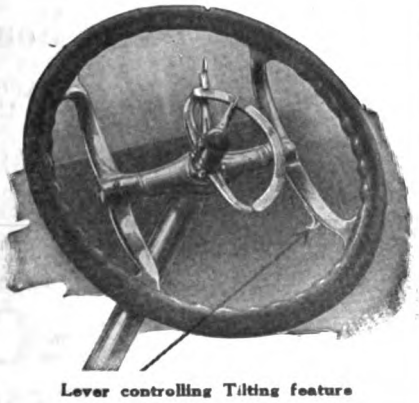
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30x3½	8.95	9.50	2.05
32x3½	10.30	10.85	2.20
34x3½	11.50	12.15	2.25
32x4	14.10	14.85	2.75
33x4	14.65	15.45	2.85
34x4	14.95	15.75	2.90
35x4	15.55	16.50	3.00
36x4	15.80	16.60	3.10
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Tires shipped C. O. D., subject to examination, on receipt of $1.00 Deposit on each tire. If goods are unsatisfactory deposit is refunded.

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33 x 4	2.50	36 x 5	3.90
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32x3½	9.20	9.65	34x4½	17.19	18.75
32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
34x4	13.30	14.25	37x4½	19.45	20.75
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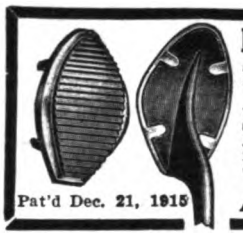
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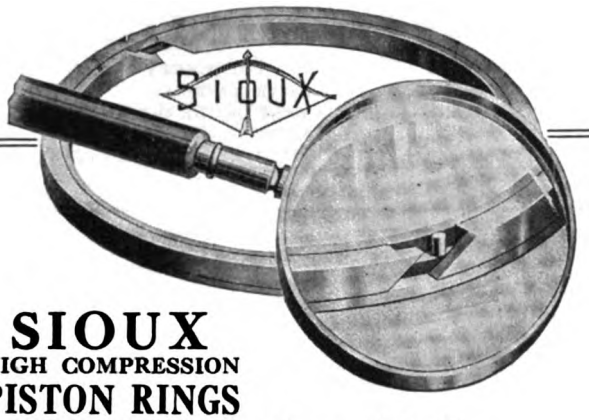
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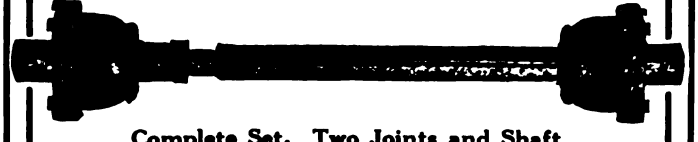
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Advertisers' Index

A

Ahlberg Bearing Co. 107
Allen Motor Car Co. ..... 57 to 60
Alliance Rubber Co. 89
Albertson & Co. 108
Ames Co., F. A. 65
Anderson Steam Vulcanizer Co. 97
Arthur Vulcanizing Machine Co. 86
Auto Pedal Pad Co. 107

B

Bales Distributing Co. 97
Benford Mfg. Co. 92
Blake Signal & Mfg. Co. 107
Bosch Magneto Co. 96
Bower Roller Bearing Co. 84
Brown-Lipe-Chapin Co. 99
Brugan Co. 99
Burnley Battery & Mfg. Co. 94
Burford Motor Truck Co. 66

C

Cassidy, E. A. 78
Champion Ignition Co. 91
Champion Spark Plug Co. 82
Chicago Auto Supply House 107
Chicago Solder Co. 93
Combination Rubber Mfg. Co. ..... 3rd Cover
Connecticut Tel. & Elec. Co. 97
Corbin-Brown Speedometer Co. 3
Craven Co., E. T. 99
Curtis Pneumatic Mchy. Co. 98

D

Detroit Accessories Corp. 81
Disco Electric Starter Co. 54
Duplex Vitalizer Mfg. Corp. 87

E

Eisemann Magneto Co. 62
Engineering & Tube Bending Mach. Wks. 107

F

Fedders Mfg. Co. 99
Firestone Tire & Rubber Co. 94
Fisk Rubber Co. ..... 72 and 73
Forbes, Walter J. 64
Ford Motor Co. 96
Foster Accessories Co., C. H. 56
Fracto Specialty Co. 88
Fried & Stonier Co. 96
Fulton Company 98

G

Gardner Governor Co. 97
Garford Motor Truck Co. 76
Gasket Supply Co. 93
Gibson-Hollister Mfg. Co. 94
Grossman Co., Emil 99
Gulf Refining Co. 88

H

Hartford, E. V., Inc. 94
Hess-Bright Mfg. Co. 110
Hill-Smith Metal Goods Co. 99
Hotel Marie Antoinette 88
Houk Mfg. Co. 96
Hyatt Roller Bearing Co. 74

I

Indianapolis Brush & Broom Mfg. Co. 55
Inter-State Motor Co. 96

J

Jeffery Co., Thos. B. ..... 69 and 70
Jenkins Vulcan Spring Co. 95
Johnson Co., The 2

K

Kelly-Springfield Tire Co. 91
Kissel Motor Car Co. 98
Koehler S. G. Co., H. J., The 92

Digitized by Google

Advertisers' Index

L

Laird & Lee 96
Leather Tire Goods Co 61
Lewis Electric Welding Mfg. Co 109
Longaker Co., V. A 67

M

Manzel, Chas. W 98
Mayo Mfg. Co 89
Merchant & Evans Co 108
Michigan Auto Trailer Co 107
Miller Rubber Co 75
Mitchell-Lewis Motor Co ..... Back Cover
Mosler & Co., A. R 94

N

National Motor Vehicle Co 45
National Rubber Co 53
New Departure Mfg. Co 92
New Era Spring & Specialty Co 107
New Process Gear Corp 98
N. J. Carspring & Rubber Co 51

O

Oakes & Dow Co 97
Oakes Co 97
O-So-Ezy Products Co 97

P

Palmer-Moore Co 63
Picard Co., A. J ..... Front Cover
Pittsburg Elec. Spec. Co 99
Pouvaillsmith Corp 99
Prest-O-Lite Co ..... 85 and 96

Q

Quaker City Rubber Co 94

R

Rayfield Carburetor Co 46
Rayford Co 48
Ross Automobile Co 80
Russell Motor Axle Co 94

S

Saxon Motor Co 77
Scripps-Booth Co 97
Shaler Co., C. A 52
Sheldon Axle & Spring Co 50
Slivex Co 107
Sparks-Withington Co 98
Splitdorf Electrical Co 95
Standard Thermometer Co 98
Stevens & Co 93
Stewart-Warner Speedometer Corp ..... 2nd Cover
Studebaker Corp 1
Sundermann Corp 71
Swinehart Tire & Rubber Co 96

T

Torbensen Gear & Axle Co 68
Twin-Rim Co 86

U

United Engine & Mfg. Co 95
U. S. Ball Bearing Co 49

V

Van Cleef Brothers 95
Vanderpool Co 98
Van Sickien Co 109

W

Walker Mfg. Co 79
Waltham Watch Co 47
Warner Auto Top Co 83
Willys-Overland Co 4

Z

Zenith Carburetor Co 94

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Conserve Power

There are certain heat treatments valves must go through to keep them from warping.

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Don't overlook the valve question. It's a big factor in gas engine building—doubly important with the present heavy grades of gasolene.

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FOR FORD CARS

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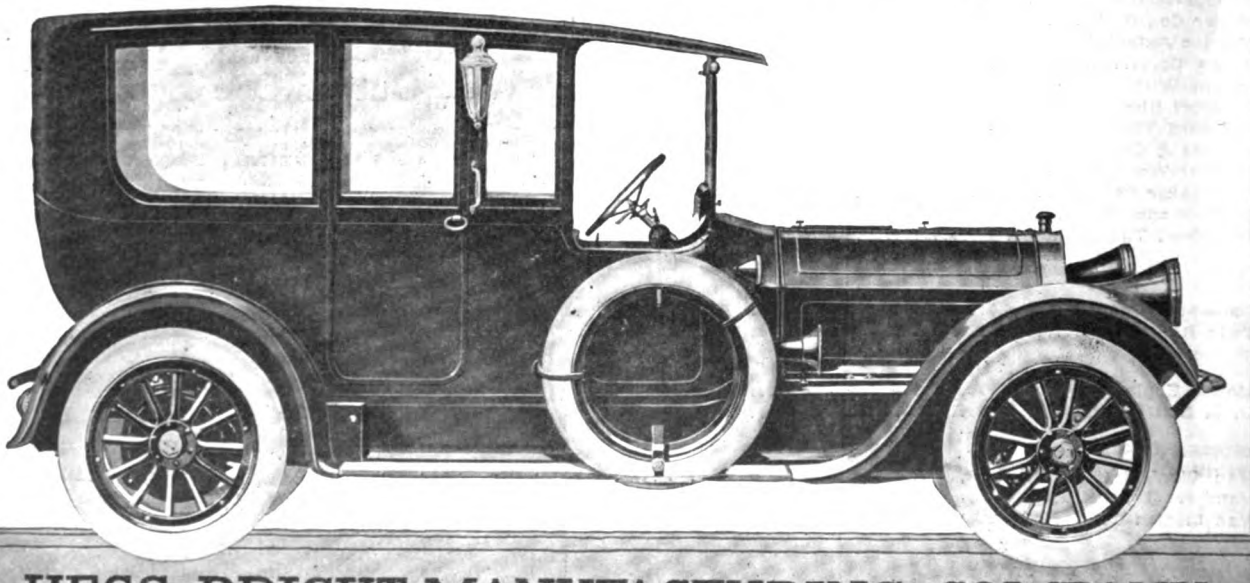
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THE INIMITABLE BEARING

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Hess-Bright Ball Bearings are one of the hallmarks of a high-grade automobile. Their first cost is high---so is the initial cost of a good motor car. The automobile here shown is one of America's best---its manufacturers prefer Hess-Brights.



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We are not the "biggest;" we are too modest to say, boldly, we are the "best"—but to make a better tire than

Combination Tires

is a task that daunts both "biggest" and "best"—because we have made Sea Island cotton, pure rubber and tire-making skill do team-work that others have found impossible.

We've handled the cotton so as to get the last atom of strength in use—

We've so compounded rubber as to generate unheard-of "bounce" and "toughness"—

And we've put them all together to make a tire that sets another and higher standard.

The "Hold-on" Tread

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"A Combination That Can't Be Beat"

THE COMBINATION RUBBER MFG. COMPANY

FLOOMFIELD — Makers of High Grade Rubber Products for Over 50 Years — NEW JERSEY

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

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What do you hear about the latest Mitchells, built by John W. Bate?

They are talked about everywhere, you know. We are spending $500,000 in advertising on the Mid-Year model only. More than 10,000 of our 1916 models are now in the hands of owners.

What do they say?

What We Hear

We hear the greatest praises we ever have heard in our 13 years of car building.

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We hear of one Mitchell which has covered 218,000 miles. We hear of six which have averaged 162,372 miles each, or over 30 years of ordinary service.

We hear of one—in Buffalo—which has run for 150,000 miles at a cost of $8.90 for repairs. And today it covers from 16 to 20 miles per gallon of gasoline.

$100,000 Books

Mitchell dealers have books of letters from owners. One of these dealers has letters from owners who paid $100,000 for their Mitchell cars. He calls it his $100,000 book. Others have smaller books.

We cannot believe that any other car in all history has had so many good things said about it.

John W. Bate Made Good

John W. Bate, the efficiency engineer, has worked here for years in silence. We never told what he was doing until it was done.

He built this mammoth model plant. He cut our factory costs 50 per cent. He made 700 improvements in the Mitchell car. He established big margins of safety. He made oversize parts, used a wealth of Chrome-Vanadium steel. In the latest Mitchell there are 440 parts which are either drop forged or steel stamped. There is hardly a casting left.

He worked for economical production, for economical operation, and for a lifetime car.

He worked for a complete car. The latest Mitchell has 26 features which other cars omit.

Men who know the Mitchell will tell you that John W. Bate made good. And when you know the car he builds we believe you will want to sell it.

Ask us for the facts.

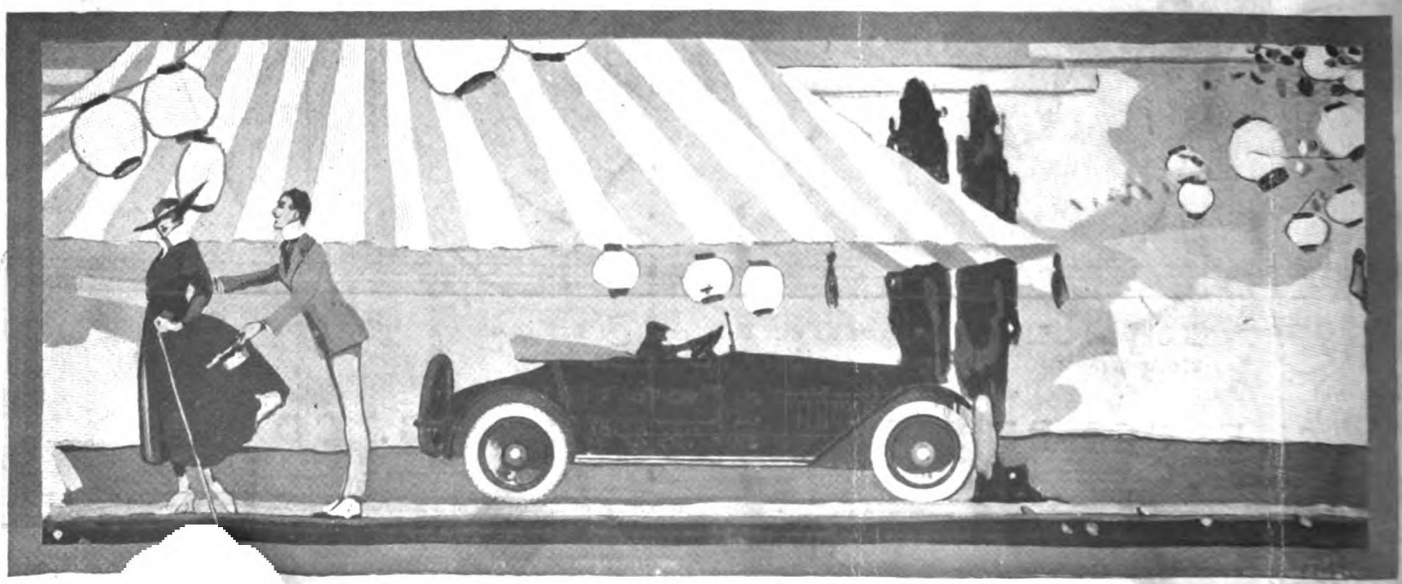
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Racine, Wis., U. S. A.

$1325 F. o. b. Racine

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7-Passenger Touring Body, $35 Extra

High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features.



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for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 5

New York, August 2, 1916

Ten cents a copy
Two dollars a year

Announcing the New

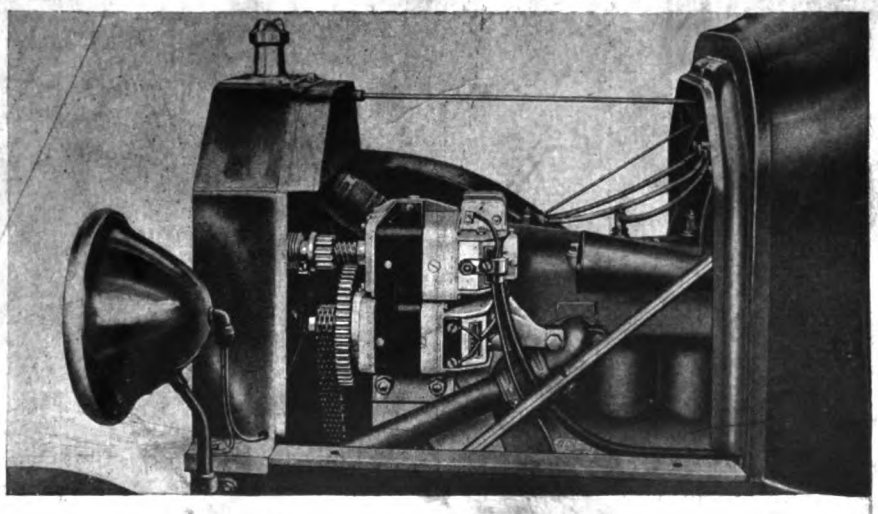
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4,000 a Day

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Dealers who make it a point to install Stewart Vacuum Tanks can do a very easy and profitable business.

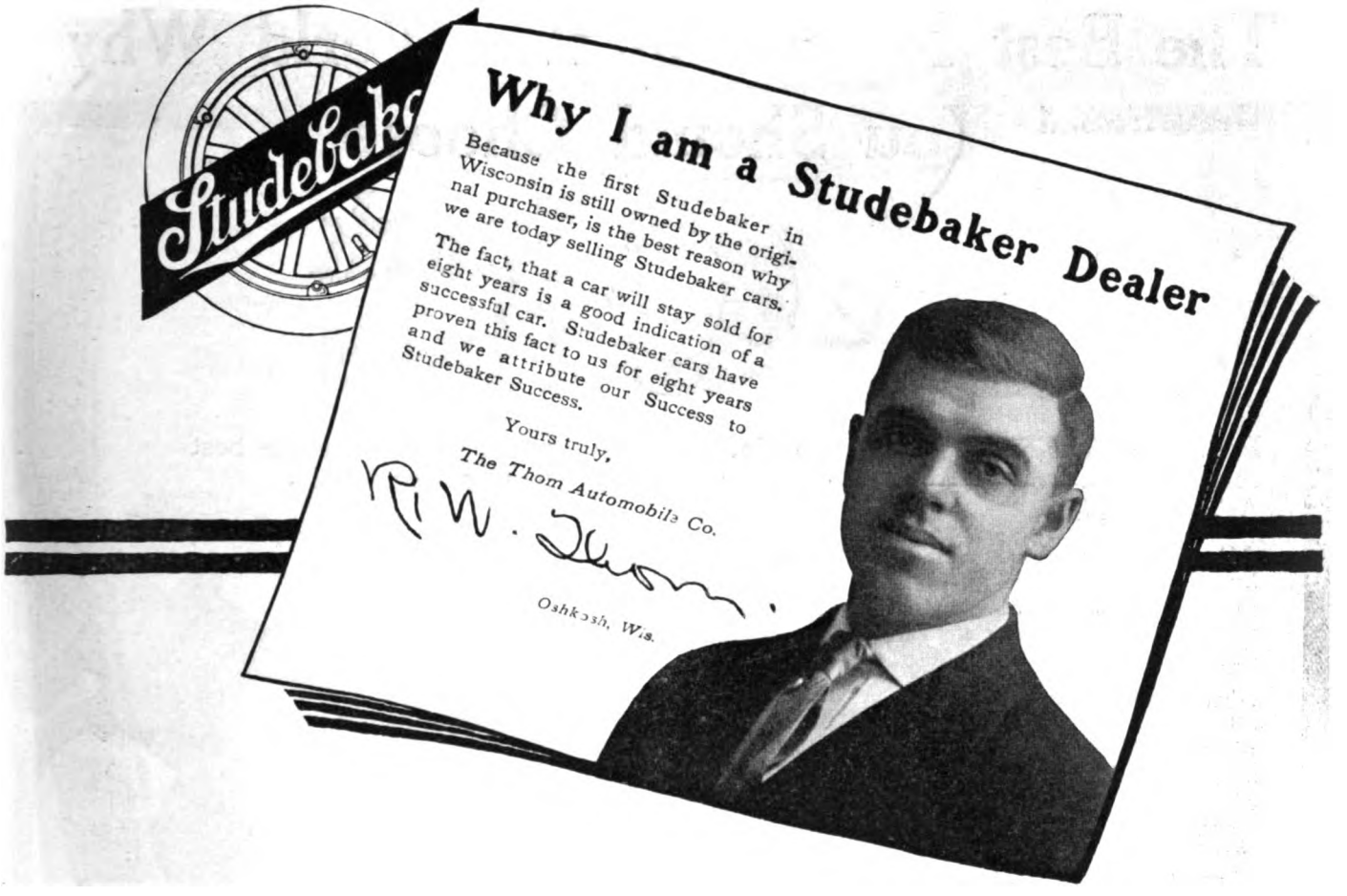
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The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.



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Stearns-Knight
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Champion Ignition Company
Flint, Michigan

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DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

Farm Tractor Service.....6-9
The story of why the motor car dealer is best equipped to handle the farm tractor. The story of the demonstration at Hutchinson, Kan., by Stanley P. McMinn, MOTOR WORLD's staff representative on the tractor circuit.
A Tractor Cartoon..... 5
A Tractor Editorial..... 20
South America and Its Opportunity.....33-35
This southern continent beckons to aggressive men and the cars of the U. S. A. The first story by David Beecroft, MOTOR WORLD's managing editor, who spent ten weeks investigating this field.
1917 Car News
Aland.....18-19
Briscoe.....36-37
Burford Truck..... 16
H. A. L......10-11
Haynes.....38-39
Jeffery.....13-14
Madison..... 15
Stutz..... 35
Ford Drops the Price Again..... 39
And new bodies are to be part of the new line of cars.
Factory News..... 43
Association News..... 42
The Widest Door..... 12
An Electrical Manufacturer Complains..... 21
Are We Feeding the Goose?..... 20
Legal Department..... 17
Repairshop Short-cuts.....22-23
Accessories and Supplies.....24-25
Building Construction.....26-27
Query Department..... 28
System Department..... 29
The Retail News.....30-32
Coming Events..... 44
News Pages.....39-44
Gas Fight in Milwaukee..... 40
Plan New Desert Race..... 41

Advertisers' Index on pages 116-117

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(PATENTED)
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The difference in price between poor electrical accessories and the best ones is not all represented in the bearings. But it is a significant fact that most ignition apparatus, lighting generators and starting motors with a service value actually represented by their price, carry "NORMA" Ball Bearings.

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THE NORMA COMPANY OF AMERICA
1790 BROADWAY — NEW YORK
BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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Overland



What Is Happening in Syracuse

Here is a reproduction of an advertisement written and placed by our dealer in Syracuse, N. Y.

It speaks for itself.

In 1911—just five short years ago—this Overland dealer ordered only 200 cars.

But this initial order has increased year by year—and 1916 already sees a total of 2100 cars.

A gain of 1000 per cent in five years.

Overland popularity increases business for thousands of Overland dealers.

The Willys-Overland Company, Toledo, Ohio

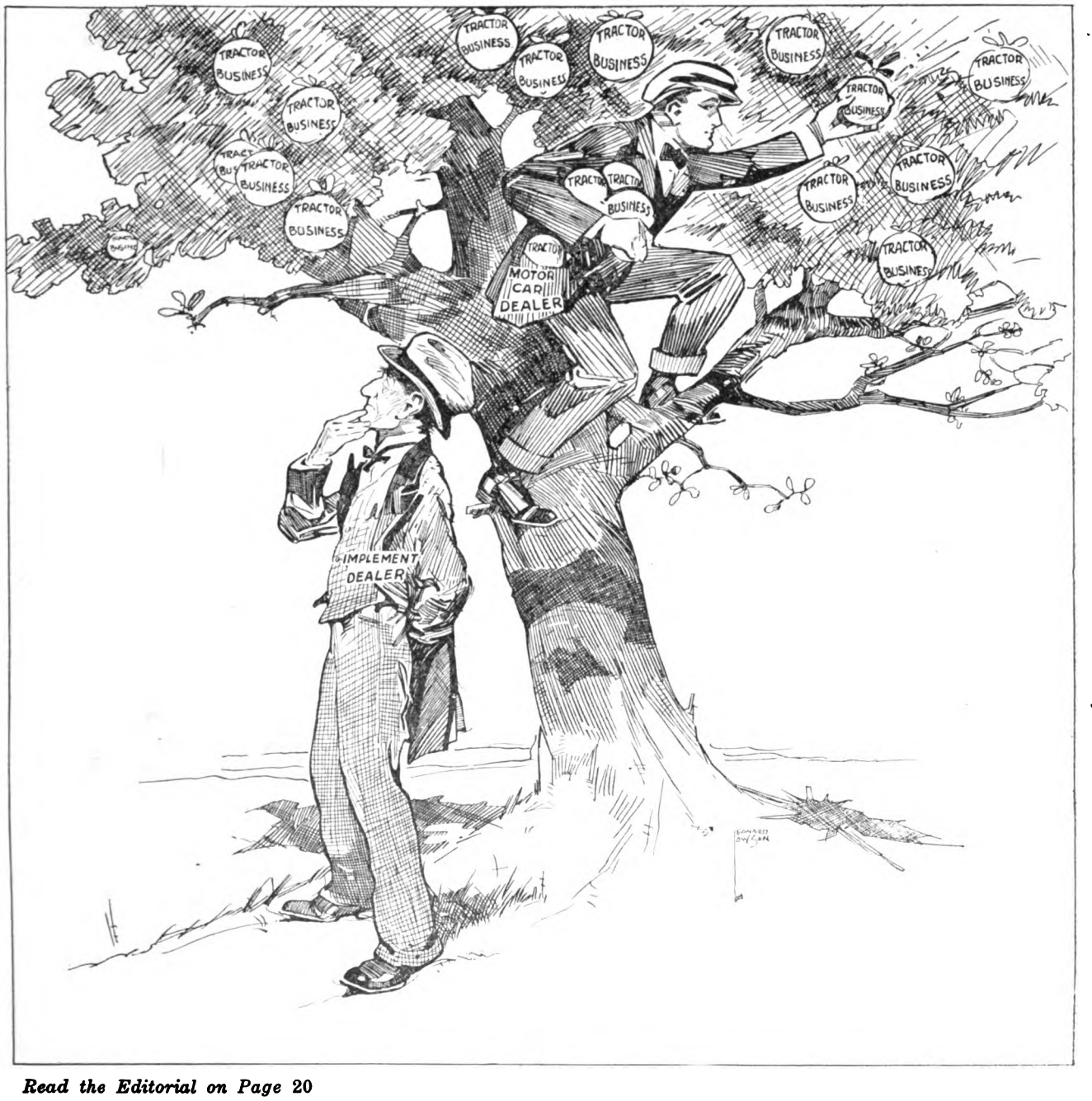
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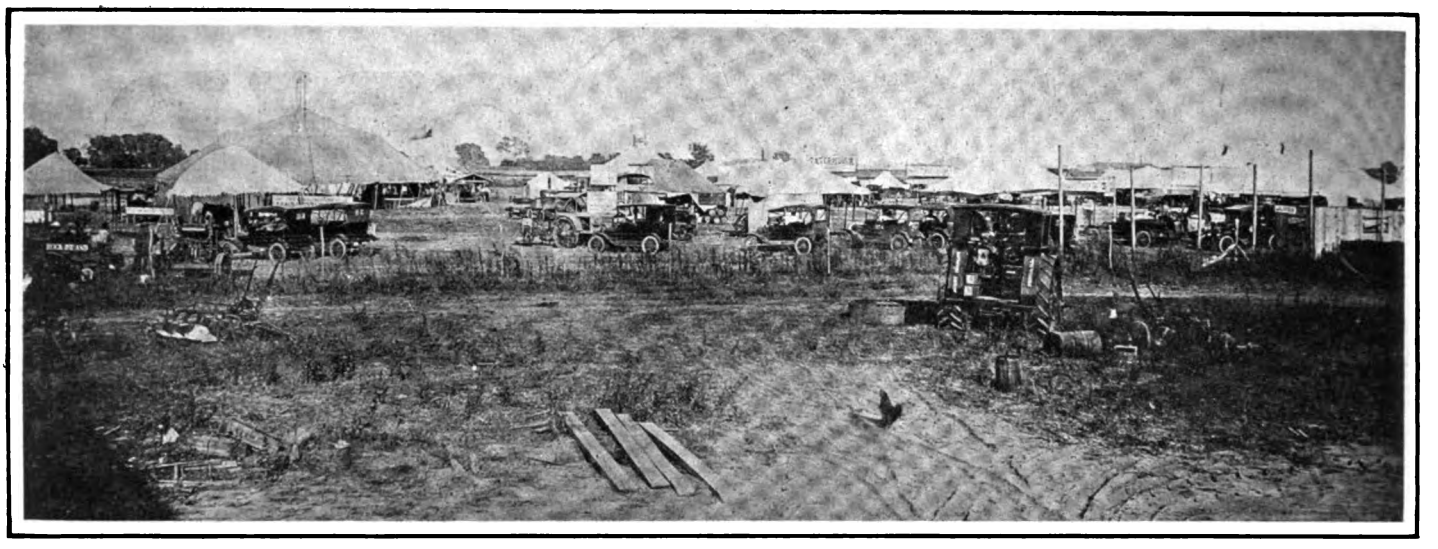
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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

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Spizzerinktum Counts!


TRACTOR BUSINESS
TRACTOR BUSINESS
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The tractor field at Hutchinson tried both machines and men. Hot sand threw back the blistering heat of the sun and the all-day chugging of the motors showed up the unenduring physical qualities of the flesh-and-blood horse

Mr. Tractor Dealer and His Tractor Service

WHAT kind of service is needed by the tractor industry? MOTOR WORLD'S special staff representative, at the demonstrations, has found that the only service that will make the tractor industry big, successful and satisfactory to users is the service of the type given by the motor car dealer. And the only one who knows how to give this service is the dealer in cars. He is, for this and many other reasons, the logical tractor distributer.

By Stanley P. McMinn

Motor World staff correspondent with the Tractor Circuit

HUTCHINSON, KAN., July 28—Service will play a big part in the tractor business of the future. And the dealers who will be the leading dealers will be those who give the best service.

Also, the dealers who give the best business-building service will be those to whom the tractor manufacturers, once they have thoroughly investigated, will pin their hope for the future of the industry.

What service there has been up to now has been manufacturer-given. The implement man knows no such system as the motor car man terms service. But, despite a lesser need for it, there MUST be service, for the farmer with a broken tractor wants a new part NOW, and not "as soon as I can get it from the nearest factory branch."

The manufacturer needs service—needs it more than he now knows. And the motor car dealer is the one—and only one—who knows how to give it to him.

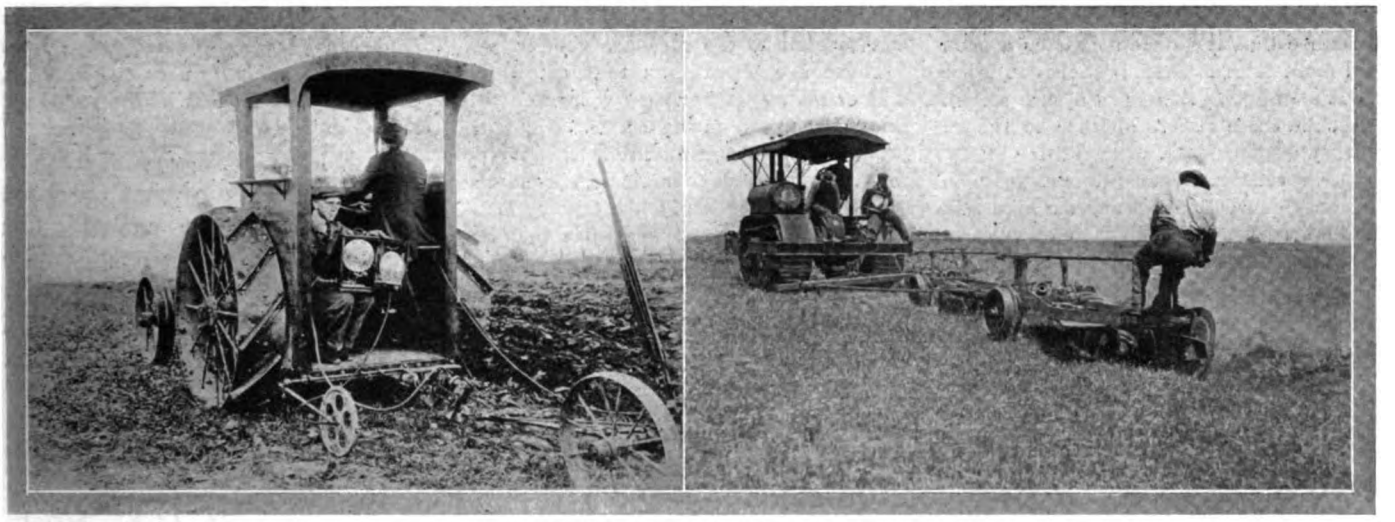
Some repair and service work is at present going to the garageman and the motor car repairshop. These men are getting a little of it already, and quite likely they will get a lot more in the not far-distant future. In this connection it is significant that one manufacturer is quite frank in his statement that *motor car dealers on his list are far and away ahead of implement dealers, for the simple reason that they are fully equipped to give real service when necessary and because they have spare parts right on their shelves.*

With very few exceptions tractor manufacturers tell me that there is no reason in the world why the garageman and the repairman should not continue their drive for tractor business and get it. You know, human nature is much the same the world over and what holds in the pleasure car field holds also in the tractor field. When a man wants service he wants it quick. And so long as he gets quick service he is not greatly concerned with the cost of the service. *Speed is the primary consideration; price the secondary.* This the implement dealer does not seem to have fully realized as yet. Whether he ever will realize it time only will tell. But in the meantime the motor car dealer, the garageman and the repairman know all about it.

The implement dealer's method of handling service is crude, even though it APPEARS satisfactory. But it is factory service, not dealer service. Practically every factory whose tractors are handled by an implement dealer has a number of branch houses scattered over the country in the principal farming centers. These branch houses each have a certain number of service men. These are not allotted to any particular territory but have their headquarters at the branch.

Immediately some owner telephones or telegraphs that something is wrong one of these factory service men is dispatched to the seat of trouble. Generally he can right the trouble in a short time, after which he gets in communication with the branch house and may be sent directly to some other owner. Otherwise he returns to headquarters and is ready for the next call—but what a cost!

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The Hyatt Roller Bearing Co. has perfected a hydrostatic tester for measuring the pulling power of tractors. The pull is measured on the dials held by the man seated on the driver's platform. The device also records variations in pull

These men invariably are experts on their respective tractors. They are expected to be able to make any repair, from replacing a petcock to pouring a bearing or putting in a new crankshaft. In one case these service men are something more besides. They are missionaries and also salesmen. When they fix up a farmer's tractor they go to see his neighbor, who may be a prospect. If possible they close a sale on the spot, and at least they do valuable missionary work. For the most part, however, service men are nothing else.

The Difference Is PARTS

The one big difference between car-dealer and implement-man service is in the handling and supplying of parts. *Implement dealers seldom, if ever, carry any spare parts whatsoever.* If they need parts they must go to the nearest factory branch, which is the one under which they operate. At first this may seem hard on the tractor owner who may go to his dealer in a hurry for a part. But this is not the case, although it may be hard on the manufacturer who finds this representation inadequate. There are so many factory branches and they are so well distributed that it would be hard to find a farmer so remotely located that he would have to wait more than 2 days for a part; but this is NOT dealer service as the car man views it.

The implement dealers state that this method of rendering service and stocking spare parts is "quite satisfactory," and, so far as I have been able to ascertain, not one of them has attempted to alter the method or to improve on it. Here and there you find an implement dealer with a very limited stock of parts; but ONLY here and there.

This stock almost invariably is sold him on a cash basis by the factory. One factory will consign a limited stock to a small dealer; but to a bigger dealer, one who may become a competitor, a deal would be made only on a C. O. D. basis.

Contrast this now with the method that is being put in force by those motor car men who have gotten into the tractor business. *These men almost invariably contract at once for a generous supply of spare parts and pay cash for them.* But the amount of cash put into parts seldom is great. One factory states that a stock of parts sufficient for all ordinary needs can be put on the dealer's shelves for from $200 to $300—a comparatively small cost. (This factory produces a small tractor rated at 10-20 hp.—10 hp. at the drawbar and 20 at the belt.) After this stock has been put in the factory will ship parts to the dealer on open account, 30 days, but requires a deposit of at least $500 to guarantee credit.

NEXT WEEK
Tractor Accessories and Their Possibilities

For the most part tractor manufacturers are trying to eliminate the need for service. Many factories operate schools where their purchasers are thoroughly instructed in the care and repair of the machine. Others send factory men into various territories, and these men get communities of owners together and lecture to them.

Some Good, Some Bad

Again, most instruction books that go with tractors are far more complete than similar books issued by motor car dealers. One that I have in mind illustrates with photographs every step in starting the tractor and every step in making such simple adjustments and repairs as may be necessary. Another, however, is as bad as this one is good, for what does it suffice to tell a man who has never run a tractor before to "see that all wires are properly connected" and then fail to give him a wiring diagram?

An interesting feature of the exhibits made by a few of the manufacturers at the demonstrations are boards of parts, with each part carefully labeled and priced. These bring home to the prospect in a graphic manner not only the low price of the parts—and the price really is low—but also their construction and appearance. One manufacturer even went so far as to add beneath the price of each part the location of the nearest branch house where it could be obtained.

Not a Knotty Problem

It has been said that the farm tractor would present an extremely knotty service problem. But actually this is not so. Investigation among tractor users, among implement dealers and among motor car dealers who are handling tractors makes this plain. The tractor owner requires a minimum of service, and there are a number of reasons why this is so.

First and foremost is the fact that tractors are ruggedly and simply built. There is not the influence of the sales department to hamper the designer getting exactly what he wants regardless of appearance. Curves and pretty paint have no place in or on the tractor. In consequence parts are big and heavy, and nuts and bolts are almost elephantine in size, judging by motor car standards. Similarly, there are not many of them.

Secondly, while at first it might appear quite the contrary, tractors are not subjected to the intense vibration that tears at the vitals of the motor car. Jolts that come of plowed fields are big and some of them are quite heavy, but there is little real vibration. The cushioning of the earth takes up some, but the most important reason for the absence of vibration is the comparatively low speed at which the motors run.

Again, they run at almost constant speed and for the most part are carefully governed. There is not the destructive effect that comes of undue racing of the motor. Furthermore, the farmer has come to take good care of his tractor. Time was when he left his implements in the field, and the tractor

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along with them. But of late he has come to realize that it harms a tractor a good deal more than it harms a horse to leave it out all night, perhaps in a rain storm.

So, all these things operate to reduce service requirements. One tractor manufacturer tells me that all last year he had only one call for a service man and all that service man had to do was to tighten the fan belt.

Of course, there are other conditions which almost, if not quite, counterbalance these. There is the dust problem, with the cutting of bearings, pistons and piston rings; there is the fuel problem and carbon deposits; there are lubrication and cooling troubles, which are more or less foreign to the pleasure vehicle.

These are the things that cause the tractor manufacturer real worry and will impose a burden on the dealer. Breakage of parts is at a minimum. Seldom do replacements have to be made. It may be that in a year or two, when tractor manufacturers attempt to use what they believe to be better material and less of it, that the breakage factor will become higher. But at present this is negligible.

It is replacements because of wear that is making service necessary. Of course, wear in time means breakage, but this is not what I mean.

Breakage in service is a serious proposition, as the loss of half a day may mean, and frequently does mean, the difference between a loss and a profit on a crop.

And here is where the motor car dealer's type of service counts. It is service that satisfies, and since satisfied users are essential to the well-being and growth of the tractor industry, it seems vain to believe that the tractor manufacturer will overlook the one best bet for his own salvation.

Kansas Soil, Hard and Dry, Tries Tractors

Sometimes Three Men Have to Ride the Bottoms to Get Them Down— But Deeper Plowing Means Greater Wealth for the Farmer

By Stanley P. McMinn

HUTCHINSON, KAN., July 27—Kansas soil is provng a difficult test for the farm tractors that have been brought here for the second of a series of eight National Tractor Demonstrations, started July 18 in Dallas, Tex. The Kansas demonstration was officially opened on Tuesday and from then until now the grounds have been thronged. The attendance is, perhaps, not quite as good as it was at Dallas, because there is not as great an area from which to draw and because railroad facilities are not as good. Still, the crowd is an excellent one and has been drawn from the farthermost corners of the State.

Some Sales Already

A fair number of bona fide sales already have been made, though few dealer and distributer contracts have been signed to date. Manufacturers are now signing prospects obtained at the Dallas demonstration, many of them having left men behind for the purpose, so likely much of the business here will be deferred until after the furore of the demonstration has subsided somewhat.

In a measure this is an encouraging sign, for it makes plain that such contracts are not being signed merely on momentary enthusiasm or because of a type of hysteria peculiar to gatherings of the kind. Generally, careful investigation precedes the making of contracts.

That the demonstration will stimulate sales, there seems no doubt. Of late, owing to a long-continued drought and to partial failure of wheat and corn crops, due to too much early rain, implement dealers and motor car men handling tractors have assumed a condition of lethargy which has not augured well for sales. In fact, sales have fallen off quite noticeably since the first of the year and tractor manufacturers look to this demonstration to bolster up the courage of dealers and to inject new life into the trade.

The absence of rain throughout Kansas is having somewhat of a double-barreled effect. In the first place it has retarded the corn crop to such an extent that dealers state that if no rain falls within a short time fully two-thirds of their accounts will have to go over until next spring. And in the second place it has left the ground almost stony hard where uncultivated and given tractor manufacturers the hardest kind of plowing to do.

A supplementary effect, and an altogether important one, is that no one of the tractors has failed to make good in the demonstration. Thus, farmers and dealers who would be impressed by tractor plowing under ordinary conditions are doubly impressed by the good work being done under the present adverse conditions.

It is true that during the first day of plowing many more or less tortuous furrows were plowed, and that in some cases it was necessary to have as many as three men on a gang of three plow bottoms in order to get the plows in and to keep them in. But notwithstanding, this is not held against the tractors, but is rather taken as an indication of their ability, for it is realized that horseflesh could not plow under similar conditions—that is, without at least four horses to a bottom instead of the usual two.

Now Measure Pull

This year, tractor manufacturers and those who view the demonstrations have a definite means of knowing exactly how much work a tractor must do to pull its plows. Each morning, before the plowing is started, dynamometer tests are made to ascertain the average draft per plow bottom in various parts of the field. These figures, obtained with a hydrostatic dynamometer developed and operated by the Hyatt Roller Bearing Co., are then posted at the test furrow where they are obtained.

Knowing the power of the tractor, which is displayed on a sign carried by the machine, and the number of plow bottoms pulled, spectators can then refer to the test draft figures and make allowance, if necessary for the condition of this part of the field. The average draft per bottom on Tuesday, the first day, was 710 lb. However, the draft varied widely over various parts of the field, some spots being almost stony hard and very dry and other parts being quite sticky.

Soil Is Different

The character of the soil is quite different from that in Texas and moldboard plows are used almost exclusively. It is admitted that better results might be obtained, at least insofar as the tractors are concerned, if disk plows were used, but Kansans are wedded to moldboards and they are used in the demonstration for this reason. In Texas it is almost impossible to use moldboard, because it will not scour, due to the sticky soil.

Does Kansas need the tractor? Will the tractor prove a success in Kansas? These two questions are perhaps best answered by referring to the work done a year ago in the demonstration. But first let us examine conditions in Kansas up to about a month or two ago.

There had been exceedingly heavy rains. So heavy were they in fact that in the great wheat belt the land was left soggy and entirely full of water. This naturally retarded the wheat. Subsequently there has been a month-long drought, which has dried out that water very quickly and left the ground very hard. The net effect has been that, whereas Kansas had a banner year last year, getting an average of nearly 30

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bushels of wheat to the acre, this year's average is expected to be between 6 and 9 bushels an acre.

Now examine into what the tractors did last year.

The field that was plowed last year in the demonstration already has yielded an average of 24½ bushels of wheat to the acre, as against the figure of 6 to 9 bushels for adjoining fields.

What better argument could be wanted for the genuine need of the tractor in Kansas? Why this great difference, you say? Briefly stated, the reason is DEEPER PLOWING.

The Kansas farms which this year are yielding only 6 to 9 bushels of wheat per acre were plowed only 5 and 6 in. deep last year. *The demonstration field that has given a crop of 24½ bushels to the acre was plowed to a depth of 9 to 10 in.*

In short, this has proved a great object lesson on the benefits of deep plowing in Kansas. It has shown farmers and dealers that deep plowing not only provides for excessive rain by permitting the ground to soak it up, but that it provides equally as well for drought by permitting the ground to give up this stored moisture when it is needed.

Not all land can be economically plowed as deeply as this. Where there is a layer of clay beneath the top soil it may prove detrimental to throw this up over the good soil. For example, the United States Department of Agriculture experimental station in Texas has demonstrated that 7 in. is about the proper depth for Texas. This department has compiled figures on nearly every farmed area in the country and these figures are easily available. But they are not always as easily lived up to unless the plowing is done with a tractor.

Kansas grows each year an average acreage of 16,000,000 in wheat and corn, and agricultural experts inform me that at least 40 per cent of this acreage can be cultivated with the farm tractor. In all, there are some 177,840 separate farms in Kansas, according to the 1910 census. Of these, 61,286 are between 175 and 499 acres in extent—almost the ideal size for the small tractor. There are 57,879 between 100 and 174 acres, 10,475 between 500 and 999 acres, and only 3360 over 1000 acres. Of really little farms—under 50 acres—there are only about 18,000.

Practically all of this is gently undulating land, with no great impediment to power farming.

Hutchinson has been admirably chosen as the scene of the Kansas demonstration. Reno County is virtually the center of the great Kansas wheat belt. Within a circle having a radius of 75 miles and having its center at Hutchinson there is grown fully 65 per cent of the Kansas wheat production and 42 per cent of its corn. Also, one-third of the population of the State is in this area.

Reno County itself last year averaged between 20 and 30 bushels of wheat to the acre, but this year the average will fall below 9 bushels, in the estimation of crop experts. Farther west in the State, however, conditions are more nearly normal. Corn has suffered to such an extent that the crop will be from one-third to one-half of last year's.

Kansas is one of the few States which has made a census of its farm tractor users, though the figures are not strictly accurate, owing to the difficulty of getting returns and because of the constant influx of new machines. The census shows that Kansas had about 2500 tractors the first of this year, but that number may have increased to 3500, and in the estimation of quite a few probably has done so.

It is difficult to estimate, or even to guess, how many tractors Kansas will absorb this year.

Gasoline is used here to a slightly greater extent than was the case in Texas. Strictly speaking, however, it is not gasoline, but is better styled naphtha. Gasoline here is defined as having a gravity higher than 58. Gasoline tractors, however, are burning fuel which measures about 57.3 Beaume. This fuel costs 18.3 cents per gallon. Kerosene measures about 44 and is selling this week for 7.3 cents.

The accessory demonstration here is much larger than in Dallas and is drawing a much larger crowd. Except in isolated incidences, dealers are not attempting to sell tractor accessories and few of them are selling them. What business is done generally is direct between the manufacturer of the device and the purchaser. The exhibitors are:

McQuay-Norris Mfg. Co., St. Louis; Cudahy Refining Co., Kansas City; Indian Refining Co., New York; Eisemann Magneto Co., New York; Hyatt Roller Bearing Co., Tractor Bearings Department, Chicago; National Refining Co., Cleveland; Waukesha Motor Co., Waukesha; Sumter Electric Co., Chicago; Domestic Engineering Co., Dayton; Balso Oil Co., Toledo; Vacuum Oil Co., Chicago; Byrne-Kingston & Co., Kokomo; Kokomo Electric Co., Kokomo.

Makers plowing the first day follow:

The Demonstrators at Hutchinson

Advance-Rumely Thresher Co., La Porte, Ind.—12-24, gasoline, drawing 3-gang Rumely moldboard; 15-30, kerosene, drawing 3-gang Rumely moldboard; 30-60, kerosene, drawing 16 Sanders disk plows.

Allis-Chalmers Mfg. Co., Milwaukee—10-18, gasoline, drawing 2-gang Case moldboard.

Aultman-Taylor Machinery Co., Mansfield, Ohio—30-60, gasoline, drawing 10-gang P. & O. moldboard; 18-36, gasoline, drawing 6-gang P. & O. moldboard.

Avery, B. F. & Sons, Louisville, Ky.—5-gang Avery moldboard; 40-80, kerosene, drawing 8-gang Avery moldboard; 18-36, kerosene, drawing 4-gang Avery moldboard; 12-25, kerosene, drawing 3-gang John Deere moldboard; 8-16, kerosene, drawing 3-gang John Deere moldboard; 5-10, kerosene, drawing 2-gang Grand Detour moldboard.

Avery, B. F. & Sons, Louisville, Ky.—10-20, gasoline, drawing 2-gang Avery disk plow; 10-20, gasoline, drawing 2-gang Avery moldboard.

Bates Machine Co., Joliet—13-30, kerosene, drawing 3-gang Grand Detour moldboard.

Bull Tractor Co., Minneapolis—10-20, kerosene, drawing 3-gang Case moldboard.

Bullock Tractor Co., Chicago—12-20, gasoline, drawing 2-gang Grand Detour moldboard; 20-30, gasoline, drawing 3-gang Grand Detour moldboard.

Case Threshing Machine Co., J. I., Racine—9-18, gasoline, drawing 2-gang Grand Detour moldboard; 10-20, kerosene, drawing 3-gang Grand Detour moldboard; 12-25, kerosene, drawing 4-gang Sattley moldboard; 20-40, gasoline, drawing 5-gang Sattley moldboard.

C. O. D. Tractor Co., Minneapolis—13-25, kerosene, drawing 3-gang Oliver moldboard.

Dauch Mfg. Co., Sandusky, Ohio—15-35, gasoline, drawing 4-gang La Crosse moldboard.

Dayton-Dick Co., Quincy, Ill.—12-18, gasoline, drawing 4-gang Sanders disk plow.

Denning Tractor Co., Cedar Rapids, Ia.—10-18, kerosene, drawing 2-gang Janesville moldboard.

Electric Wheel Co., Quincy, Ill.—12-25, kerosene, drawing 3-gang P. & O. moldboard.

Emerson-Brantingham Implement Co., Rockford—12-20, model L, kerosene, drawing 3-gang Emerson moldboard; 20-35, Big Four kerosene, drawing 5-gang Emerson moldboard.

Ford Tractor Sales Co., Minneapolis—8-16, gasoline, drawing 2-gang Grand Detour moldboard.

Gray Tractor Co., Minneapolis—15-25, gasoline, drawing 3-gang John Deere moldboard.

Happy Farmer Tractor Co., Minneapolis—8-16, gasoline, drawing 2-gang La Crosse moldboard.

Hart-Parr Co., Charles City, Ia.—38-60, kerosene, drawing 8-gang La Crosse moldboard; 23-35, kerosene, drawing 6-gang La Crosse moldboard; 15-22, kerosene, drawing 3-gang La Crosse moldboard.

Holt Mfg. Co., Peoria—60-90, gasoline, drawing 12-gang John Deere moldboard; 25-45, gasoline, drawing 6-gang Grand Detour moldboard.

International Harvester Co., Chicago—15-30, Titan, kerosene, drawing 4-gang P. & O. moldboard; 10-20, Titan, kerosene, drawing 3-gang Grand Detour moldboard; 12-25, Mogul, kerosene, drawing 3-gang John Deere moldboard; 8-16, Mogul, kerosene, drawing 2-gang Oliver moldboard.

Kansas City Hay Press Co., Kansas City—12-25, gasoline, drawing 3-gang Case moldboard.

Killen-Straite Mfg. Co., Appleton, Wis.—25-30, gasoline, drawing 3-gang Grand Detour moldboard.

Kinnard-Haines Co., Minneapolis—30-50, kerosene, drawing 8-gang John Deere moldboard; 15-25, gasoline, drawing 4-gang P. & O. moldboard.

McIntyre Mfg. Co., Columbus, Ohio—(Farmer Boy)—10-18, gasoline, drawing 2-gang La Crosse moldboard.

Minneapolis Steel & Machinery Co., Minneapolis—40, kerosene, drawing 10-gang John Deere moldboard; 25, kerosene, drawing 6-gang Grand Detour moldboard; 15, kerosene, drawing 4-gang Grand Detour moldboard.

Moline Plow Co., Moline, Ill.—6-12, gasoline, drawing 2-gang Moline moldboard.

Nilson Farm Machine Co., Waukesha, Wis.—24-36, gasoline, drawing 4-gang La Crosse moldboard.

Parrett Tractor Co., Chicago—12-25, gasoline, drawing 3-gang Grand Detour moldboard.

Peoria Tractor Co., Peoria—10-20, gasoline, drawing 3-gang P. & O. moldboard.

Pioneer Pony Mfg. Co., Winona, Wis.—12-25, gasoline, drawing 3-gang Grand Detour moldboard.

Rock Island Plow Co., Rock Island (Heider)—10-20, gasoline, drawing 3-gang Rock Island moldboard.

Simplex Tractor Co., Minneapolis—15-30, gasoline, drawing 4-gang La Crosse moldboard.

Standard-Detroit Tractor Co., Detroit—10-20, gasoline, drawing 2-gang Oliver moldboard.

Sweeney Tractor Co., Kansas City—15-2500 lb. drawbar, gasoline, drawing 3-gang P. & O. moldboard.

The Russell & Co., Massillon, Ohio—30-60, kerosene, drawing 8-gang P. & O. moldboard; 12-24, kerosene, drawing 3-gang P. & O. moldboard.

Waite Tractor Co., Elgin, Ill.—8-16, gasoline, drawing 2-gang Janesville moldboard.

Wallis Tractor Co., Racine—26-44, kerosene, drawing 4-gang Case moldboard.

Waterloo Gasoline Engine Co., Waterloo, Ia.—12-24, kerosene, drawing 3-gang Grand Detour moldboard.

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Valve-in-Head H-A-L Twelve Attractive and Powerful

Price $2,100-Runabout and Seven-passenger Bodies-Motor Accessible

HANDSOME appearance and extreme power characterize the H-A-L twelve, which was announced by the H. A. Lozier Co., Cleveland, last winter, but production of which has only now begun. It sells for $2,100, either as a seven-passenger touring car or as a roadster.

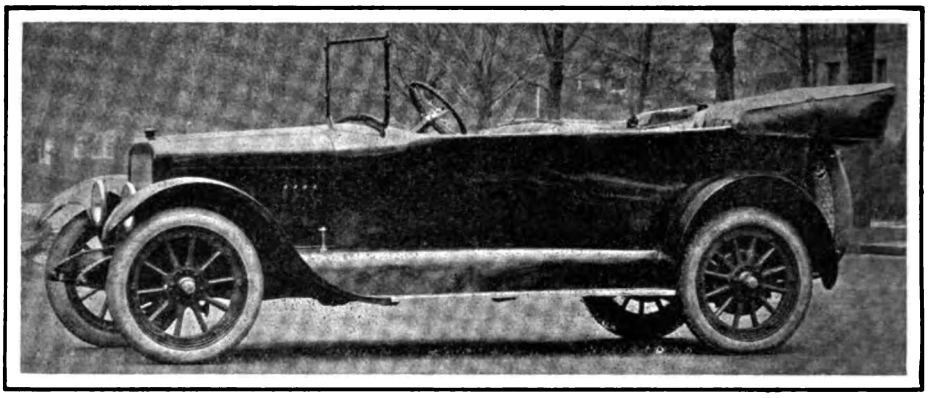
With a motor that is capable of developing 90 hp. and a gear ratio of 4 5/11 to 1, great hill-climbing ability and unusual power of acceleration may be expected. Yet the maximum speed of the motor is so high—more than 3600 r.p.m. —that the car is speedy even with the low ratio.

It has an overhead-valve, twelve-cylinder engine, 2⅞ x 5. The drive is taken through a disk clutch, three-speed gearset and open driveshaft fitted with two universals. The final drive is a Timken floating axle, and the rear suspension is by semi-elliptic springs.

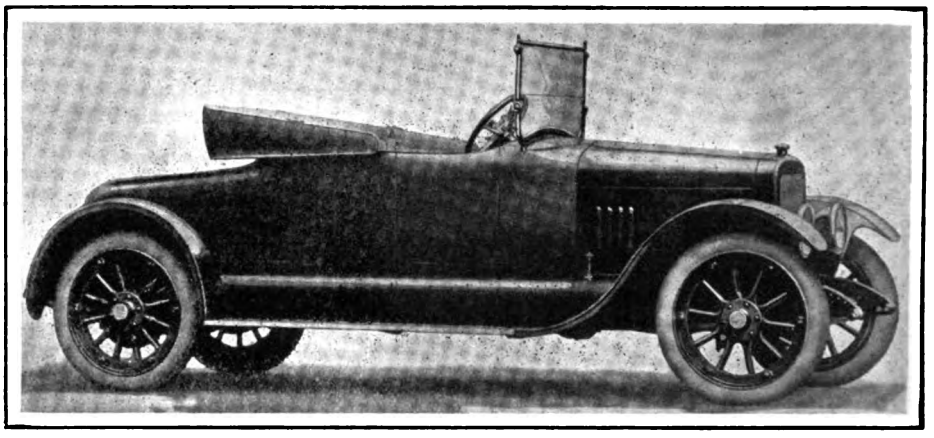
Sturdiness of chassis construction is notable. The frame is a straight tapered design reinforced by four large crossmembers, and the wheel equipment is ample for the car's weight, the tires being 34 x 4½.

Because of the valve-in-head construction practically the only thing between the blocks is the carbureter, which is a commendable construction. The valves are inclosed by four cover plates.

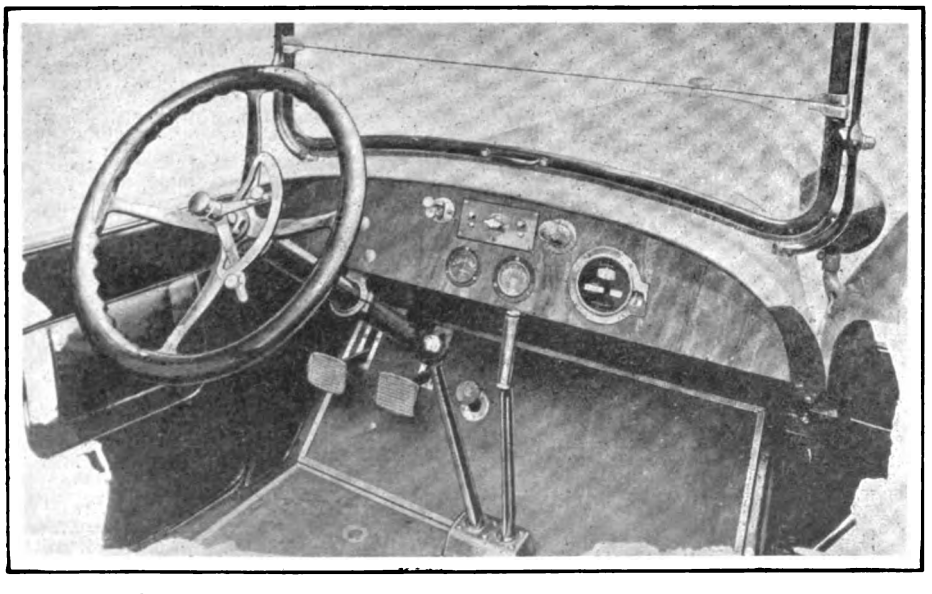
On the right side of the engine are located the starting motor, the generator and the water pump. Thus only one extra driving gear is required besides the timing gears. The fan is driven by a pulley on the front of the generator and water-pump shaft, and at the rear of the crankcase, just back of the cylinder blocks, is the vertically mounted ignition distributor of Remy make. This is driven from the rear end of the camshaft by a helical gear. The position of these units leaves ample room for the exhaust manifold for the right block, hence the layout seems to provide for every requirement without giving the appearance of having to squeeze any unit in.



Unbroken lines from radiator to tire carrier characterize the H-A-L



The runabout is mounted on the same chassis, and sells for the same price

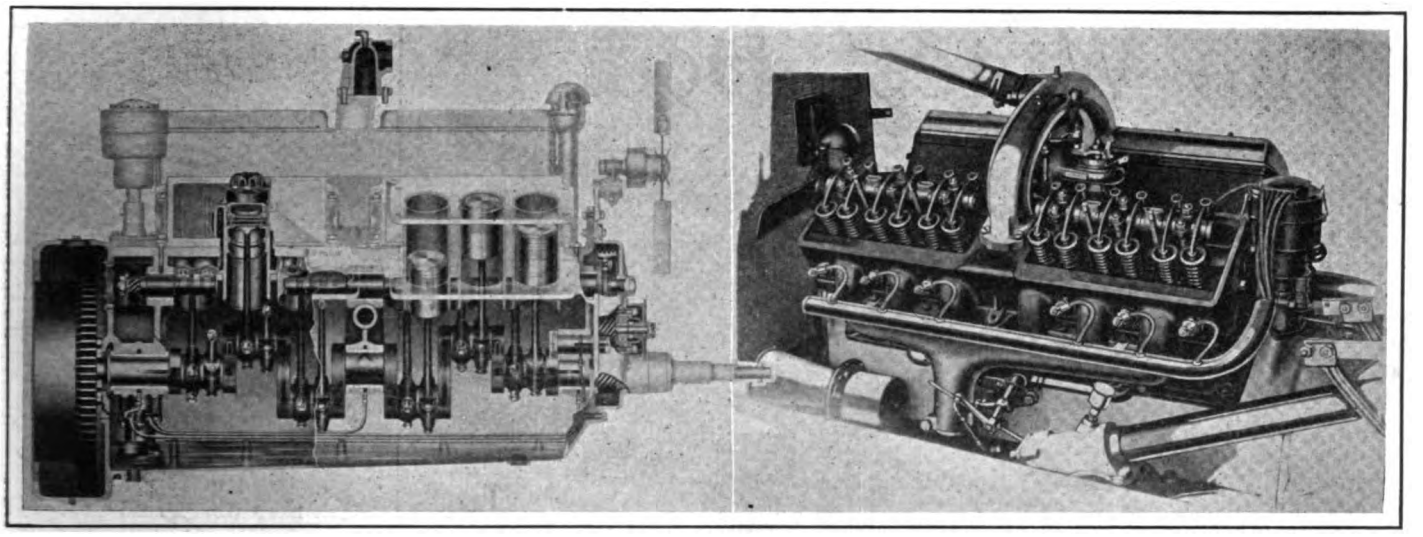


Neatness is a feature of the H-A-L cowl board and control assembly

Internally the design is very sturdy in every respect. The cylinder blocks are offset 1½ in. so that the pairs of connecting-rods may be placed side by side. The crankshaft is supported on three bearings and has a diameter of 2⅛ in., which, when it is considered that the bore is only 2⅞ in., is an exceptionally large shaft for a motor of this size and one which should minimize vibration. The camshaft is mounted also on three bearings and is directly above the crankshaft, so that it actuates all of the valves directly. Due to the fact that the cylinders are offset, it is possible for each tappet to have its individual cam.

Pistons are quite long and have chamfered heads, which should assist in keeping the oil down out of the combustion chambers, since there is a tendency of the lubricant to ride by the piston head instead of being scraped into the combus-

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Left—Phantom view of motor with extra long pistons provided with two rings above and one below the wristpin. Right—Arrangement of valves, carbureter, and ignition wiring

tion chamber, as might be the case if the upper edge of the head were not of this beveled form.

In addition to the two rings at the top, there is one ring near the bottom, which acts as a wiping ring. The pistons are cast iron.

An elaborate oiling system has been provided for the motor, with the oil pump in the crankcase forcing a constant supply through individual pipes to each of the three main bearings of the crankshaft and also to the camshaft bearing. The connecting-rods are oiled from the main bearings through holes drilled in the webs of the crankshaft. There is sufficient oil thrown off from the sides of the connecting-rod lower ends to lubricate the cylinder walls, this oil being virtually a vapor, due to the rapid revolving of the crankshaft. A special lead runs to the timing gears, and the oil breather and filler pipe is mounted at the front of the motor, directly ahead of the left cylinder block, being brought up high enough so that filling is very convenient.

This motor is arranged so that the water outlet connection is combined with the intake manifold, which bridges the gap between the cylinders and from which the carbureter is suspended. Thus the heated water from the cylinders passes around the inner pipe which carries the fuel to the cylinders and good vaporization of the gas results. Besides introducing the water into the immediate block of cylinders, the pump also sends a supply across through the crankcase to the more remote block, and the design is such that each set of cylinders gets equal cooling water. The belt-driven fan is mounted on a bracket attached to the crankcase and there is a simple adjustment for the belt tension.

Electrical units for starting and lighting are Westinghouse make, and these, together with the Remy distributor, utilize a 100-amp. hr. Gould storage battery carried on the right side of the chassis and reached through the floor-board of the front compartment. The location of the distributor is such that the ignition wires running from the spark plugs are quite short; and as the plugs are mounted on the outside of the cylinder block, wiring manifolds are fitted, which prevent the wires falling down on the exhaust pipes below them. The starting motor drive through gear connection with teeth cut in the flywheel rim in the usual way.

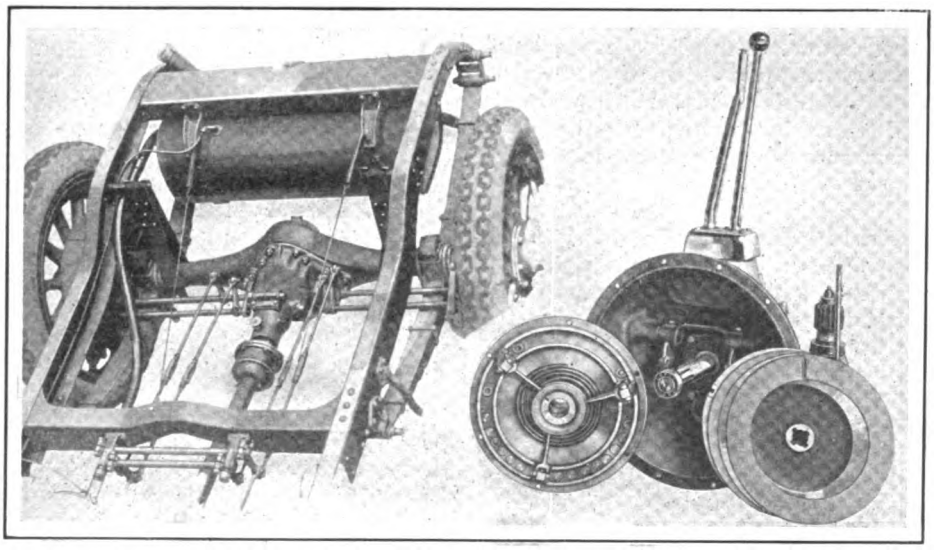
H-A-L Twelve

Price—	
Touring	$2,100
Roadster	2,100
Color	Dark blue white stripe
Make of motor	Own
Number of cylinders	12
Shape	Overhead valve
How cast	Two blocks of six
Bore	2⅞
Stroke	5
S. A. E. horsepower	39.6
Ignition	Remy distributor
Carbureter	Stromberg
Engine starter	Westinghouse
Lighting System	Westinghouse
Clutch	Dry disk
Wheelbase	135
Front tires	34 x 4½
Rear tires	34 x 4½
Wheels	Wood
Steering	Left
Control	Center
Make of axles	Timken
Type rear axle	Floating
Options	Wire wheels

Compactly attached to the rear of the crankcase is the multiple-disk clutch and three-speed gearset, the bell housing of which completely incloses the flywheel and clutch mechanism, as well as carrying the brake and clutch pedal shafts. The clutch is of the dry-disk type and is made up of one steel disk and two other disks faced with Raybestos friction material, all three disks being 12 in. in diameter and having a face width of 1¾ in. It is stated that the clutch is so simply constructed that once it is properly adjusted at the factory it requires no further attention.

Gears and shafts in the gearset are made of nickel steel and mounted on S. K. F. annular ball bearings. On the left side of the gearcase is mounted a single cylinder tire pump, which is driven by one of the countershaft gears meshing with the pump gear. To throw the pump into driving engagement there is

(*Continued on page* 35)



Left—Sturdy rear construction. Straps are provided to prevent rebound. Right—Clutch disassembled

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The Widest Door

By Ray W. Sherman



"COME on, Reilly!" yelled a big, husky dealer from down-state. "Tell us how you sell all those cars!"

The dealers in convention at the Sennett Motor Car Co.'s factory in Sayanna sat up and took notice. They had been listening to addresses by various dignitaries, and the had-enoughness of the gathering was typified by the irrepressible dealer's remark.

"Yes, Reilly," said Jim, the sales manager. "Tell 'em how you do it."

"Boys," began the champion of all Sennett dealers, who sold more cars in the little city of Callawassa than were sold in several big towns rolled into one, "some folks say salesmen are born and not made; but I agree with Hugh Chalmers that that's mostly bunk and that hard work will sell anything."

"'At a boy!" yelled the down-state man, dripping and moist.

Hard Work Makes Sales

"Selling is mostly work—hard work!" Reilly continued. "But there is perhaps one thing I might say about methods of work that may be of assistance to some of you, and that is the way you start on the prospect who has come or been brought to look at your car.

"We should plan to make our strong beginning appeal to his eye rather than to his ear. They say the eye is twenty times stronger than the ear in its ability to convey impressions to the brain, and, if that is so, why shouldn't we go hand in hand with this stronger organ instead of trying to get to the prospect's mind through the weaker organ? The eye is the widest door.

The Eye the Widest Door

"The eye is so strong that if we become deeply interested in a book or our work the ear sometimes ceases to work at all. We are absorbed and don't hear what is said to us. But an appeal to the eye is seldom subordinated to an appeal through the ear.

"Now, take a prospect who is getting a view of your car. He walks in the door. He sees the car. He is, right then and there, getting what we may call his first impression. He may have seen the car before; but let us call this his first impression.

"What is going on in his mind? He is receiving impressions of the style, finish, color and looks of the car. He has already started to sell himself. And in what way? Through his eyes.

The Logical Method

"What, then, should we do? We should make our sales talk fit in with the demonstration he is giving himself. He sees looks. Then let us talk looks. He sees the color, so let us talk color. He sees and feels the upholstery, so let us talk upholstery. He gets an impression of the style, so why not say something to supplement what he has already found out for himself through his eyes?"

Another "'At a boy!" from the back failed to interrupt Reilly.

"The man walks up to the car. He knows the thing will run, because he knows—if he knows anything at all—that we have been building cars for years and haven't been involved in any motoring-merchandising scandal through the falling down of our cars. So why should we take the time to give him a long harangue on how good the car is?

Why Waste Time?

"He wants a car or he wouldn't have come in, so why waste time telling him what a fine thing an automobile is? He hasn't seen the motor, and maybe isn't interested in it; and if he is, this isn't the place, anyway, to begin telling him about the motor.

"He has seen the car, its good appearance, its general outline, and he knows she's a good-looker. Our job right then and there is to hammer home the very things he can see. Call his attention to the design, the finish, the looks! Sell him thoroughly first on the looks and style of the thing. After that we can begin our story of the rest of the car.

"His eye has taken in at a sweep more than we could have gotten in through his ear in a million years. We never could tell him how good the car looks; but if we tell him it looks well, and by our words draw his attention to the design and style, his eye does the rest. We've got his eye, his most powerful sense, working for us—and he doesn't know it. The only way he can get away from us is to shut his eyes, and he never thinks of that at all.

The Eye All-absorbing

"We shoot another little word in through the narrow door of his ear and then get what we want him to know in front of his eye, and his eye gobbles up another selling point. Before he knows it we can get the whole darned car in through the door of his eye.

"We must remember the story of the blind men and the elephant. The man who grabbed the trunk thought the beast was like a snake. The man who got hold of a leg thought the elephant was like a tree, and the man who felt the sides of the animal said the critter was like a wall, while the man who used no sense but his sight got the whole darned thing at one peek.

"And that's what we want to do with our prospect. Sell him the sight proposition first. Then, if the man is interested in the motor take him to it and show it to him. Don't mention a single part without getting it in front of his eyes if you can. If you talk small bore and long stroke have a sectional piston or a drawing or something that will take your story in through his eye. Don't leave any more to his ear than you have to.

Play for the Eye

"If you must tell him that the upholstery is fourteen inches deep have a section of it to show him. Fourteen inches—through his ear—doesn't mean any more than four inches, but through his eye he gets the difference with a wallop.

"If you want to go into the story of our fifteen coats of paint it doesn't mean much through his ear. But if we have fifteen four-inch-square sections of the body side, and each one at a different stage of the painting process, the story gets to him through his eye. He can see the whole fifteen coats of paint and can even almost count them on the last section.

"That's what I mean by eye salesmanship. Get in through the widest door and, similarly, fit the right sense to every part of the car. Let him feel the seats by sitting; let him know the convenience of the dash by reaching; let him know the easy clutch by pressing, and simply shove him along and let him sell himself!"

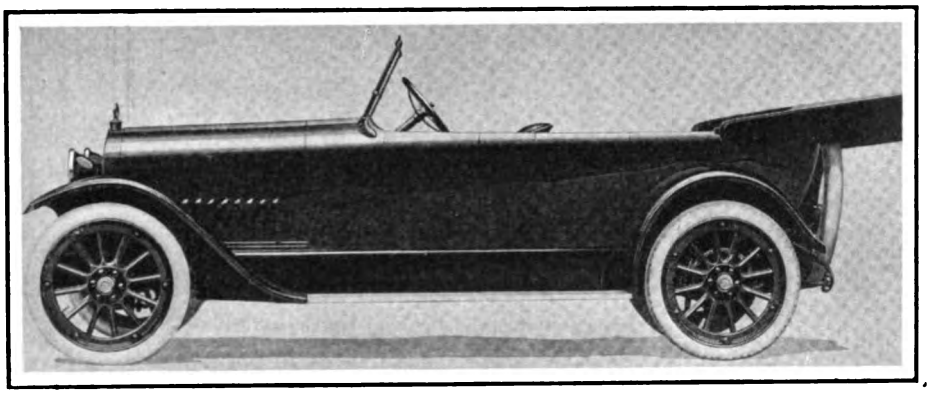
"'At a boy!" yelled the down-stater, as he wrung out his handkerchief.

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Jeffery Six 7½ in. Lower—Price Reduced $85

Rear Springs Underslung—Motor Balance Improved—Three Body Models

Body lines More Attractive—Greater Comfort for Passengers



Improved Jeffery six which sells for $1,365

IN addition to the roll edge four, which was announced 2 months ago, the Thomas B. Jeffery Co. of Kenosha, Wis., has brought out a six-cylinder model for 1917 under the series number of 761. The Jeffery roll edge four will be continued without change.

The outstanding feature of the new car, which will retail at $1,365, or $85 lower than the previous six, is its low body and general comfort in seating arrangement. The low effect has been accomplished by re-designing the rear axle so that the springs are now underslung. The line of vision is 7½ in. lower than it was in the previous six. In addition to this improvement a more perfectly balanced crankshaft is used, resulting in a smoother acting engine, so that the two details of body comfort and more quiet engine action, have combined to give a much better performing car.

Floor 3 in. Lower

Summing up the body improvements, the floor of the new six is 3 in. lower than that of the 1916 model. The running board is now 15 in. from the ground, and to add to the long, low appearance, the windshield has been given a pitch of 16 deg. and is now 20 in. in height. Nowhere on the body is there a flat surface, every piece of metal being of double curvature. The upholstery is better and the dimensions of the seats are more liberal. The rear tonneau seat is 48 in. wide and 18 in. deep and the distance from the front of the back to the back of the front seat is 32 in. The auxiliary seats have also been made more comfortable and passengers occupying these are allowed 9 in. knee-room. The seats themselves are 14 in. deep and there is 8½ in. knee-room between the passengers in the rear seat and the auxiliary seats.

SPECIFICATIONS OF THE JEFFERY SIX—SERIES 761

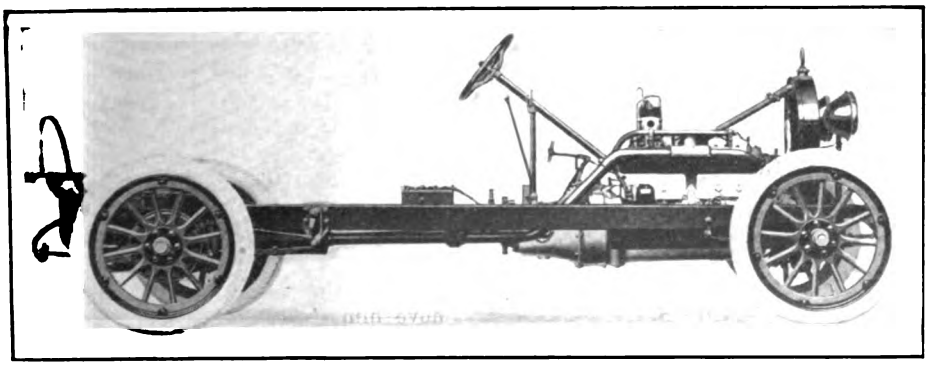
Roadster Price—Touring	$1,365
Roadster	$1,335
Sedan	$1,530
Make of motor	Own
Number of cylinders	6
Shape	L-head
How cast	Block
Bore	3½
Stroke	4⅝
S. A. E. horsepower	29.4
Magneto	Dixie
Carbureter	Rayfield M-3
Starting and lighting system	Bijur
Clutch	Plate
Gearset	3-speed
Wheelbase	125
Tires	34 x 4
Steering	Gemmer
Make of axles	Own
Type of rear axle	Semi-floating

The unit power plant has its six 3½ x 4⅝ L-head cylinders cast in a single block with the upper half of the crankcase integral. It is connected to the pressed steel pan which forms the lower half of the crankcase. The valves are carried on the right side.

In line with present practice the reciprocating weights of the engine have been kept very low. The entire weight of the piston with rings and pins is 1 lb., 7¼ oz. The pistons are of aluminum alloy and weigh but 1 lb. The length of the piston is 3⅞ in. and it is fitted with a wrist-pin having a diameter of 1 5/16 in. The rings are three in number and are of the eccentric type, made from gray iron.

Drop forged alloy steel connecting-rods are used, having a length of 9½ in. The weights of these rods are 3 lb., 2¾ oz., and at the lower ends the caps are fastened by two chrome nickel steel bolts; at the upper end the piston-pin bearing is carried in a phosphor bronze bushing, located in the connecting-rod. The lower end bearings are of die-cast babbitt and have a length of 2 in. The diameter of the crankshaft, which is a drop forging of 0.35 to 0.45 carbon, is 2¼ in., and this is laid out to be inherently balanced. It is carried on three main bearings, the dimensions being as follows: Front, 2¼ x 2 3/16 in.; center, 2¼ x 2⅛, and rear, 2¼ x 3¼.

Mushroom-type followers are used and the camshaft is carried on four bearings. All of these are of liberal size, the shaft diameter being 1 5/16 in. The length of the front three camshaft bearings is 2 1/16 in. and the rear 1 in. The diameters are 1⅛ in. for the center pair, 2 11/16 for the front and 2¼ for the rear. The bearing material is die-cast babbitt.



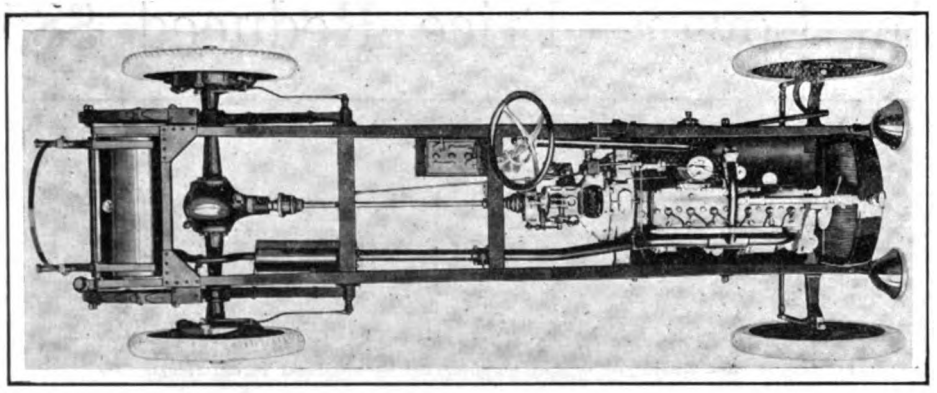
Elevation of chassis showing unit power plant

Valve Timing Standard

Conventional valve timing is used, with the inlet opening at 8 deg. after top center and closing 40 deg. after bottom center. The exhaust opens 40 deg. before bottom center and closes 8 deg, after top center. In other words, there is a zero lap, since the intake opening and exhaust closure are coincident. A Morse silent chain is used to drive the camshaft, the chain being 1¼ in. in width and operating on drop-forged sprockets with adjustable centers.

Lubrication is by combined pressure

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Plan of Jeffery six chassis showing Hotchkiss drive

and splash with oil forced to all the main and camshaft bearings and also to the driving chain. In addition, oil is fed to splash troughs, into which the connecting-rods dip, taking care of the connecting-rod bearings, piston and piston pins.

Gasoline feed is from the Stewart vacuum system to a Rayfield Model M-3 carbureter. This is a 1¼-in. instrument, fitted with a hot-air tube. In the intake manifold special care has been taken to give a free passage to the gases, and in fact this has been carried right through to the valves, which have an overall diameter of 1¾ in. with an inside seat diameter of 1 9/16 in. and a lift of 5/16 in. These are the ordinary 45 deg. poppet valves and the material from which they are made is tungsten steel on the exhaust side and nickel steel on the inlet.

Bijur and Splitdorf

Electrically, the car is Bijur for lighting and starting and Splitdorf for ignition. The Dixie magneto is used in combination with A. C. spark plugs, located in the cylinder-head midway between the valves and the cylinder bore. The starting and lighting system is in two units with a 20-lb. Bijur motor capable of turning over the engine at 160 r.p.m. and a generator mounted on the pump shaft. The battery is a U. S. L. 6-volt type of 80 amp.-hr. capacity, weighing 48 lb.

The lamp equipment is by Edmonds & Jones, operating at 6 volts, with 18-c.p. headlamps. Throughout the entire lamp equipment the Ediswan base is used, with single contact.

From the engine the drive is taken through a Borg & Beck three-plate clutch to a Jeffery three-speed gearbox. There is one steel disk and two asbestos friction plates in the clutch, which is located in the flywheel. The gearbox is in a unit with the motor and is arranged to provide ratios in the box of 14.6, 8.2 and 4.5 to 1. The width of the gear face is ⅝ in. and the shafts are carried on Jeffery taper roller bearings. There are two shifter rods with a lock made by ball and spring. The driveshaft has six splines and the shaft center distance is 3½ in.

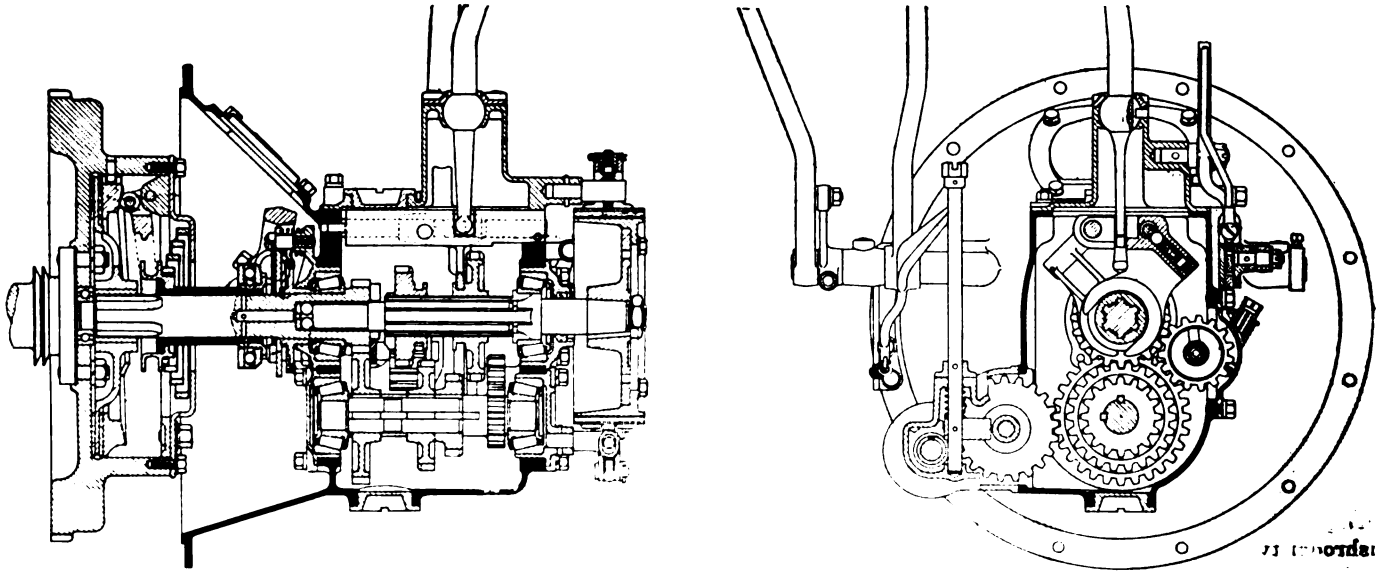
A Jeffery semi-floating rear axle is used, in which the ratio is 4.5 to 1 as regular equipment, although 4 2/14 to 1 and 4 10/11 to 1 can be furnished. This arrangement is secured by a 54-tooth bevel gear with 11-, 12- and 13-tooth pinions respectively. The gear teeth are spirally cut and have a 5 pitch. The differential is a bevel gear design and throughout taper roller bearings are used. In making up the axle housing a malleable iron center is used, with alloy steel tubular ends. Both the drive and torque are taken through the springs by the Hotchkiss drive.

The spring equipment is manufactured by the Detroit Steel Products Co. The rear springs are three-quarter elliptic, underslung, and 53 in. long, with eight leaves in the lower part and seven in the upper. The width of the spring is 2 in. The front springs are 38 in. long, with eight leaves, and 2 in. wide. The front axle is a Jeffery drop forged I-section, with 9½ in. clearance. It is fitted with a Gemmer steering gear of worm and wheel type.

Wire Wheels Extra

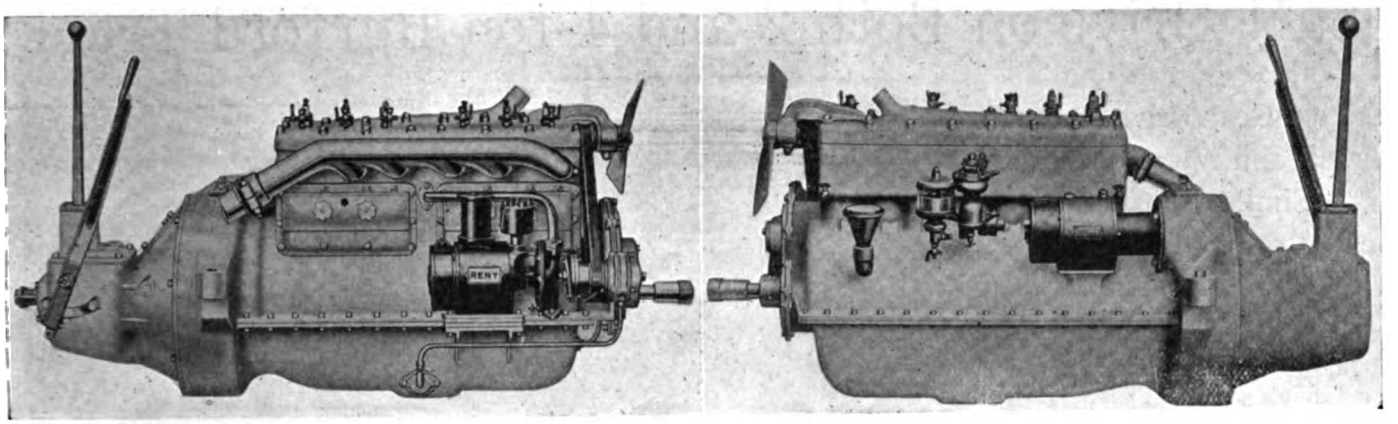
Artillery-type wheels are used, with twelve spokes front and rear. The spoke width is 1½ in. The wheels are made from hickory on the standard equipment, although Houk wire wheels will be fitted at additional cost. The rims are Stanweld, of the straight-side detachable type, and designed to fit any straight-side tire. The tire equipment on the standard cars is Goodyear, with plain tread in front and the All-Weather non-skids in the rear. The tire size is 34 x 4 in.

There are three bodies, the seven-passenger touring, selling for $1,365; seven-passenger sedan at $1,530, and roadster at $1,335. Full equipment is included at these prices and all are mounted on the same wheelbase of 125 in. The equipment includes one-man top, Jiffy curtains, rain-vision sloping windshield, rope straps, foot rest, extra rim, complete set of tools, Boyce Moto-Meter, Stewart power-driven tire pump and electrically lighted instrument board with speedometer, ammeter, oil gage, ignition switches and carbureter adjusting device.



Borg & Beck three-plate clutch, and three-speed gearbox with Jeffery taper roller bearings. The tire pump is driven from the reverse idler

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Both sides of the unit power plant used in the 1917 Madison cars. The engine has a bore of 3⅛ and a stroke of 5 in. The cylinder head is detachable and the valves are inclosed and have easily removable brackets

Madison Six with Two, Five and Seven-Passenger Bodies

Wheelbases 115 and 124 in.—Unit Power Plant—Standard Parts Throughout

FOR 1917 Madison cars will be constructed upon the six-40 chassis model and will be made in two body forms, for five and seven passengers. Alterations in the body lines form the principal changes and these have been made to correspond to the flat cowl line which is in vogue this season. The prices for the five- and seven-passenger cars are $1,050 and $1,150 respectively. The five-passenger car has a wheelbase of 115 in., while the seven-passenger has 124 in. A two-passenger roadster is also made.

A unit power plant is used, the Rutenber motor being direct-connected to a Muncie Gear Works gearset and clutch. The bore is 3⅛ in. and the stroke 5 in., and the six L-head cylinders are cast in a single block and are integral with the upper half of the crankcase. The valves are inclosed and the cylinder-head is detachable.

Three-point suspension is used and the rear support is secured by two arms on the rear of the crankcase casting. The third support is at the forward end of the motor and is flexible, allowing the motor parts to be independent of any weaving of the frame. The pistons are cast-iron and are fitted with three rings, two of which are close to the top and the third located just beneath the wrist-pin.

A drop-forged camshaft is used, the carbon content being 0.20 and the diameter 1⅛ in. The cams are integral with the shaft and are hardened and ground. It is carried in plain bearings at the center and front and at the rear in a double row S. K. F. self-aligning ball bearings. The valves are actuated by mushroom type flat followers, which are offset 1/16 in. to distribute wear.

Two steels are used in the manufacture of the valves, carbon steel being employed for the heads while alloy steel is used for the stems. The diameter of the valve is 1 5/16 in. in the clear with a 5/16 in. width. A feature of the valve construction is that the entire valve bracket, together with the lifting mechanism, can be removed from the engine without disturbing the camshaft. This is done by removing the cover plate and stud nuts and then turning the crankshaft by means of the starting crank until the valves are at their lowest level.

Power is transmitted by means of the Muncie Gear Works dry-plate multiple disk clutch, which is fitted with alternate disks of asbestos and saw steel. Annular bearings are used in the clutch release and these are lubricated by oil which is allowed to enter from the crankcase, since the housing is in direct communication with this part of the motor.

Two universals are used in the drive, the power being taken through the propeller shaft to a floating rear axle fitted with a pressed steel housing and Brown-Lipe nickel steel spirally cut gears. The axle shafts are supported on large annular bearings of heavy duty design and alloy steels are used throughout in the parts carrying the driving and torsion stresses. Hotchkiss drive is used, both torque and propulsion being taken through the rear springs.

Electrically the car is Remy throughout. Starting is by an independent series-wound Remy motor, used in connection with the Bendix drive for meshing the starting pinion with the flywheel ring gear. The generator carries the regulator and automatic cut-out, operating in connection with the Willard storage battery.

The gasoline system is composed of a 16-gal. tank supplied with a gage mounted on the rear of the chassis, a Stewart-Warner vacuum system, and a model M Rayfield carbureter provided with automatic air intake and climatic dash adjustment. Steering is by the T. W. Warner irreversible worm and full gear, used with a steering wheel having an 18-in. corrugated rim. The wheels are artillery type, 34 x 4, provided with demountable rims, and an extra rim is located on the rear for carrying spare tires. The tire equipment is Goodyear, 34 x 4 all around, with the All-weather non-skid tread on the rear. Three-quarter elliptic underslung rear springs are used and the front are semi-elliptic.

Among the accessories provided are a one-man top made from Neverleek top material, electric horn, Stewart-Warner speedometer, ventilating and rain-vision windshield, tire carrier, foot and robe rails, trouble lamp and a full tool outfit.

Upholstering is in long grain black enamel leather with deep Turkish-type cushions. On the five-passenger body a single front seat and rear seat are used, while on the seven-passenger the boat-shaped design is carried out with divided front seats and auxiliary seats which fold against the backs of the front seats entirely out of the way when not in use. The Madison standard body color is Richelieu blue.

THE MADISON SIX—40

Price—	
Touring, 5-passenger	$1,050
Touring, 7-passenger	1,150
Color	Richelieu blue
Make of motor	Rutenber
Number of cylinders	Six
Shape	L-head
How cast	Block
Bore	3⅛
Stroke	5
S. A. E. horsepower	23.4
Ignition	Remy
Carbureter	Rayfield-M
Starting and lighting system	Remy
Clutch	Disk
Gearset	3-speed
Wheelbase	5-pass., 115; 7-pass., 124
Tires	34 x 4
Steering	T. W. Warner worm and gear
Type rear axle	Floating

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Shaft Drive on Both 2 and 4-ton Burford Trucks

Internal Gear Drive on Smaller Chassis and Worm on Larger—Similar in Design

THE Burford Motor Truck Co., Fremont, Ohio, will have two models for 1917, the smaller rated at 2-ton capacity and the larger at 4 tons. The internal-gear drive is used on the smaller chassis and a worm axle on the larger, the former being a continuation of last year's practice and the latter a change from the chain drive employed previously.

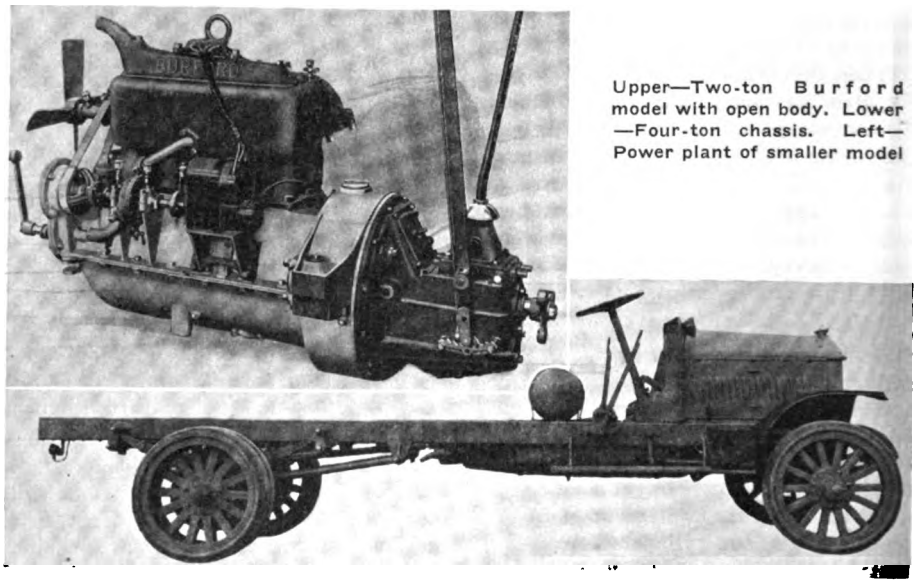
The engines used are similar on both models, though different in size and in the fact that the smaller has block cylinders while the larger has pair castings. Dimensions are 3¾ x 5½ in. for the 2-ton and 4½ x 6¾ in. for the larger model.

Lubrication has been cared for particularly, oil being forced to the main crankshaft bearings by a plunger pump, and also supplied to dip troughs for the connecting-rods. Oil pump and strainer gauze are both easily removable for cleaning.

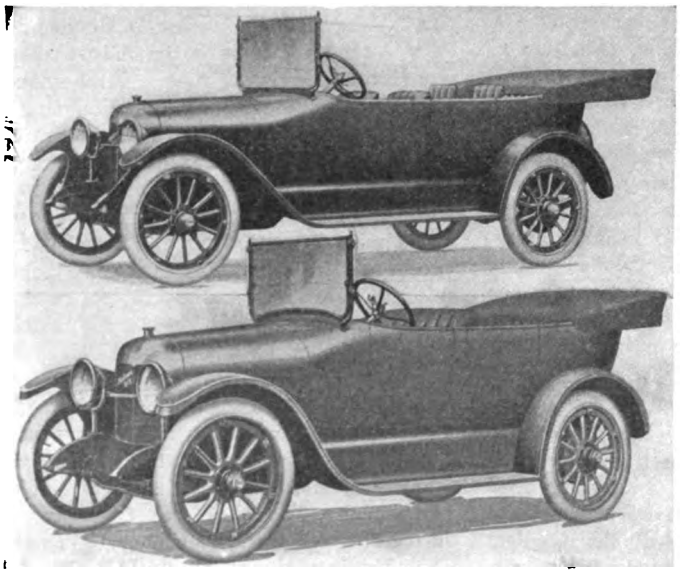
On the side of the cylinders remote from the camshaft there is a front end gear which drives the water pump, and an Eisemann magneto is coupled to the water pump shaft by a universal joint. The pulley for the fan belt is set on the same line, just in front of the water pump, keeping the belt high up and so well protected from the destructive action of oil and water.

On the 2-ton model the flywheel is contained in a bell housing which incloses the leather-faced cone clutch and supports the three-speed gearset, but the 4-ton type has a separate gearbox mounted independently and giving four speeds.





Upper—Two-ton Burford model with open body. Lower—Four-ton chassis. Left—Power plant of smaller model



Upper—Madison seven-passenger. Lower—Madison five-passenger

This large gearset is of rugged construction, having gears 1½ in. wide with a 5-7 pitch, which makes for great tooth strength. Driveshafts and gearset gears are chrome-nickel steel.

Strength in frame and springs is obtained by the use of high-quality steel and ample proportions. Radius rods are employed on the 4-ton model, but the smaller truck has Hotchkiss drive, the springs taking both torque and load.

There is plenty of load space, the 2-ton being obtainable with either 132-in. or 144-in. wheelbase, and the 4-ton with a wheelbase of 175 in. Throughout both chassis a number of New Departure ball and Bower roller bearings are used.

There is a little difference in the brake equipment, the smaller having the conventional expanding brakes in the wheel drums, but the emergency brake acts on a drum attached to the bevel pinion shaft. This axle is made in the Burford plant. The 4-ton has a Sheldon axle, and uses the Sheldon double expanding brakes.

Tires are 36 x 3½ on the 2-ton, single in front and dual rear, while the 4-ton has 36 x 5 in., similarly disposed. The smaller chassis lists at $2,250 without body or cab, the latter costing $50 extra, and the 4-ton chassis sells for $3,600. Bodies of any kind can be supplied to special order.

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ANGLES OF THE LAW



By George F. Kaiser

Sell with Care

Editor Motor World:

We would like to know if a party that buys a car and pays about half of the price to the dealer, can sell that car to another party without paying the dealer in full first; or, could the dealer claim that amount from the second party when the second party has the car? That's in Wisconsin, we mean.

WISCONSIN.

If you sold the car and transferred title and possession to the purchaser without any reservations on your part, the purchaser has the right to sell the car to some third person and you will have no claim against that third person for the amount still due you.

The best way to protect yourself in a case of this kind is to sell on a conditional bill of sale, or to take a chattel mortgage for the remaining portion of the unpaid purchase price. An out-and-out sale of this kind, without any security, is a risky thing.

Can Still Collect

That when a manufacturer of motor cars, on shipping them, omits the price of one of the cars from the draft attached to the bill of lading, he does not part with title to that car, was held in a recent Alabama case.

It was further decided that, as the manufacturer did not part with title to the car, a sale by one of its agents to another person is a conversion for which it can maintain an action.

Three motor cars were to be shipped C. O. D. with bill of lading attached to a draft for the purchase price, and were to be delivered to the consignee upon payment of the draft. By a mistake the price of one of the cars covered by the bill of lading was omitted. This particular machine was then sold by the agent and an action was brought by the manufacturer against him.

The court held that the manufacturer was entitled to a recovery for the car, as it still possessed title when the car was resold by the agent.—Finney vs. Studebaker, 72 Southern (Alabama), page 55.

Freed of Building Default

When a person has obligated himself to build a garage under the terms of a written contract he is not liable for damages for failure to perform his contract if he can show that he was at all times willing to go ahead with his part of the contract but that the other party to the contract made it impossible for him to do so by requiring him to build a garage essentially different from that provided for in the contract.—Ferber vs. Cona, 97 Atlantic (N. J.), page 20.

Delays Don't Count

That mere delay on the part of a person selling personal property in delivering the goods cannot be used as a defense by the person contracting to purchase same in the absence of a showing of injury to him through the delay, is the decision by the Supreme Court of Pennsylvania in a recent case.

A contract was entered into which provided that certain parts should be furnished to be used in the building of motor cars. The payments called for under the contract were personally guaranteed by an individual who was president of the purchasing company.

When suit was started against the individual to recover for the payments which had not been made, it was set up that certain profits had been lost because the contract could not be carried out by reason of the fact of the bankruptcy of the purchaser.

As a defense, it was contended that there had been a delay in shipping the articles to the purchasing company, but no proof was offered to show that the delay resulted in pecuniary damage. In the absence of proof of this kind, it was held that the guarantor would be liable for the unpaid amounts.—Warner vs. Bergdoll, 97 Atlantic (Pennsylvania), page 1085.

Sell to Whom You Will

When can a dealer refuse to sell to some particular person, and under what circumstances, if any, is he obliged to sell to any one who is willing to buy?

In a recent case, Judge LaCombe of the United States Circuit Court of Appeals of the Second Circuit, said:

We have not yet reached the stage where the selection of a trader's customers is made for him by the Government.

In this case the right of a person to refuse to sell was established as a constitutional property right which cannot be taken away by either State or National legislation. The Sherman Act, the Clayton Act and the Anti-Trust Acts were held not to make a refusal to sell an attempt to restrain competition by means of maintenance of prices and in promotion of a monopoly.

When thinking of the various anti-trust acts, and anti-monopoly laws, all the dealer need think about is: Has he a monopoly in any certain kind of merchandise? If he has, then let him be on his guard. If he has not, then let him go on his way rejoicing and sell to one man because he is not red-headed and refuse to sell to another man because he is red-headed, if he so desires.

Back-Crank Defect

An interesting case in which a chauffeur sued his employer for injuries received while driving a motor truck was recently reviewed by the Supreme Court of Washington.

An employee was engaged as helper to the driver of a motor truck. While the helper was endeavoring to crank the truck it kicked back and broke his arm. Until that time he had never cranked the motor and he had no knowledge as to how to adjust the spark before attempting to start it.

On the day of the accident he had been directed to take the truck to a garage to get certain equipment. While he was backing the truck out of the garage the motor stopped, and while attempting to start it again he suffered the injuries complained of.

It appears that, owing to a defect in the magneto, it was necessary to operate the truck with the spark advanced in order to get sufficient power; that it was also necessary in starting the car, owing to this defect, to keep the spark advanced. To crank the machine with the spark advanced was dangerous, for it was likely to kick back. The car had been in this defective condition for some time previous to the accident; and the employer had been notified of that fact, while the employee had no knowledge of it.

The court held that it was the duty of the master to furnish the man with reasonably safe instrumentalities with which to work, and that the company, having had notice of the defective magneto, was liable for the injuries to the employee.—Collins vs. Terminal Transfer Co., 157 Pacific, 1092.

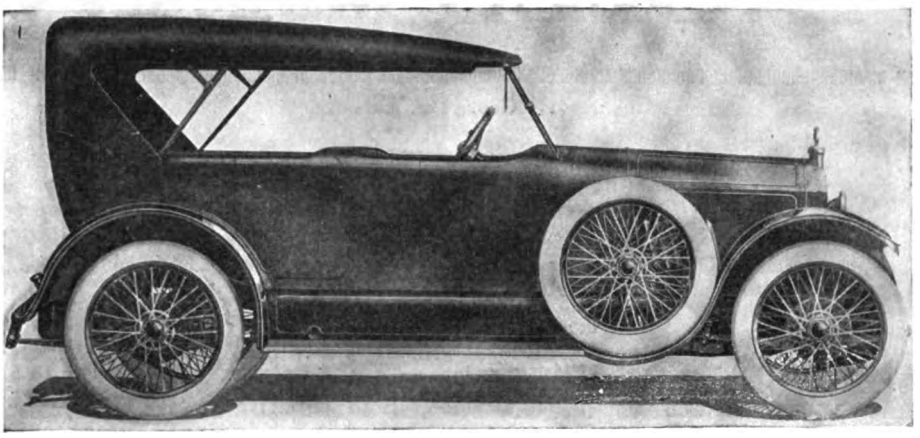
Firestone Holiday in Des Moines

DES MOINES, IOWA, Aug. 1—The first annual picnic of the Des Moines branch for the Firestone Tire & Rubber Co. was held on the Des Moines River, near this city, Saturday, July 22. A half-holiday was declared for the occasion.

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Extreme Efficiency in Sixteen-valve Aland Four

Maximum engine power with minimum weight are the outstanding features. The sixteen-valve aluminum motor, only 3 x 5½, gives 4½ times the S.A.E. rating. Other features of this car, which is to sell for about $1,500, are high-grade material, diagonal braking, wire wheels, and U. S. L. starter mounted in front



Price About $1,500—Rated at 14 H.P.—Develops 65—Aluminum Cylinders—Front Wheel Brakes with Diagonal Braking

FOR the last few months there has been considerable talk of sixteen-valve four-cylinder cars, and the latest of these to be mentioned is the Aland, made by the Aland Motor Car Co., Detroit, Mich. This concern is just organizing and expects to be in a position to start manufacture about the first of December. The company is incorporating under the laws of Michigan with a total capital of $500,000.

The line will be made up of one chassis with several body styles, but production will first be started on a five-passenger touring and a two-passenger roadster. The paramount feature of the design is the use of a high-speed sixteen-valve aluminum engine, and in keeping with the intention to have the weight as low as possible throughout, the car will be characterized by a liberal use of high-tensile strength steel. Throughout the entire design the matter of price will be a secondary consideration, and as a result this has not been definitely fixed, although in all probability it will retail for about $1,500.

While rated at 14 hp. according to the S. A. E. formula, the manufacturer states that the engine will develop more than 65 hp. at 3200 r.p.m. The cylinders are cast in a single block with crankcase integral. This is an aluminum casting and the cylinder walls are provided with cast-iron sleeves, which are pressed into place. The bore of the engine is 3 in. and the stroke 5½, giving a piston displacement of 155.5 cu. in., and, according to the rating of the maker, 1 hp. from every 2.39 cu. in. of displacement. This high efficiency is explained by a careful attention to balance and to the high volumetric efficiency due to the extra large valve areas and the fact that there are four valves per cylinder. Each of these valves is 1 7/16 in. and opens directly into the combustion chamber, being operated by an overhead camshaft which is located in the alley between the valves. One cam operates two valves through double rocker arms, which are provided with roller followers at both ends to minimize friction. The rockers are offset 2 to 1, so that while the cam lifts the rocker but 9/64 in. the valve is lifted 9/32 in.

THE ALAND FOUR

Price—	
Touring	$1,500
Roadster	1,500
Number of cylinders	Four
Shape	Valve-in-head
How cast	Block
Bore	3
Stroke	5½
S. A. E. horsepower	14.4
Starting and lighting system	U. S. L.
Clutch	Disk
Gearset	3-speed
Wheelbase	122
Tires	33 x 4
Type rear axle	Semi-floating

An aluminum alloy casting is also used for the cylinder-heads. It is held in place on the cylinder block with twelve 7/16-in. nickel steel studs placed in such a position as not to interfere with water circulation and to be accessible. This cylinder-head casting contains the valves, springs, guides, brackets, camshaft, etc., and forms a separate unit which can be removed without disturbing any adjustment. This enables the repairman to grind the valves on the workbench. A feature of importance is that the entire valve mechanism runs in a bath of oil and is protected from dust by an aluminum cover which fits over the entire top of the engine block.

Aluminum alloy is used for the pistons, which are provided with three rings, two above and one below the wrist-pin. A groove is cut in the piston below the bottom upper ring, with six small holes drilled into this as an extra precaution against superfluous oil in the combustion chamber, which would cause smoking and fouling of the plugs.

A nickel steel wrist-pin is used and this is free to oscillate in either the connecting-rod or the piston. A small steel ring fits into a groove on either side of the wrist-pin and prevents it from working out to one side and scoring the cylinder wall. The upper end of the connecting-rod is provided with a bronze bushing and the connecting-rods themselves are of the feather-weight tubular type, made from chrome vanadium steel. In manufacture it is purposed to pay particular attention to the balance of these parts and also to make them secure against breakage. Nickel steel bolts are used to hold the cap on the lower end of the connecting-rod, and throughout the sections are such as to provide a good factor of safety.

Three bearings support the crankshaft. This is of chrome vanadium steel, heat-treated and balanced so as to be in running equilibrium at 4000 r.p.m. The shaft is machined all over and at the rear is fitted to a cast-iron flywheel, while in front is the U. S. L. starting and lighting system, which is not in this case a flywheel installation. It is stated that this layout permits this motor to turn up to more than 3600 r.p.m. The unusual installation of the U. S. L. starting and lighting system on the front end of the crankshaft is quite accessible and in this case a stamped steel housing incloses it.

Naturally, with such a high-speed

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motor, lubrication has been carefully studied. Oil is first pumped from the cast aluminum pan, which has a capacity of 6 qt., to a distributor tube cast integral with the cylinder block. On the top of this tube is located the pressure regulator for the overhead compartment and a small tube delivers oil to the camshaft bearings and other valve parts. A vertical lead directly over the center crankshaft bearing carries the oil back from the overhead compartment to the crankshaft, lubricating the center bearing. In addition, there are adjustable troughs beneath the crank throws which take care of the wearing surfaces within the motor, and the front and rear main bearings are oiled by separate leads from the oil pump distributor. Beneath the troughs and extending the entire length of the crankcase is a strainer, which is readily removable for cleaning.

A Raybestos-faced, multiple-disk clutch is used, with alternate disks of steel. The clutch release is provided with a ball bearing, so that only light pressure is needed to release the clutch. The gearbox is three-speed selective, with gears and shafts of chrome nickel steel. The shafts are mounted in large-sized, double-row, self-aligning ball bearings.

From the gearbox, the drive is taken to the rear axle through a large diameter nickel-steel tube with universal joints at each end, both propulsion and torque being taken in Hotchkiss style through the springs. The rear axle is semi-floating and is equipped throughout with Timken bearings. The driving gears are spiral bevel and are made of chrome-nickel steel. A bearing is located on either side of the pinion, giving a substantial mounting and also shortening the pinion shaft and decreasing the amount of axial movement of the rear universal joint in transmitting the torque strains.

A bottle-neck frame is used, allowing a wide rear, which conforms to the shape of the body sills, and narrowed at front to allow for a short turning radius; in fact, the makers state that the car is able to turn about in a radius of 16 ft. 4 in. In carrying out the construction, all the frame cross-members and brackets are hot-riveted in place, the spring horns at both ends being provided with bronze bushings.

The springs are semi-elliptic all around and are designed to be approximately flat under load. They are of vanadium steel and are provided with bronze bushings. The rear springs are 55 in. long and 2 in. wide and are underslung. The front springs are 37 in. long and 2 in. wide. The springs are attached to the frame by forged shackles and these also are provided with self-lubricating bolts. A full set of shock absorbers is provided as standard equipment.

A departure from conventional practice has been made in the brake design, as there is a brake on each wheel, front as well as rear. They are all of equal size and are of the internal expanding type. The left front and right rear are operated by the pedal and are used for service, and the right front and left rear are operated by the hand lever and are used for emergency. The idea of this diagonal braking layout is to eliminate skidding. The brake-operating shaft is designed in such a way as to permit applying the brakes regardless of the angle occupied by the front wheels.

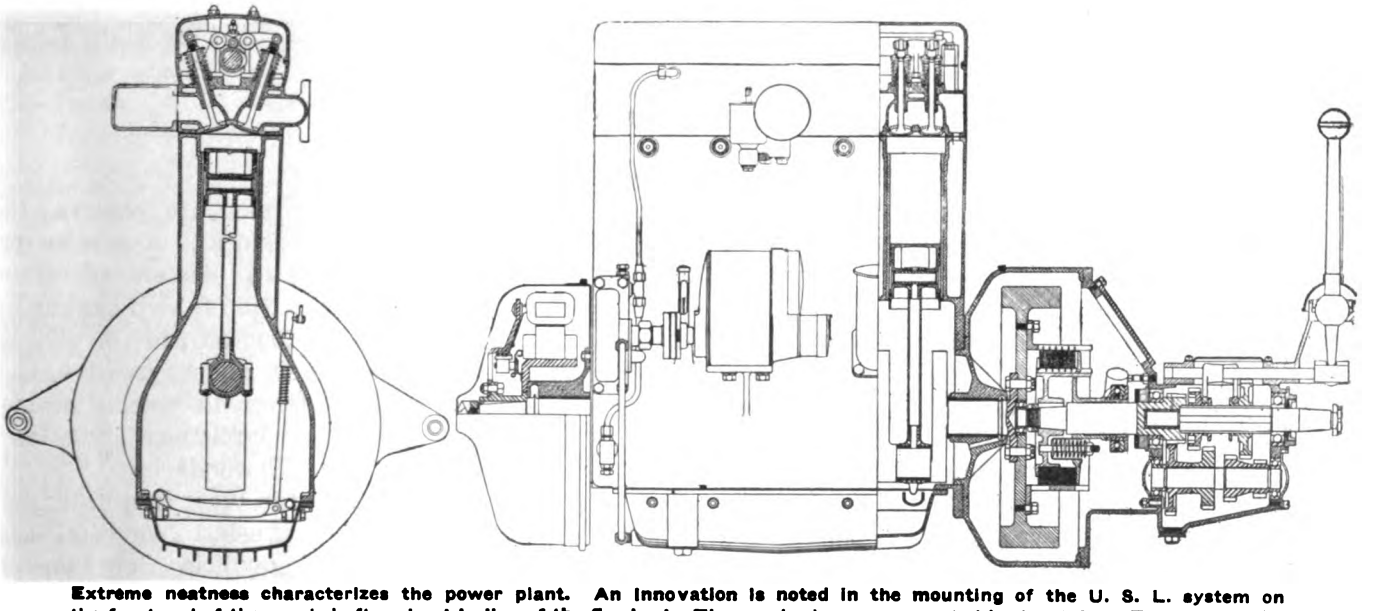
Conventional steering is used, with worm and full gear, and adjustments to take up wear at different points. The steering wheel is an 18-in. walnut nobby grip and the control levers work on a full circle control plate instead of the conventional section.

On this chassis, which has a wheelbase of 122 in., there will be several types of bodies, which will be interchangeable. The five-passenger open touring and the two-passenger touring roadster will be the first in production. The five-passenger design is featured by a deep cowl with a built-in sloping windshield. The body is a double-cowl style and is made of sheet aluminum over a sub-structure of wood. The seats are low and are tilted back to give ample leg-room. A great amount of attention has been paid to detail in equipment and the car is provided with five Rudge Whitworth wire wheels with 33 x 4 tires.

Silence Is Steady Noise

Silence equals continuous noise, says A. Ludlow Clayden, in The Automobile. He explains the statement by saying that in a twelve-cylinder car running at 20 m.p.h. the quiet hum is made up of some quarter million sounds per minute, all blended together, until the conglomeration becomes a pleasing noise, rather than a pleasing quietness. If each of these sounds were isolated, he continues, it would produce an easily recognizable note, whereas that degree of quietness which is generally termed "silence" is produced by the blending together of all these different noises. Here is the way Clayden analyzes the noises from a twelve-cylinder car running at 20 m.p.h.:

	Sounds per Min.
Explosions	6,000
Valves and tappets	24,000
Reversing piston direction	24,000
Braker mechanism	6,000
Timing gear	60,000
Gearset and bevel drive	41,000
Bearings throughout car	56,000
Total	217,000



Extreme neatness characterizes the power plant. An innovation is noted in the mounting of the U. S. L. system on the front end of the crankshaft and not in lieu of the flywheel. The spark plugs are mounted horizontally. The level of the splash troughs is controlled by the throttle

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Are We Feeding the Goose?

THIS story has been sent to Motor World by the Public Comfort Station Bureau of New York City. Read its beginning:

Under what is called "The American Plan," a nation-wide campaign has just been launched by the Public Comfort Station Bureau, 261 Broadway, backed by the American Automobile Association, National Highways Associaion, National Old Trails Road Association, and other national organizations, to provide roadside stations in cities along all highways like passenger stations along the right-of-way of a railway. The plan was called forth by the urgent need for Public Comfort Stations, and the almost criminal lack of them in this country, which is far behind Europe in that respect.

What does it mean?

It means that a big need has been recognized for travel conveniences, such as rest-rooms, washing facilities, toilet rooms, combs and brushes, clothes brushes, shoe brushes, chairs, towels, mirrors, manicure sets, and a hundred other things.

If this is suggested to the car owner what will he say? Will he greet it enthusiastically or will he say: "We don't need it; we can get all those things in the garages, and we have to stop there anyway."

This is a mighty important matter for the consideration of every member of this industry. It is a BIG thing. Is this movement going to lead the tourist from the garage? Is there going to be made an opportunity for some one to set up little garages and filling stations next door to these comfort stations and grab all the business? Are not these comfort stations the big opportunity everyone has expected for a chain of "United Cigar Stores" garages?

It's about time we all waked up a bit!

Ever since touring began the motorist has patronized the garage. We have all fondly dreamed that he couldn't get away from the garage, that there was no other place where he could go.

This HAS BEEN true. The motorist has patronized the garage and has put up with a great deal of inconvenience. He has found unclean places of business, with nothing in some cases that even approached a comfort station.

Yet he has wanted these comforts and conveniences. He has longed for them, and now this longing is taking the form of a chain of comfort stations in which there are undreamed-of possibilities for harm to the garageman and dealer.

These proposed comfort stations should include emergency hospitals, waiting rooms and a lot more things, which may or may not be practical, but the possibilities are stupendous for actual damage to the garageman.

The car owner is the "goose that lays the golden egg" for the garageman and dealer.

Have we been giving the goose the right feed?

Spizzerinktum Counts

THE cartoon on page 5 this week sets forth a factor that is destined to play an important part in the farm tractor situation insofar as it affects the car dealer and the implement man.

The implement man is of an older school than the motor car dealer and it is generally considered that he is not so aggressive. There are, however, aggressive men among the implement dealers and a canvass of the West reveals that the more aggressive the implement dealer the more quickly has he become a motor car dealer, handling the two lines together.

This, obviously, places these implement men in the ranks of motor car dealers, and they cannot be termed strictly implement dealers.

With two fields of dealers eligible to handle the farm tractor it is obvious that the more aggressive faction will win out; it will investigate the business, take on the distribution of the product and push its merchandising. Too many implement men are passive; they wait for business. A greater proportion of car dealers are active.

The situation is well summed up in the cartoon on page 5. The car dealer, alert and aggressive, is already getting the tractor business while the implement man as a class is still wondering.

Out in the West they roll "pep," ginger, enthusiasm, aggression and all allied qualities into the one word "Spizzerinktum." It is an aggressive word and—it counts.

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What Have You to Say to This?

Editor Motor World:

A new evil has arisen in the automobile accessory trade and is rapidly assuming the proportions of a nuisance to car owners and a real menace to the reputations of dealers, jobbers and parts manufacturers.

I refer to the distribution and sale of imitation contact points, springs and other wearing parts of standard magnetos, distributors and other electrical equipment of the car.

There are several concerns engaged in the manufacture of these fake or imitation parts and the extent of their dealings is apparently widespread.

Jobbers are supplied with standard catalog pages containing illustrated lists of parts "to fit" (this probably as a concession to the patent laws) Delco, K-W, Atwater Kent, Remy, Splitdorf, Bosch, etc. These fake parts are usually listed at prices much lower than the genuine and this is their only reason for being.

Is It Clean Business?

Now, the question of whether this business is within the law is of little interest to the writer. His objection to the practice is simply one of clean business and the fact that the imitation parts made "to fit" at least one ignition device with which he is familiar, do not perform their function properly and give trouble which the car owner (who does not know that he has bought fake points) blames first on the car, then the ignition system.

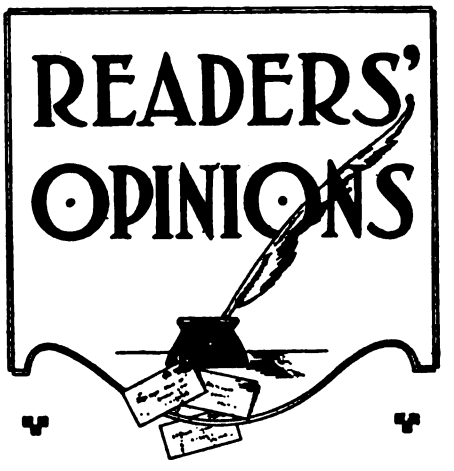
As an instance of what I have in mind, take the contact spring, which is a part of a certain well known ignition system. This spring is made of a special grade of steel and its construction is a matter of almost microscopic accuracy. The exact tension of this spring must be carefully limited, and upon this accuracy of tension depends the efficient operation of the whole ignition system—of the whole car!

Causes Trouble

Many cases of trouble have come to the writer's attention which have been traced to the improper tension of this spring, resulting in burning and rapid deterioration of the ignition equipment—and in practically every case this part was found to be an imitation part bought by the car owner either with his eyes open or closed, as the circumstances have varied.

The use by car dealers of these imitation parts jeopardizes the reputation of their cars and the good will of their customers, and makes it impossible for the ignition manufacturer to be held responsible for the service of his product.

The use of cheaper imitation parts by a garage and repairman is just as "bad



business" as stopping a radiator leak with corn-meal and charging for a soldered repair.

The jobber who sells these parts "to fit" instead of the genuine immediately locks the door on a legitimate profit (in dollars, not in per cent on the sale) on legitimate goods.

The manufacturers of these parts are out to pirate the parts business. Price is their only sales argument. They assume no responsibility—the layman cannot tell whether the part is properly constructed or not—can only go by the resemblance between the real and the imitation. The only aim of the imitation part manufacturer is to make something that *looks* like the genuine and sells for less. His methods of manufacture do not permit of accuracy. If they did, his price would of necessity be higher than that of the original manufacturer.

Says It's "All Wrong"

The whole business is wrong because it is based on a fallacy. A car owner buys parts only for replacement—he would not buy or use more of them if he could get them cheaper.

The average car owner realizes the vital importance of his ignition system in the proper performance of his car. Offer him his choice—take a set of contact points in each hand and say to him:

"Here in my left hand I have a genuine contact spring and screw—in my right an imitation pair. The real thing will cost you two dollars, the imitation a dollar and a half."

Would the car owner deliberately risk the performance of his car for that half dollar saved?

No, it is the dealer who seeks to save money on service or who does not realize that even though the points may be of genuine platinum, the part may still be wrong and cause trouble, annoyance and discredit—to the car, the manufacturer who built it and to himself.

Only a few hours before writing this an instance came to light where the owner of a car spent forty-five dollars for additional unnecessary work on his motor after the repairman installed fake contact points, which immediately corroded and caused missing but were not suspected because they had "just been changed."

In another case a number of cars were sold to a taxicab company. The mechanic employed by this concern for personal reasons (?) employed imitation ignition parts for his repairs. The amount of ignition trouble which ensued nearly caused a suit between the taxi company and the car dealer, damaged the reputation of the car in that territory, lost business for the taxi company and discredited the manufacturers of the original ignition equipment.

Asks Your Opinion

The writer has discussed this subject at length and believes that it merits the attention of all interested parties.

He would respectfully ask for a publication of his views and an expression of opinion from jobbers, dealers and garage men, believing that when the matter is given its merited attention by these gentlemen they will act together to correct this evil.

The writer believes that this is a most important issue and would ask for the cooperation and advice of your editorial department in fighting the evil.

Every statement above written is capable of proof and if any of your editorial department would care to see and test for yourself the difference in performance between these genuine and imitation parts we will be glad to demonstrate this beyond doubt.

Aside from its legal aspects—aside from the question of justice to the manufacturer who has built up a reputation for quality which is endangered—the car owner himself should be protected and I ask your assistance in abolishing the evil.

Very truly yours,
ELECTRICAL.

This System Seems Good!

Editor Motor World.

We have a very neat system of timekeeping on repair work. We have provided each mechanic with a cheap watch. When he starts on a job, he simply sets his watch at twelve o'clock and if when he finishes he finds that the watch reads 2:15 o'clock he has put in 2¼ hours on that particular job.

We have been using this system for some time and find it very practical and entirely satisfactory to our customers. If all repairmen would adopt our plan, there would be less disputes about mechanics' time.

Yours very truly,
RAY AUTOMOBILE CO.,
Per T. R. Ray.
Fort Worth, Tex.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 787) VALVE SPRING LIFTER

An adjustable valve spring lifter that possesses the added advantage of holding the valve down from the top is shown herewith. It is cheap and easy to make, and may be adjusted to fit many makes of cars.—G. A. Wadman, J. W. Maguire Co. (Pierce-Arrow), Boston.

(No. 788) GENERATOR-BEARING

Inaccessible generator bearings may be easily removed by the device shown. The two halves of the puller are first slipped beneath the overhanging edge of the bearing and tightened by means of the bolts. A screwdriver may then be used to pry the bearing loose.—J. E. Quinn, Studebaker Corp., Boston.

(No. 789) BABBITT HAMMER MOLD

A serviceable babbitt hammer mold may be made from a hardwood block. A large hole is drilled lengthwise through the block and a smaller hole for the handle is drilled at right angles to it. The block is then sawed in two, after the bottom plate has been screwed into place. To use, the two halves are clamped together, with the handle in place, and the mold is ready for the molten babbitt. Care must be taken to have the hold dry, and the babbitt should be poured slowly. In removing gears and arbors, or in any place that there is danger of upsetting the work, the babbitt hammer is indispensable.

(No. 790) ADJUSTABLE PULLER

Time is lost in the adjustment of the jaws of a gear or wheel puller. The work is facilitated by the use of a puller having the adjusting holes cut away to the sides in the manner shown. The jaws may readily be moved from one position to the other, and are securely locked in place when the screw is tightened onto the work. Jaws made thus should be extra heavy, as the removal of the stock tends to reduce the strength.—George Schuster, Henshaw Motor Co. (Dodge), Boston.

(No. 791) CAMSHAFT GEAR PULLER

It is often difficult for a workman to remove the gear from a camshaft alone. The difficulty arises in catching the jaws of the puller beneath the gear and tightening the bolt at the same time. With the puller illustrated, the fixed jaw may be placed beneath the gear and the adjustable jaw caught by turning the thumbscrew. The puller may then be held in place with one hand until the screw is tightened, after which the operation is the same as with the ordinary puller.—J. L. Hall (Jeffery), Boston.

(No. 792) VALVE SPRING TESTER

The valve springs of a motor must have the correct tension, or the motor will not run smoothly. This may be determined by ascertaining the pressure necessary to deflect the spring a given amount. A testing set may be made up from an old valve, mounted in a threaded guide that is secured to the bench by means of an iron brace. The spring is placed on the valve rod and the locking collar tightened down until the spring has the same length as when in the motor. A stirrup is then hooked between the lower end of the valve stem and a spring balance connected through a cable to a pedal. Pressure on the pedal will compress the spring. A notch is made on the valve stem exactly ½ in. below the edge of the seat, and the tension is taken at the time the notch appears. A table of the number of pounds necessary to compress valve springs from the common types of cars should be posted near the apparatus. Reference to this table will show if the spring is all right. The data for the table may be obtained from the car manufacturer.—G. A. Wadman, J. W. Maguire Co. (Pierce-Arrow), Boston.

(No. 793) GENERATOR TESTING SET

Disabled generators can best be tested and repaired by means of a special testing stand. The layout shown permits the generator to be quickly mounted, run at any desired speed, and the trouble located by the resulting instrument readings. A pulley is clamped to the generator shaft and the generator clamped to the carriage. Lateral motion of the carriage governs the belt tension, and the carriage is locked by the same bolt that holds the generator.—J. E. Quinn, Studebaker Corp., Boston.

(No. 794) AUXILIARY JACK

It is oftimes necessary to block a car up and remove the jack for other purposes, and an auxiliary jack offers a ready method. One may be made up from a piece of iron pipe, oxy-acetylene-welded onto a strap-iron base and carrying an adjustable upright of steel turned down to fit the inside of the pipe. Holes are drilled at inch intervals in the upright, and the insertion of a steel pin locks the jack in the required position. A flat piece of steel turned up at the ends offers a rest for the work.

(No. 795) VALVE SPRING REMOVER

A valve remover that may be used on many makes of cars is made up from two pieces of strap iron and a threaded rod. The lower bar is placed between the engine frame and the chassis, and is slotted to permit the lateral movement of the fulcrum. The threaded upright with the two nuts permits up-and-down adjustment, and the plate at the top offers a rest for the lever while prying up the valve washer. Each end of the lever is notched—one large and one small—for different sizes of valves. The set may be made readily by any blacksmith.—J. Guinazzo (Winton), Hyde Park, Mass.

(No. 796) CRANKSHAFT STAND

After removal from the engine the crankshaft is usually placed on the bench or in a box, where there is danger of injury to the polished bearings. The wooden rests shown remove this danger and may be made up in a few minutes.—G. A. Wadman, J. W. Maguire Co. (Pierce-Arrow), Boston.

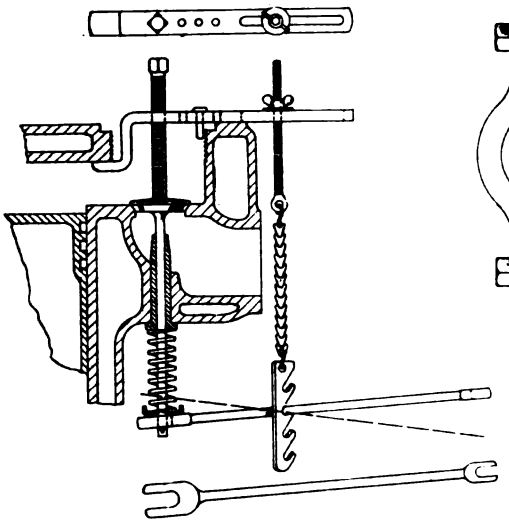
(No. 797) VALVE GUIDE SWEDGE

Worn pushrod guides may be made quiet and oil-tight by the use of a swedge and swedge block. The upper portion of the guide is placed in the lower swedge block, the upper swedge block placed upon it. Then, by turning the guide with tongs and hammering the upper swedge block, the metal is forced into the hole. The guide may then be reamed to the correct size and replaced in the engine.—G. A. Wadman, J. W. Maguire Co. (Pierce-Arrow), Boston.

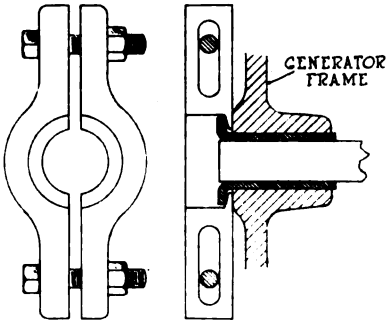
GENERATOR BRUSH CARE

The dynamo brushes should be inspected and cleaned about every 2000 miles. Do not oil them. When worn down to about ½ in. long replace with a new set. New brushes should be ground to a perfect seat on the commutator by drawing a piece of sandpaper, smooth side against face of commutator, several times under each brush, at the same time holding brush firmly against the paper. Keep the brush cover tight at all times and avoid soaking the dynamo with water or oil, as this will cause unnecessary trouble. Never install brushes other than those furnished by the manufacturers.—King Instruction Book.

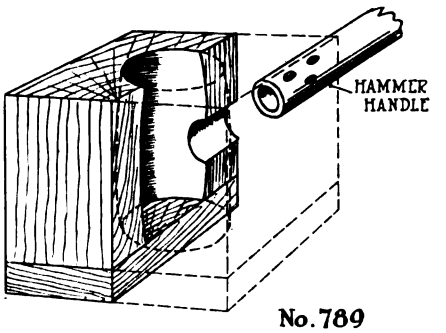
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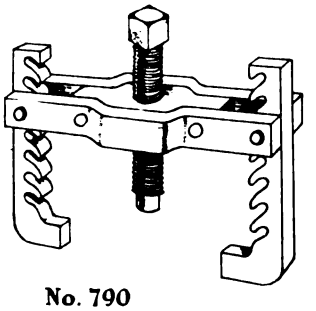
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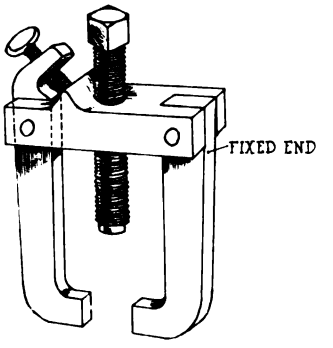
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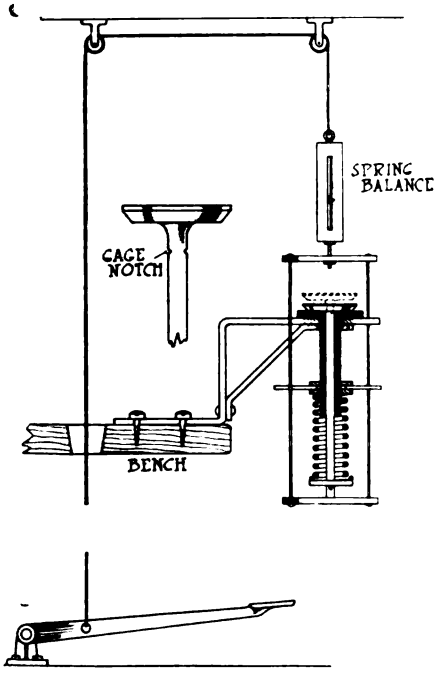
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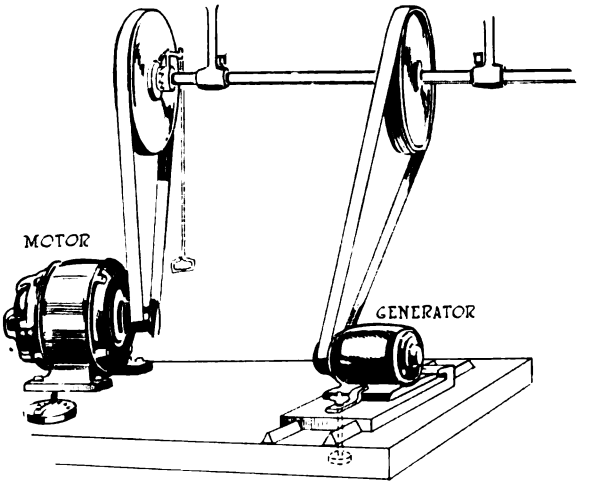
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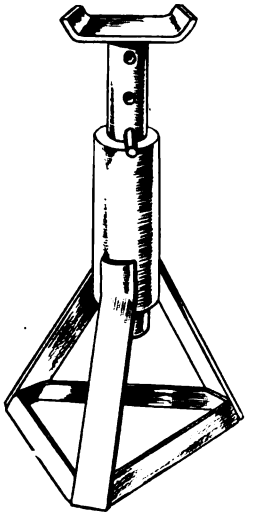
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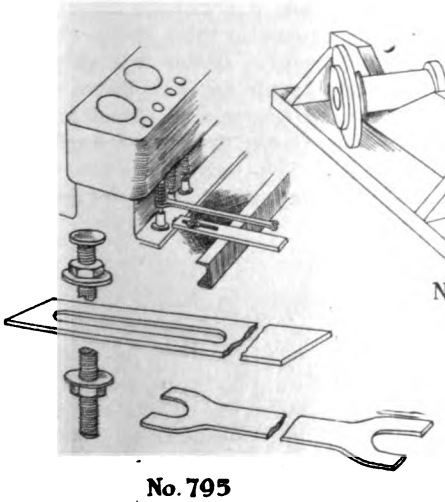
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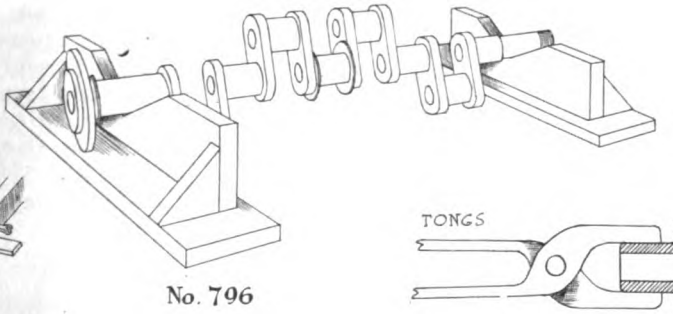
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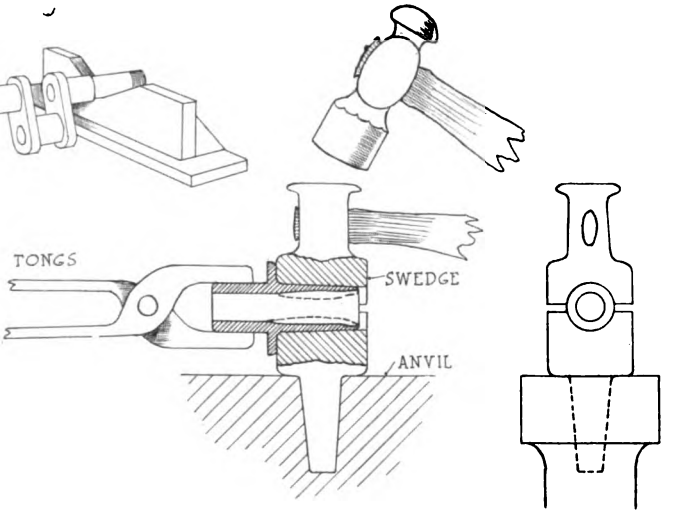
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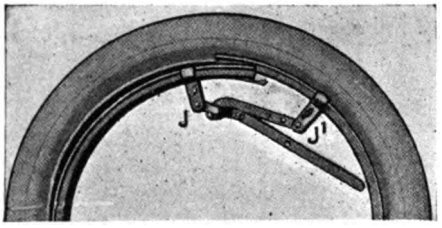
Accessories & Supplies



K. P. UNIVERSAL RIM TOOL

K. P. Mfg. Co., 250 West Fifty-fourth Street, New York. PRICE, $2.

A tool for demountable rims of the transversely split type, such as the Baker, Stanweld, Kelsey, Detroit, etc. The rim is locked in a collapsed position while the tire is being removed or replaced. In removing a flat tire from the rim, jaw J is clamped 4 or 5 in. from the split end of the rim that is to be pulled under. Jaw J1 is then clamped as far from J as the handle will permit. With rims of the Stanweld type the joint is broken with a screwdriver and the handle pulled over to the position shown in the illustration, locking the tool and freeing the tire. With the Baker type the handle is pulled sideways until the rim clears the valve stem and lugs. In replacing the tool and locking the rim the tool is capable of forcing the joint together, as is often necessary with an undersize tire. The manufacturer states that the tool will not slip, spring the rim out of shape or throw all the strain on one point of the rim. The tool is very durable, being made of cold-rolled steel, and weighs 3 lb.



K. P. Universal rim tool

WINDSHIELD CLEANER

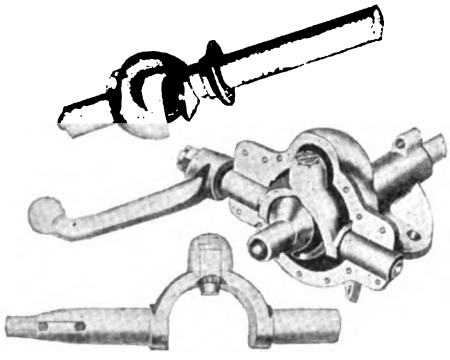
The Clear-O-Scope Co., 738 Madison Street, Chicago. PRICE, $5.

This cleaner is made of steel wire covered with rubber tubing and is slipped over the top of any standard make of windshield.

STEERING GEAR FOR FORDS

Nash Mfg. Co., 1723 O Street, Lincoln, Neb. PRICE, $12.50.

A steering gear installation for Fords. The operating member is a hollow metal sphere, having a spiral groove cut in its surface. A boss on the yoked shaft carrying the steering arm rides in this groove and is moved, or held, by the metal sphere. The gear works on roller bearings, and is said to be exceptionally easy to operate. It is also claimed to be irreversible and to require but one revolution of the wheel to turn the front wheels of the car from one extreme to the other.



Steering gear for Fords

WATER CIRCULATOR FOR FORDS

Hughes, Bull Co., Detroit, Mich. PRICE, $4.85.

Water circulation is assisted by a centrifugal pump which is combined with the fan and driven through the fan belt. The pump is mounted on the front gear cover in place of the arm which now carries the fan; its installation requires only a few minutes. Its capacity is 10 to 15 gal. per minute and it is guaranteed to prevent overheating.



Evapco air valve

HIGH-SPEED CAMSHAFT FOR FORDS

D. R. Noonan Mfg. Co., Paris, Ill. PRICE, $12.50.

A specially designed camshaft for Ford speedsters. The intake valves are opened 5 deg. before center and closed 40 deg. after center. The exhaust opens 51 deg. before center and closes 18 deg. after center. The valves are lifted slightly higher than with the standard Ford camshaft; and it will be noted that the intake opens before the exhaust closes. With a gear ratio of 3 to 1, a speed of 72 m.p.h. is claimed for a Ford equipped with one of these camshafts.

MISTOKLEEN CLEANER

Crew Levick Co., Land Title Building, Philadelphia. PRICE, $1.25, outfit including filled sprayer and Mistokloth polisher.

A spray cleaner for cleaning and polishing at one operation. It is described as containing only pure mineral oils, scientifically blended, and when wiped off with Mistokloth leaves the surface dry and lustrous. For refilling, quart, 1- and 5-gal. cans are supplied. For a small additional price the gallon can may be had equipped with a spray nozzle for garage use with compressed air.

GREASE-IN-TUBES

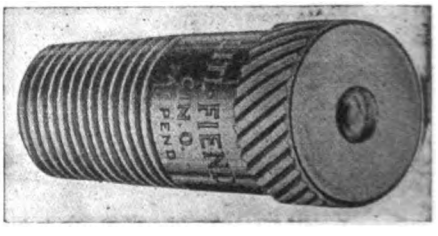
Crew Levick Co., Land Title Building, Philadelphia. PRICE, three tubes for $1.

Cup, gear or spring grease, packed in tubes. This method of packing automobile grease is claimed to be convenient, clean and economical. The grease is supplied in cartons of three tubes each. There is a distinct carton for each kind of grease, and one special carton—the Lincoln Highway Kit—which contains one tube of each of the three greases. For ready identification, the tubes are labeled in color—red for cup grease, white for gear compound, and blue for spring grease.

LITL FIEND AIR VALVE

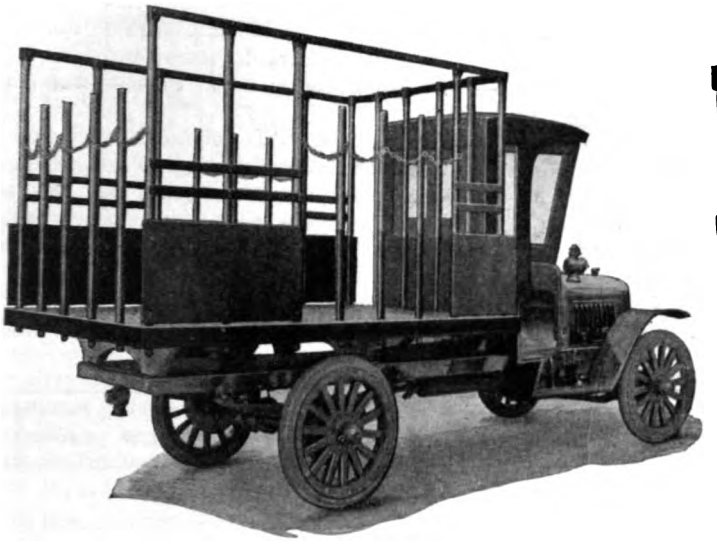
The White Mfg. Co., 619-621 Main Street, Cincinnati. PRICE, $3, prepaid.

This device is screwed into the intake manifold and is a tubular housing, holding an automatic valve at the outer end. At high engine speeds this valve opens and admits air to the intake, while at low speeds it remains closed and sends the normal mixture to the engine, it is claimed. This valve may also be used as a priming cock in cold weather.

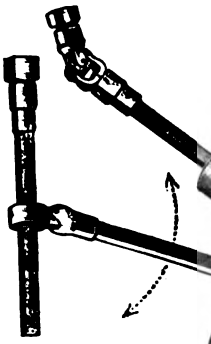


Litl Fiend air valve

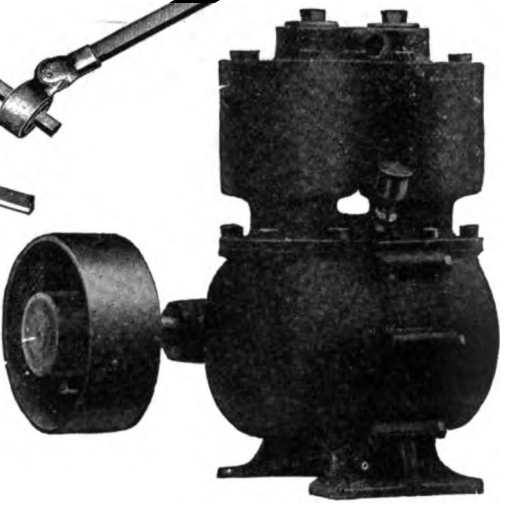
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All steel truck bodies are stronger but no heavier than wood



Removable handle socket wrench



Post twin cylinder air compressor, water cooled

ALL STEEL TRUCK BODIES

Stover Steel Tank Co., Freeport, I.l.

All steel, non-destructible bodies are made in a wide range of sizes and types to suit all needs. They are said to be stronger than wood bodies, yet lighter. In addition to the standard types, bodies are built to order.

REMOVABLE HANDLE WRENCH

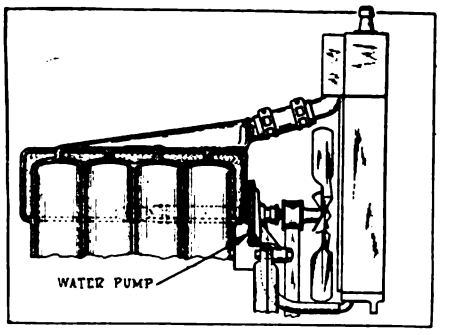
C. M. B. Wrench Co., Darwood, N. J.

Combines wrench and socket feature with the additional advantage of a removable handle. The handle is attached to the wrench head by a ball and socket joint, so that it may be made to move up or down to clear any obstacles in the way of its swing in removing nuts or bolts. Many out-of-the-way places can be reached with comparative ease because of this feature. Five different sets are offered, ranging in price from $4 to $9. A feature of the line is the special Ford set which weighs 5 lb. and includes ratchet wrench extension, universal joint and ten sockets ranging in size from ¼ to ⅝ in. square and hexagonal. The price complete in a carrying case is $4. Other sets are listed at $4, $6 and $6.50. The equipment DeLuxe, known as the Silver King, including adjustable handle ratchet wrench, screw driver, spark plug socket and sixteen square, hexagonal and cap screw sockets, ranging in size from ¼ to ⅝ in., sells at $9.

EVAPCO AUXILIARY AIR VALVE

Evapco Mfg. Co., 427 Grand River Avenue, Detroit. PRICE, $5 prepaid.

An attachment for supplying additional air to the intake manifold. It consists of a metal casing, housing an automatic valve, and screwed into the intake manifold. At low speeds the valve is held closed, and the normal mixture is supplied to the engine. As the speed increases the valve opens and admits air in proportion to the speed. The installation



Centrifugal pump attached to Ford motor

is made by tapping a ⅜-in. hole in the manifold and screwing is the valve. No adjustment is required and the valve fits any make of car.

POST AIR COMPRESSOR

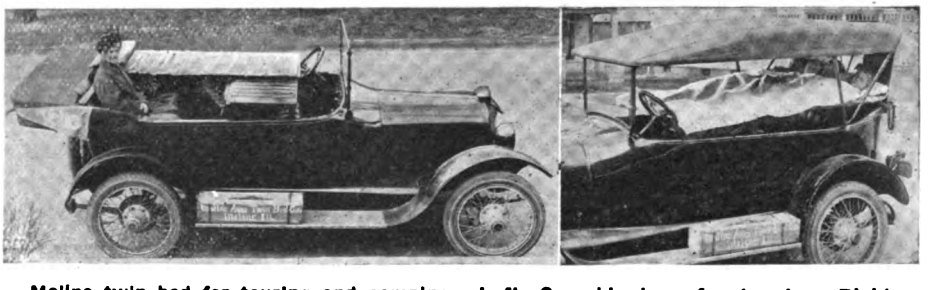
Machine Shop Equipment Co., Grove City, Pa.

A twin-cylinder, vertical, water-cooled air compressor with all parts working in oil. All bushings are removable. It is built in six sizes, from 2 x 2¼ to 5 x 6 in.

MOLINE TWIN BED

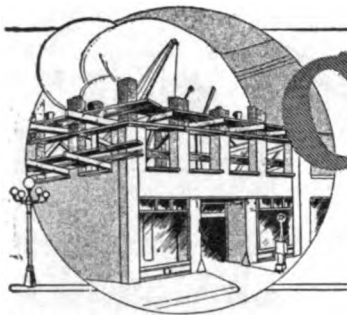
Moline Auto Twin Bed Co., Moline, Ill. PRICE, $8 to $12; case, $3 to $5.

Designed to meet all the requirements of touring and camping. It is a comfortable, full-sized bed, which is called a twin bed because one side is entirely independent of the other. Anyone can erect it or take it down easily in 10 min. When not in use it is folded and packed into a waterproof fiber case, which is placed on the running board of the car. Its weight, including case, is but 35 lb. The bed and case are made to fit any style or make of touring car. As a full-sized bed it occupies the space above the seats, which gives the advantage of plenty of fresh air, while the curtains of the car can be arranged for ventilation and serve as a protection from wind and weather. The bed is supported on the rear top brackets of the car and legs—connected to the frame with swivel hinges, making them adjustable—rest on the sills of the car, while straps, connecting the cross bars of the bed and the floor of the car, hold the legs firm and secure. Preparations for retiring can be made by one occupant on one side of the car after the half of the bed on the other side is made up. Room is afforded in the front of the car, before the slats of the remaining half of the bed are laid, for the other occupant to undress before entering the bed, after it is completely made up, from the front. All the space in the body of the car is left available for clothing and luggage. By no means the least important feature of the auto bed is that it can be arranged to form a cooking and dining table. The front section turns back, making both the front and rear seats available, and, with the use of the 3-in. slat the table is strong and solid.



Moline twin bed for touring and camping. Left—One side down for dressing. Right—Bed in use

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

THREE-STORY BUILDING FOR IRREGULAR PLOT

Figs. 1 to 6

Editor Motor World:

We are inclosing a diagram of an irregular plot, on which we plan to erect a three-story garage. Will you kindly suggest a suitable arrangement for us to follow and the location of an elevator or ramp?—C. A. Vuille, Huntingdon, Pa.

Fig. 1 shows the ground floor with the offices concentrated at the rear of the showroom and the accessory store at one side. Back of the store is the accessory stockroom and to the rear of it is the tool and parts stockroom, so that the man who has charge of the accessory store may also keep track of the parts stock and the tools.

Figs. 2 and 3 show two layouts which can be used on the second and third floors. The plan followed in Fig. 2 is particularly suitable for active storage, because all the cars except those in the corners may be removed without disturbing any others.

The arrangement shown in Fig. 3 has the advantage that forty-eight cars may be stored instead of thirty-six, as provided for in Fig. 2. As has been explained many times, only those cars directly on the aisle should be on active storage. Those in the two rear rows should be on dead storage or might be new cars, which you knew would not need to be removed except at rare intervals. Probably when it would be necessary to remove some of the cars in the rear rows, all, or nearly all, of the machines in the rows facing directly on the aisle would be outside of the garage.

Fig. 4 shows the first floor as it would look with a ramp, and Fig. 5 illustrates how the cars might be arranged on the second and third floors if a ramp were used. Fig. 6 is a section of the ramp.

Whether it will pay to have a ramp or not depends on the cost of land and building material. If the total investment by the ramp or the total income which might be obtained from space taken up by the ramp is less than the total elevator expense, then it is advisable to have a ramp. The total elevator expense includes interest on investment, cost of current, repair and depreciation charges.

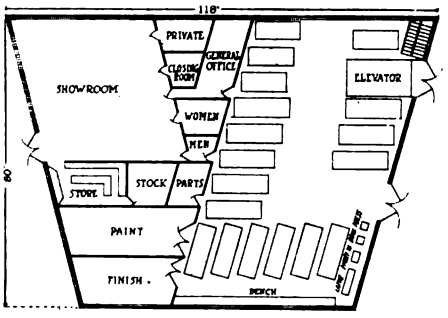


Fig. 1—First floor

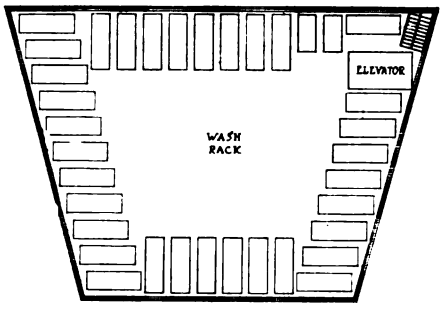


Fig. 2—Second floor

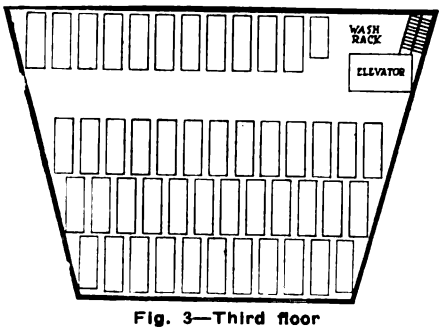


Fig. 3—Third floor

The entrance to the ramp, Fig. 4, was put at the rear so that the full frontage might be used for showroom; however, if it is desirable to have the ramp entrance at the front and change is a simple matter, as it merely means narrowing the two showrooms enough to allow the entrance to be put in and then the second and third floor plans are merely turned around, the front going at the back and the back at the front.

COLORING CONCRETE

To color concrete properly it is not advisable to use paints or stains. Best results are obtained from the use of a pure mineral cement color that is free from clay, gypsum and organic matter.

A well-informed contractor offers the following formula for coloring cement. He says:

"The colors will not fade if the directions are closely followed. These recipes were given me some years ago, and I find, that wherever tried, they have proved to be all that was expected of them. The quantities are given per barrel of cement, the coloring matter in each instance being mixed dry with cement and sand. Caution is given that Venetian red and common lampblack should not be used, as the color obtained with these materials will run and fade. The various colors and quantities of coloring materials for each barrel of cement are as follows:

"For brown, 25 lb. of best roasted iron oxide; or 15 lb. to 20 lb. of brown ochre.

"For black, 45 lb. of manganese dioxide.

"For blue, 19 lb. of ultramarine.

"For buff, 15 lb. of ochre. (This is likely to considerably reduce the strength of the mixture.)

"For Green, 23 lb. of greenish-blue ultramarine.

"For gray, 2 lb. of boneblack.

"For red, 22 lb. of raw iron oxide.

"For bright red, 22 lb. of Pompeiian or bright vermilion.

"In using coloring matter with concrete, the color should always be mixed with the cement dry, before any sand or water is added. The mixing should be thorough."—*Architect and Engineer.*

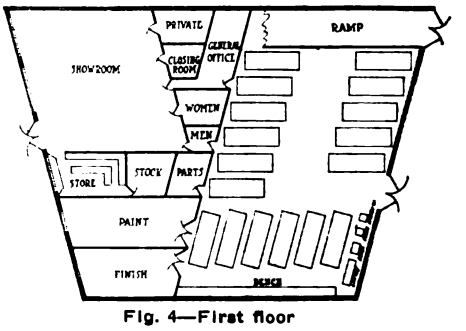


Fig. 4—First floor

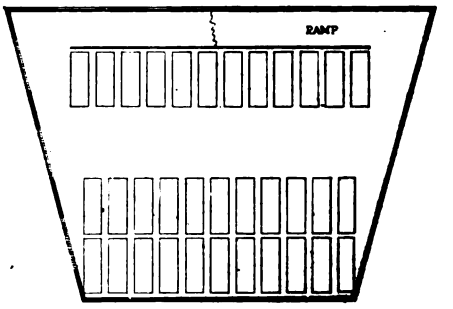


Fig. 5—Second and third floor

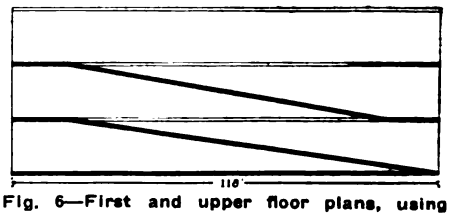


Fig. 6—First and upper floor plans, using ramp

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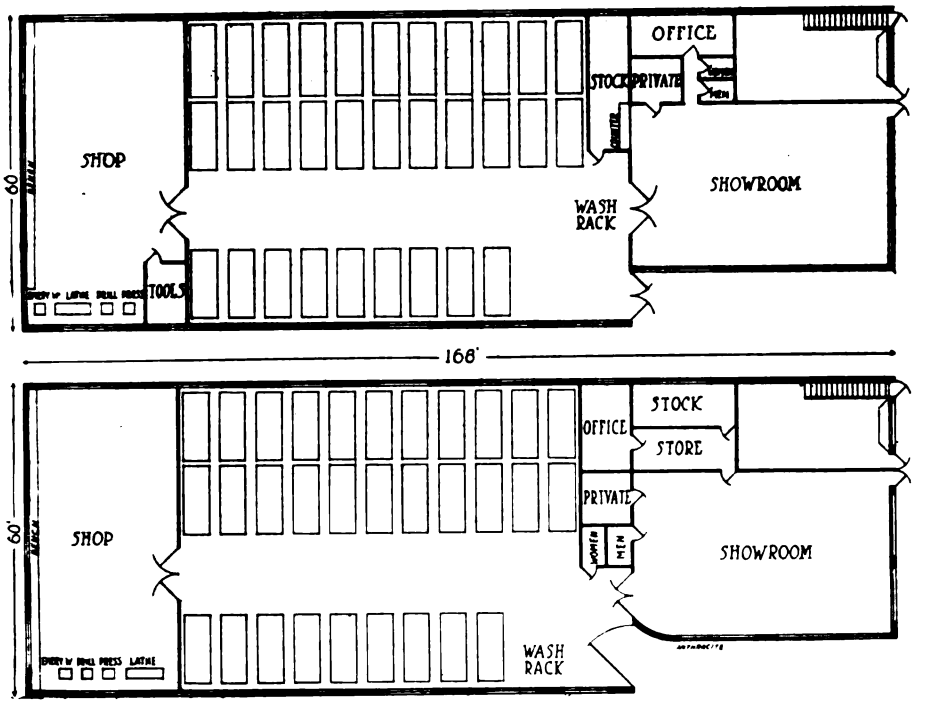


Fig. 7—Upper—Plan for one-story garage, with store and stock-room combined. Fig. 8—Lower—Arrangement with the stock-room and store separate

ONE-STORY GARAGE WITH LARGE SHOWROOM

Figs. 7, 8 and 9

Editor Motor World:

We are on the verge of closing a contract with a local property owner to build a one-story garage, 60 x 167 ft.; the lot is level and situated in the center of block.

As our largest income is from car sales, we want a large and well laid out showroom, and a shop in rear.

We have outlined the general plans as we desire them on back of this letter and ask you to suggest the best place for wash-rack, etc.

The writer takes your paper and it is certainly a live one and has made our firm lots of money.—Jos. J. Curt, Jr., president and treasurer, Anthracite Motor Car Co., Scranton, Pa.

Figs. 7 and 8 show plans which we believe you will find satisfactory. They resemble yours in a general way, but differ in details.

We have not altered the size or shape of either your showroom or shop, because these seem to be about the right dimensions as near as we can judge from this distance and without having all the details at hand.

There is one point upon which we wish we had more information. That is, just what you intend to use your stockroom for. Although you call it a stockroom, it would appear from its location that you were planning to use it as a sort of an accessory store and stockroom combined.

If it is merely to be a stockroom we think that the layout shown in Fig. 7 will prove most satisfactory. This gives you a compact arrangement of offices.

If your roof is high, you might find it advantageous to locate the stockroom on a hanging platform or balcony, thus leaving the floor free for the storage of cars.

Although your letterhead states that you deal in supplies, you have made no provision for a store, unless you intend to sell them in the stockroom, as already suggested. You will find that it will pay to display your accessories. You should have a store window for this purpose. An ideal plan would be to use the vacant store which you evidently intend using for some other purpose for the sale of accessories and then have the stockroom immediately back of it.

Fig. 8 shows a plan which you may use in case you desire to sell your accessories from the stockroom. We would suggest that you have a partition across the room as indicated, using the front as a store and the rear for rough stock. The front edge should be lined with counters.

For that matter, you might utilize that part of the stockroom in Fig. 7 which overlaps the showroom as a store, with no partition, but merely a counter along the dividing line, though it, of course, should have shelves lining the walls.

The entrance to the showroom should be at one side or the other. If you place it in the center there will not be room enough at either side to properly allow for the display of a car. It is better to have one car well-displayed than two poorly.

The idea of having the show window along the driveway is excellent.

We are very pleased to have you say "Motor World is certainly a live wire and has made our firm lots of money." We will be greatly indebted to you if you will be kind enough to give us details regarding how we have been able to help you. We feel that there is a basis for a good story in this statement of yours.

We hope that you will continue to write us whenever you need information or advice on any matter connected with your business. We are always glad to aid our subscribers in any way, and the oftener they write the better we like it.

Republic to Triple Employees

ALMA, MICH., July 31—The Republic Motor Truck Co. will erect two new factory buildings in which to manufacture the new Model 9 ½-ton truck. The main structure is to be 60 x 1000 and one story. Parallel to the large building will be built a stockroom 36 x 500. The two buildings will have a floor space of 48,000 sq. ft. and will cost about $38,000. The company at present employs 700 men and this number will be practically tripled upon completion of the new buildings.

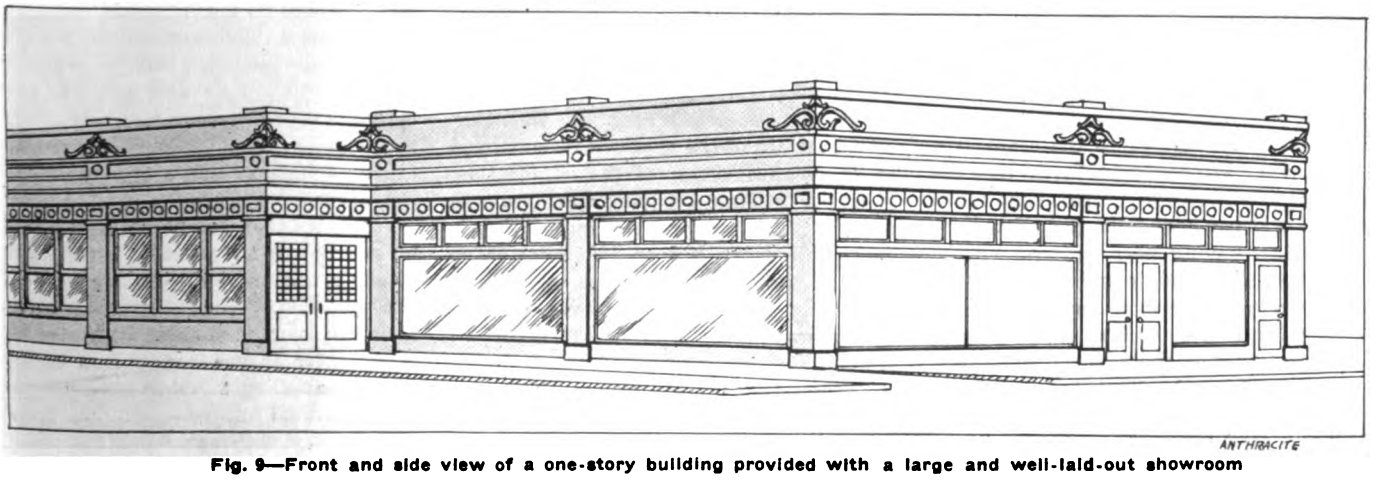


Fig. 9—Front and side view of a one-story building provided with a large and well-laid-out showroom

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Do It This Way—

···QUERIES ANSWERED···

SHOULD CRANKCASE OIL BE THROWN AWAY?

Editor Motor World:

I have considerable lubricating oil that has been in the case but a short time. Owing to the oil getting past the piston rings, causing the motor to smoke, the remaining oil becomes dark and smells of smoke. Is there any way in which I could clean same and make fit for use, as I have changed rings and expect no more smoke from motor?—Subscriber.

Probably this oil is not so bad but what it is still good for several hundred miles of running. Oil becomes dirty very shortly after it is put in the motor, and the fact that it is now black is no indication that it is not a good lubricant.

According to some engineers it is possible to clean oil that has been used for some time so that the oil is practically as good as new, but there are others who question whether this really can be done; and, furthermore, it is considerable trouble to renovate the oil, anyhow.

C. W. McKinley, chief engineer of the Overland company, says that the oil must first be filtered through waste and charcoal, and finally through pure sand. He also states that there are no detrimental effects through using this oil over and over again, providing it is thoroughly cleaned as described.

J. Whyte, a Maxwell engineer, states that it is questionable economy.

Damage Greater Than Saving

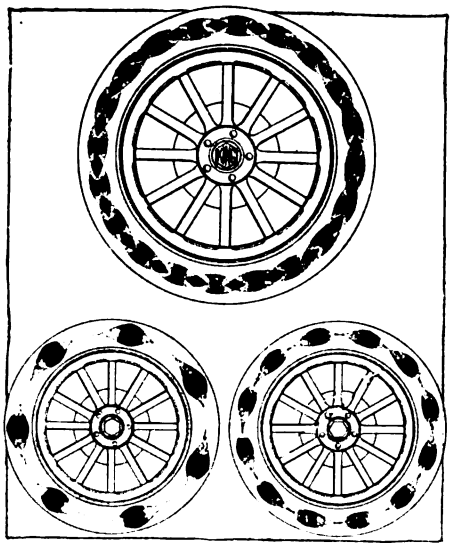
The chief engineer of the Pierce-Arrow company, David Fergusson, advises against the use of motor-lubricating oil over and over again, even though it has been carefully strained. He says that the old oil shohld be drained every 300 to 400 miles, replacing it with a complete charge of new oil, for the reason that after this time the oil becomes exceedingly dirty, containing a considerable amount of carbon deposit, as well as sand, road dust, etc., that has been taken in through the carbureter and has moved past the piston rings into the crankcase.

He says: "We have also found that the viscosity of lubricating oil is very much less after it has been used for a few hundred miles, having been reduced by the addition of the gasoline and in some cases containing a considerable amount of kerosene which may have been used to prevent gumming of the pistons and rings.

"Lubricating oil with all this foreign matter in it is unsuited for feeding an intricate mechanism like an automobile engine. The damage done by the use of such dirty oil is altogether greater than the saving effected by being able to run double or triple or even ten times the mileage on one charge of oil.

Heating May Help

"It might be possible, of course, if proper protection were taken, to filter the oil and by applying heat to it for a long enough time to remove any gasoline that might be present. At the same time it would not do to advise this method unless it were absolutely certain that the proper precautions would be taken and that the resulting oil would be properly tested to see that it was in proper condition to use. The cost of this to the ordinary user would be prohibitive. It would cost him more to have proper tests made by chemists, of his own filtered lubricating oil, than it would to throw it away and buy new oil.



Interesting method of showing at a glance the number of explosions per one revolution of the wheels in four, six and eight cylinder cars. This diagram was originated by the King Motor Car Co.

"If he uses new oil he will be absolutely certain of the quality recommended by the manufacturer of the car that he is using, getting the very best possible results. The cost of using new lubricating oil every 300 or 400 miles is so small an item in the expense of running an automobile that it seems to us a folly to attempt a saving of so small an amount."

Russell Huff says: "There are many reasons why we recommend the changing of engine-lubricating oil every thousand miles or oftener, but I will touch only on the more important reasons.

"In an ordinary oiling system where the oil is used over and over again many thousand times without any fresh oil being added to the original quantity, experience shows that this oil gradually becomes thinner, absorbing fine carbon particles and water, and gradually becomes more acid in nature.

Gasoline Thins Oil

"The thinning down of a good grade of oil is generally caused by the absorption of condensed gasoline which is picked up by the oil film around the top of the pistons, the reciprocating action of the pistons sliding over this oil film many thousonds of times eventually dragging some of this oil with the dissolved gasoline in it down into the crankcase. A strong affinity of oil for gasoline permits the more rapid absorption of the gasoline if there is a poor fit between the piston, piston rings and cylinder wall. A poor fit will allow a certain proportion of the charge to be blown down past the sides of the piston into the crankcase compartment during the compression stroke.

"In the same way the exhaust gases of the high explosive force on the top of the piston will work past the loose fitting pistons and carrying a large percentage of moisture will condense and cause an accumulation of water.

"The oil film on the walls is constantly being burned into carbon. Gradually this carbon works down into the oil and causes the black sediment which rests in engine oils after they have been used over and over.

Evaporation a Small Factor

"I do not believe that the thinning down of the oil from use is caused so much by vaporization of some of its constituents as from the presence of gasoline and water which get into the oil from the above mentioned sources.

"As to the question of rejuvenating used engine oil, I do not consider this practice desirable, owing to the expense involved in accomplishing a first-class job. The suggestion of merely heating the oil for 1 hr. at a temperature of 300 deg. will do much toward driving out the gasoline and water, but I do not believe this operation will neutralize the acids in the oil or pick out the gritty carbon and calcareous substances which are usually found in used engine oil."

Mr. Johnson, laboratory engineer of the Studebaker Corp., says: "In general our idea is that for ordinary use motor oil can be used repeatedly after suitable filtering, and, if necessary, evaporation of the gasoline. For very hard service, however, such as running in new motors, it is better to use new oil, as we have found that a tight motor will seize when run with old oil when it will operate satisfactory with new."

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Accounting and Business Systems



By T. W. Snead

WANTS A SYSTEM

System Editor:

We have subscribed to Motor World the past 3 years, but did not notice the accounting department closely until the system, or rather, series of accounting was half completed. We opened a repairshop 2 years ago, intending to keep no books and do only a cash business, and have at the present time a sort of memorandum or scrap book system, which in some respects is worse than none. Our business consists of general repairs (no agency for cars), small amount of storage and considerable welding, also electrical and ignition work.

After this description of our situation, if there are any special suggestions that you can make, be assured that they will be gratefully received. As we would like to open our books with your system, kindly forward the outfit as soon as possible.

Hodges' Auto Repair Shop.
Birmingham, Ala.

After you have installed the system we shall be only too glad to answer any questions or to help you on any points on which you are not entirely clear.

The writer would like to emphasize the fact that no matter how small the volume of your business is, or whether you are doing a cash or charge business, that business is worth recording properly, as so many of us have found after the damage has been done.

AS TO DUPLICATE CUSTOMERS' ACCOUNT FORMS

System Editor:

We would like to ask if it would not be possible for you to furnish the Form No. 3 sheets in such a way that we could use the duplicate statement system, by which at the end of the month the leaf containing the original statement could be torn out of the book or taken out and mailed to the customer, leaving the carbon copy in our possession? Kindly advise us about this and send same if you have it.

We would like to ask if you have any suggestions to make regarding the accounts payable with the automobile manufacturing companies? We find that there are many cases of replacement on cars, also in ordering parts, mistakes are sometimes made in shipments, also parts are sometimes ordered which are not used and this makes a condition in which we are often far behind on credit of parts returned or sent in for replacement, etc. If you have given any time to studying this part of the sales business we shall be very glad to hear from you or have any suggestions which could enable us to simplify this to some extent.

Hugo-Buick Co.
Moscow, Idaho.

Your System

Even if you are not using the Motor World Simplified System of Accounting your questions about system will be welcomed by this department.

The manufacturers of the Motor World Simplified System of Accounting will be glad to submit samples and prices to you covering the duplicate statement system, by which at the end of the month the leaf containing the original statement could be torn out of the book and mailed to customer, leaving carbon copy in your possession.

However, the writer would like to express an opinion which has been published several times in our columns on this way of sending out your statements. If the charges and credits from Form 1 (the Income sheet) are posted to the customers' account sheet in the rear of the binder, then you have a permanent record at all times of the customers' accounts. It seems to me, then, that the carbon sheet would be "excess baggage."

Why not carry just an original statement sheet, which could be made out from day to day and be all ready to mail at the end of the month?

The writer does not know for sure whether you sell gasoline or not, but he has found numbers of cases where charges were made on these kind of sheets (duplicate statement sheets) in gallons and not in dollars and cents. The number of gallons purchased each day were posted to the account and at the end of the month these gallons totaled and multiplied by the cost per gallon, which constituted the charge for that month's business. You can readily see that a mistake of 10, which is so easily made, would mean an error of $3 at 30 cents a gallon in this customer's account.

The worst part of it is, there would be no way of finding this error, for the reason that there is no control over the entire customers' accounts receivable, due to the fact that charges had been made in gallons and not in dollars and cents. This is only one of many objections that we have found with this system. The writer could give you many more.

Possibly you have a different plan for working these monthly statement blanks and if so we would appreciate it very much if you would "tell us the story."

In answer to your inquiry in regard to accounts payable with manufacturers, wish to say that where parts are returned on which you are to receive a credit, the cleanest and the best way to handle this is to place a value on this part when you return same to the manufacturer. Charge it to him as if you were charging a customer on Form 1. Your debit would be in the All Other Accounts column to the manufacturer, and your credit would be to the customer that returned the part.

In this way you have a record of the part going back to the manufacturer and when the credit is received if the amount does not just agree with what you charged, this can be easily adjusted by another entry correcting the amount.

If it is for parts returned that have not been used, you would charge the manufacturer at the cost price and credit your inventory stock on hand; then at the end of each month send the manufacturer a statement of the account as it appears on your books, and in this way you will always be in balance to a certain extent on this end of your business.

I might add that when you credit a customer for a part upon which you are not sure just what the ultimate credit will be to you from the factory, be sure to make some notation of this credit on the customer's sheet; that is, do not allow him to use this credit as a cash payment until you have been definitely advised as to the amount by the factory.

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The RETAIL NEWS

CANADA

The Electric Motor Car Co., 219 Ontario street, West, Montreal, has been appointed Anderson Electric dealer.

The Kelly Tire Co., Montreal, has taken larger quarters at 17 Park avenue.

The Savard Motor Supply Co., 119 Laurier avenue, West, Montreal, Que., has opened an accessory store.

The New Accessory Store, 11 Park avenue, Montreal, Que., is the latest addition to Motor Row, handling supplies.

The Canadian Gasoline Corp., Ltd., Toronto, Ont., has incorporated at $3,000,000.

NORTHWEST

C. A. Snyder, Barnesville, Minn., has bought the Possehl & McColl interests in the Front Street Garage.

J. T. Morse, Minot, N. D., will open an automobile and tractor agency.

The Sentinel Butte Auto Co., Sentinel Butte, N. D., has moved to its new building on West Front street.

The Alexander Motor Co., Alexander, N. D., has opened the largest garage in McKenzie County.

Swan Hokanson, Rosholt, S. D., has bought the H. K. Stowe Garage.

Ben Kliegle, Strandburg, S. D., is building a garage.

C. H. Paxton, Minneapolis, has been appointed Northwestern manager for the Federal Rubber Co., at 1115 Hennepin avenue. He succeeds W. F. Bigelow, resigned July 15.

John Roufs, Jr., Victoria, Minn., has opened a garage. He is from Cologne, Minn.

Emil Strom, Two Harbors, Minn., has been made agent for the Saxon.

The Whi-Kinn Motor Car Co., Duluth, has been incorporated at $50,000 by John Wahl, Ole Kinn, H. C. Wahl, Justin Zuger and Oscar Nilsen.

Erskine, Logan & Co., Grand Rapids, Minn., will build a garage.

L. J. Holub, Preston, Minn., has rented the Munkel Garage.

Joseph Heiling, Maddock, N. D., has taken the Pullman agency.

Brown & Johnson, Madison, S. D., a new firm composed of W. C. Brown and Bud Johnson, have leased the Daniels Garage.

Clemons & Kaupp, Hecla, S. D., garage proprietors, have dissolved, and Clemons will continue.

McKinney-Fuller Motor Co., Grand Forks, N. D., will erect a two-story garage.

Philip O'Neill, Red Lodge, Mont., will erect a garage to cost $10,000, at Main and Montana streets.

Hopkins & Dicks, Hinckley, Minn., have bought the E. A. Elford & Son Garage.

Fred Linberg, Brooklyn, Minn., mail Hibbing, Studebaker and White agent, has moved into a new garage.

William Wishart, Noonan, N. D., has taken the Empire agency.

George Dixon and Major Roberts, Devils Lake, N. D., have let the contract for a garage, 40 x 75.

Siegling Bros., Belt, Minn., have bought the MacLeod Garage and reopened it.

The Jacobs Garage, Wabasha, Minn., and automobile livery has opened.

C. A. Snyder, Barnesville, Minn., has bought the McColl & Possehl Front Street Garage.

The Hall & Finton Garage, Alden, Minn., is ready to open.

The M. L. Johnson Garage, Hastings, Minn., has been bought by J. W. Downs & Son, Chaska, Minn.

L. G. McCormick & Co., Sebeka, Minn., will convert the Kraywinkel blacksmith shop into a garage.

J. W. Rhodes, Maquoketa, Ia., is building a new garage, 50 x 100.

Joseph Schallan, Havelock, Ia., suffered the loss of his garage by fire recently. A motorcycle was burned. Schallan will rebuild.

H. H. Kinner, Elberon, Ia., is putting up a new fireproof garage.

W. F. Vick, Montgomery, Ia., has installed a new free air system at his garage and has added a line of tires and accessories.

Fred Crist, Shenandoah, Ia., has located his garage business in a new building at Sheridan avenue and Sycamore street.

H. A. Wilsey, Spirit Lake, Ia., has established the Wilsey Storage Battery Co. in the old Spirit Lake House building.

The Miller Auto Co., West Bend, Ia., has sold out to L. J. Jergens, of Hardy, the consideration being $38,000 for the business, three new cars and 23 acres near West Bend.

J. R. Stickler, Shenandoah, Ia., will locate his business in a new building at Sheridan avenue and Sycamore street in August.

The Iowa Auto Sales Co., Sioux City, Ia., has been formed to handle the Maxwell and has located in the Motor Mart. J. D. Cullis is manager.

Edwards Bros., Joplin, Mont., have taken over the Joplin Garage.

James K. Banks, Grace City, N. D., is building a garage.

Otto Platz, Calvin, N. D., is building an addition to his garage.

Carl K. Thoe, Nels S. Nelson and Emil S. Nelson, Fordville, N. D., have opened a garage and supply business and taken the Ford and Saxon agencies.

Skurkrud & Anderson, Maynard, Minn., have begun building a garage.

George Anderson, Scobey, Mont., has opened the Scobey vulcanizing shop.

Kinney-Fuller Auto Co., Grand Forks, N. D., state agent for the Dodge Bros. car, is erecting a garage.

The Scobey Motor & Machine Co., Scobey, Mont., has been bought by B. W. and E. W. Battleson and Dwight Benson. Benson Bros. are in charge.

J. M. Carignan, Fort Yates, N. D., has opened a garage and livery. Oscar Baumann is manager.

August Roloff and George Gilliland, Welcome, Minn., have bought the equipment and supplies of the C. C. Stoner Garage. They owned the building.

Edward Milligan, Madison Township, Poweshiek County, Ia., has gone into the garage and repair business in an old blacksmith shop near the Sheridan store.

T. R. Crandall, Albia, Ia., has bought the interest of his partner, A. W. Mangle, in the Vulcan Welders & Electricians and will continue the garage business as heretofore.

The Heikens Motor & Tire Co., Spencer, Ia., has bought the garage of the Van Winkle Auto Co., on South Main street, and has moved to its new location.

Fred J. Benischek, Oxford Junction, Ia., has sold his garage business and building to Louis Trilsch, who will continue the Ford and Buick agencies held by the former owner.

Martin & Carter, Bedford, Ia., has sold its garage business to Charles Sturm and Charles Preston, who will conduct the business in the new Slattery garage building.

S. N. Dawkins, Ute, Ia., has sold his garage to Carl Ballantyne, of Moorhead, who has taken possession.

The Jones Auto Co., Madrid, Ia., has broken ground for a new garage building, two stories high and 44 x 132, which is to be completed this summer.

G. H. Martin, Lenox, Ia., has sold his repairshop to L. E. Neely, of Sharpsburg, Ia.

The Kassler Auto Co., Dubuque, Ia., has secured Lester Cook, one of the most expert repairmen of that city, to take charge of its repairshop in its new building, which will have a complete repair department and service station.

The Overland-Davenport Co., Davenport, Ia., has been organized to handle the Overland in six counties, with C. E. Alford, former Overland man at Huron, S. D., as manager. A new building will be erected. The temporary location is at 324 Harrison street.

Johnson & Fink, Armstrong, Iowa, have bought the Gibbs garage and will take over the agency for Buick and Ford in addition to those they already have for Overland and Chevrolet.

Cuttell Bros., College Springs, Iowa, are now located in a new garage.

Col. I. L. Eells, Ida Grove, popular auctioneer, has purchased the J. M. Wilson garage at Sheldon and has taken possession.

The Wolfer-Cadillac Co., Davenport, Ia., has just been incorporated at $50,000 by H. J. Wolfer and Charles R. Wolfer, formerly of St. Paul, and E. J. Bouder, of Davenport. The company handles the Cadillac exclusively, its territory covering sixteen counties in Eastern Iowa and Western Illinois. A warehouse and office will be erected. Temporary quarters are at the People's Garage, Fifth and Main streets.

The Iowa Auto & Tire Co., Davenport, Ia., has completed negotiations for the handling in the Davenport territory of the Velie. A Velie service station will be opened at the company's garage on Main street, between Fourth and Fifth streets.

George H. Doty, Cedar Rapids, Ia., succeeds to the business of the Foy Supply Co., in which he has been associated for seven years with Charles H. Foy. The concern has sold more than $2,500,000 worth of Overland cars in seven years. Foy retires from the automobile business. Doty will continue at the old location until Oct. 1, when he will move the business to a new building at Third avenue and Eighth street.

A. McDowell, Perry, Ia., has bought out the Clapp Motor Co., located in the Jones Garage in that city.

Braley & Allen, Maxwell, Ia., have sold out their garage business to George Pring and John Oxley, who will continue the Maxwell agency.

R. J. Johnson, Mount Pleasant, Ia., has given up his Velie and Chevrolet agency and has moved to his old home in Amboy, Ill.

SOUTHWEST

The Continental Auto Top Mfg. Co., St. Louis, has taken over the plant and business of the Continental Auto Top Co. Arthur Leeser succeeds George I. Juhlein as owner of the majority interest. The plant is being overhauled. Tops, jiffy curtains, seat coverings and commercial bodies are the output.

The Efficiency Oil Corp., St. Louis, has opened downtown quarters in the Security Building, in addition to storerooms at 3213 Locust. Edward Sterns, president, is the inventor of a new rubber-fiber tube.

Ralph Dillard, for six years in charge of motor car advertising on a daily newspaper, has been made publicity manager for the Missouri Packard Motor Co., St. Louis.

The Newell Motor Car Co., St. Louis, is advertising heavily the appearance in local moving picture houses of a series of reels

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taken of Gen. Pershing's soldiers in Mexico, in which two Dort cars are in action.

The Franklin Automobile & Supply Co., St. Louis, has leased new showrooms at 3015 Locust street, to be opened as soon as new Franklins are here.

The Clear Ford Storage Battery Co., Lockhart, Tex., has just been chartered with a capital stock of $10,000. Albert A. Borchert, A. E. Lawrence and Otto Borchert are the incorporators.

The Texas Oakland Co., Dallas, has filed a charter at Austin with a capital stock of $60,000. The incorporators are: George P. Miller, C. L. Zutavern, J. M. McCormick and French Davis.

The Nacogdoches Garage Co., Nacogdoches, Tex., has been chartered at $10,000. The incorporators are N. J. Schmidt, Greer Orton and Ben T. Wilson.

The Galveston Motor Car Co., Galveston, Tex., has filed a charter amendment, increasing its capital stock from $6,000 to $12,000.

Moomaw's Garage, Joplin, Mo., formerly the B. B. Garage, is now operating in its new quarters.

W. D. Myers, Joplin, Mo., has opened a tire service store, handling Swinehart tires.

The Brinkman Motor Car Co., St. Louis, has been organized to take over the Maxwell agency, succeeding the George C. Brinkman Motor Car Co., and taking over the latter's plant. Ben G. Brinkman, vice-president of the Lafayette Bank, heads the new company. George S. Danaher, recently sales manager of the Hudson-Phillips Motor Car Co., is manager. George C. Brinkman, head of the former company, is a member of the sales force.

The Double Tread Tire Co., St. Louis, doubles the capacity of its plant by leasing an adjoining building, 30 x 90, at 4376 Olive street. This adds a salesroom for tires. The company makes one tire of two old ones.

The Sunset Auto Repair Co., Sappington, Mo., has opened up near Sunset Inn a favorite road restaurant for St. Louisians. Joseph Huetel, the proprietor, is also a dealer in the Reo.

The Jeffery Distributing Co., St. Louis, is removing to its former showrooms at 2650-52 Locust street, after six months half a block east. In its present quarters the company has the space formerly occupied by three companies and a thoroughly remodeled building. The service department and a parts room will be with main showrooms.

The Modern Motor Car Co., Poplar Bluff, Mo., has moved to the Davis building; Barney Sarafini is owner of the garage and repairshop, and Waller Jus is in charge of the machine shop.

W. F. Heins, Carrollton, Mo., has purchased the Minnis-Arnold Garage from John Archibald, and will operate it.

Harry McGee, Warrenton, Mo., has purchased the interest of Emil Hintz in the Water Tower Garage, and the name of the firm has been changed to Drunert & McGee. McGee is a machinist. The firm is agent for the Ford, Buick and Dodge Bros.

John I. Cooper, Baxter Springs, Kan., is erecting a new brick garage.

The Foreman Auto Co., Hayti, Mo., has opened a new garage and repairshop in the Moro Gaskins building. T. A. Foreman is manager.

The Minnis-Arnold Motor Sales Repair Co., Carrollton, Mo., has been sold by John Archibald to William Heins. Archibald had just purchased the business two days before selling it to Heins.

J. T. Zook, Louisiana, Mo., has opened a garage on the former site of a livery stable managed by him. The entire floor is of concrete and the rear part of the building is of brick and stone.

The Hudkins Garage, Salina, Kan., is now occupying an addition recently completed.

The Price Garage, Salina, Kan., will be completed in August.

Winkley Bros., Marion, Kan., have moved their Ford agency and repair shop to the Old Santa Fe Trail Garage.

Frank Hoover, Marion, Kan., has taken charge of the garage adjoining the Record building, and will handle accessories.

Thorp & Propp, Marion, Kan., have moved to the Ehrlich Garage, and are building an addition.

Lutz Bros., Sharon Springs, Kan., are erecting a garage 40 x 60.

J. T. Rush and J. C. Anthony, Herington, Kan., have secured the agency for the Jones.

J. S. Price, Oakley, Kan., has nearly completed his new garage; he is agent for the Ford.

M. Shelby, Rockingham, Mo., is erecting a garage.

The Cowley County Motor Co., Arkansas City, Kan., is now occupying its new location, and has secured the agency for the Chevrolet. The company consists of A. P. Turner and Frank J. Alexander.

A. L. Hendricks, Fort Smith, Ark., is erecting a new building for the A. L. Hendricks Motor Car Co., distributor of the Overland, and will install a tire and accessory department.

Gilbert Wild, Sarcoxie, Mo., will soon start work on a new garage.

The Motor Sales Co., Wichita, Kan., will soon move to a new location. Its territory for the Chandler has been increased, and it has secured the agency for Southern Kansas of the Marmon.

E. D. Kite, Odessa, Mo., is building an addition to his garage.

Elmer Freebury, Goodman, Mo., has rented the repairshop of A. R. Wardell.

Teater & Delay, Blairstown, Mo., are now occupying their new garage.

Louis Ingennousz, Sumner, Mo., has purchased Little's Garage and renamed it the Sumner Garage.

M. A. King, Marshfield, Mo., has bought the interest of Lee Haymes in the King & Haymes Garage.

F. B. Gunn, Copan, Okla., is remodeling a building for garage purposes.

F. P. Morris and George Pearson, Arrow Rock, Mo., have bought the G. P. Martin Garage.

J. C. Barber, Manhattan, Kan., agent for the Buick, is temporarily in the Maas Garage, pending completion of his new building.

C. H. Briggs, Kanorado, Kan., will occupy his new garage early this month.

Dwight Bennett, Higginsville, Mo., has secured the agency for the Maxwell; he will have headquarters with the Missouri Motor Co.

Sam Herrick & Son, Springfield, Mo., recently conducted an auction sale of automobiles at their garage.

The Springfield Overland Motor Co., recently organized, has temporary headquarters at the Haskett-Mace Garage, pending the erection of a building.

The Jackson-Allen Motor Co., Wichita, Kan., now occupies quarters in the same building with the Apperson Sales Co., 210 South Lawrence Avenue.

J. T. Davis & Son, Gotebo, Okla., have begun work on their new garage.

The Edson Garage, Bethany, Mo., was damaged by fire recently; the machinery was saved.

Seldon Churchill, Sheridan, Mo., has bought the interest of Erna Bainum in the Turner & Bainum Garage; the name has been changed to Turner & Churchill.

Mosher & Berry, Belleville, Kan., have secured the agency for Republic County for the Moon. They conduct the Mosher Garage.

Frank Bloomer and Julius Brock, Claflin, Kan., have opened the Bloomer & Co. Garage.

C. L. Thompson, Pittsburg, Kan., is remodeling his opera house into a garage.

The Auto Supply & Tire Co., Wichita, Kan., has installed a hydraulic press for the application of motor truck tires.

C. W. Johnson and T. B. Holmes, Okmulgee, Okla., have established a Chalmers agency here, temporarily at the L. & M. Garage. They have headquarters at Muskogee.

The Springfield Overland Co., Springfield, Mo., recently incorporated, has arranged for the erection of a one-story building, 40 x 100, to cost $12,000. An expert will be brought from the Overland factory to take charge of the repair and stock departments. The company is temporarily at the Haskett-Mace Garage.

The Mid-Continent Tire Co., Wichita, Kan., has cleared its title to certain land, and will begin at once the erection of its factory.

The A. L. Hendricks Motor Car Co., Fort Smith, Ark., is erecting a two-story, 90 x 140 garage, display room and accessory store. Joseph Bailey, formerly of Little Rock, will have charge of the tire and accessory department, which will be new.

The S. W. Overland Auto & Supply Co., Joplin, Mo., has been incorporated, capital stock $20,000 paid, to deal in and repair motor vehicles. Incorporators and directors are: Carl W. Lehnard, A. F. Lehnard and Willis W. Lehnard, all of Monett, Mo. C. W. Lehnard is president of the Springfield Overland Co., recently incorporated.

The Ollinger Auto Co., Salina, Kan., has been made distributer in Kansas, west of Salina, for the Overland, the company contracting to sell 2,200 cars. J. F. Ollinger, head of the company, has leased a building now being remodeled for its purposes. H. T. Hathaway, formerly sales manager for the Overland in Missouri, becomes connected with the Ollinger company. Additional storage room, and additional salesmen and other men, will be secured to care for the prospective business.

E. J. Sweeney, Kansas City, Mo., head of the Sweeney Automobile School, has ordered work to go ahead on the new building for the school near the Union station. The plans for the building were selected by popular vote, a large majority voting for the kind of building that won the contest.

EAST

The Anthony-Pilling Co., Boston, Marion-Handley dealer, has moved from Cambridge to Washington Street, Brighton.

"Ted" Earle, Boston, has rejoined the Stearns-Knight sales force.

The Reliable Tire & Rubber Co. of New England has been formed at Boston to handle Reliable and Seamless tires and tubes.

E. F. Clark, Montpelier, Vt., has sold his interest in the Groton Garage to H. L. James.

Walter Fraker, Chelsea, Mass., has been granted a permit to erect a garage.

William Emery, Lewiston, Me., is erecting a large garage.

The City Square Garage, Beverly, Mass., has been incorporated. Frank B. Rainey is president, Agnes J. Briggs, treasurer, Robert Gallagher, secretary.

Allen & O'Donnell, Burlington, Vt., Oldsmobile and Stutz dealers, have moved to the Ideal Garage.

James M. Downs, Pittsfield, Mass., has taken the agency for the Buick in Greenfield and has moved there.

The Overland Co., Worcester, Mass., has moved to new quarters on Main Street.

Vallieres Bros., Lynn, Mass., opened a new garage last week.

Percival S. Clark, Providence, R. I., has taken the agency for the Apperson.

The Springfield Motor Sales Co., Springfield, Mass., has been formed to handle the Maxwell.

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The Willys-Overland Co., Springfield, Mass., has moved into its new building and will have a celebration next week.

The Detroit Electric Car Co. of Connecticut, Hartford, Conn., has leased a brick building, one story high, at Foot Guard and Hoadley Places and has equipped it for a service station. The firm represents the Detroit Electric and recently took on the Locomobile.

COAST

Jett & Sloman, Wenatchee and Waterville, Wash., have added a G. M. C. truck to the fleet of cars used on their stage line between Wenatchee and Waterville. The line is carrying from 80 to 100 people daily over the new $50,000 convict-built road up Pine Creek Canyon. The permanent fleet consists of a Reo, Stevens-Duryea, three Overlands, one Studebaker and a G. M. C.

Floyd J. Logan, Tacoma, Wash., in addition to taking care of Maxwell interests in Tacoma and vicinity, has been given the Spokane territory, adding nineteen counties in Washington, Idaho and Montana.

The Clark-Pearne Motors Co., Seattle, Wash., has been incorporated by W. S. Pearne and J. H. Clark and quarters secured on East Madison Street at Twentieth Avenue.

The Burbank-Thomson Supply Co., Wenatchee, Wash., has installed a Rayfield Carbureter and Jones Speedometer service station. The company is now distributing Diamond and Federal tires and the Johns-Manville line.

Pate & Sagendorf, Wenatchee, Wash., have purchased the business of the Wenatchee Tire & Auto Co. and have installed a complete Williams Foundry vulcanizing equipment. Mohawk tires are carried and business is conducted under the name of the Tire Repair Station.

C. H. Pickett, Cashmere, Wash., has sold his interest in Leuer's Garage to John Leuer. The latter has erected a new building for garage and sales purposes and closed a contract to handle the Overland.

The Ashton-Wright Co., Los Angeles, Cal., has opened a garage at 1048 South Oliver Street. The firm has the Pacific coast distribution of the Inter-State.

C. A. Capitain, Oceanside, Cal., has purchased the Oceanside Garage Second Street between Hill and Freeman from the Oceanside Garage Co., Inc. For many years Capitain has been a prominent garageman in Los Angeles, having come up with the automobile industry from the old bicycle days, when he was rated as one of the finest bicycle mechanics on the Pacific coast. He is planning on making many improvements in the equipment of the Oceanside Garage and has already put in a stock of supplies and installed some new machinery.

C. J. Cadwell, Los Angeles, has been appointed sales manager of the Miller Carbureter Sales Corp. of Los Angeles. Cadwell is well known to members of the racing fraternity as "Doc Caddy."

The White Co., Portland, Ore., is now located in new quarters at Park and Couch Streets.

The Farnsworth-Foulkes Auto Co., Tacoma, Wash., has been organized to handle the Abbott-Detroit in Washington, Oregon and Northern Idaho.

S. J. Baldwin, Tacoma Wash., has opened a repairshop at 2133-35 Jefferson Avenue.

J. A. Collins and B. M. Aycrigg, Tacoma, Wash., of the Sterling Motor Car Co., have purchased the interest of John Larkin. This firm has the Tacoma agency for the Briscoe car and Kissel.

W. B. Conniry, San Diego, Cal., has been appointed San Diego and Imperial counties distributer of the King. Conniry & Shank is the name of the firm under which the King agency and garage business will be operated.

Roy E. Burbank and Thomas Perrin, Los Angeles, have leased the brick garage building at 1317-19 South Hope Street, and will handle the Abbott-Detroit as well as conducting a garage business. Both men are well known in the industry in Los Angeles.

The Los Angeles Electric Auto Co., Los Angeles, has been incorporated to handle the Owen-Magnetic in southern California. The firm has taken over the Washington Street Electric Garage, 1914 West Washington Street, and the R. & L. Garage at 1715 West Seventh Street. The firm will also distribute the Rauch & Lang Electric in southern California.

Olin E. Davis, San Diego, Cal., who won the 1913 Los Angeles-Phoenix road race and who has been connected with the industry in San Diego for several years, has joined the technical force of Earl C. Anthony, Inc., Los Angeles.

The Auto Radiator Works, San Diego, Cal., is now located at Second and Broadway, having moved from Tenth and Broadway into larger quarters.

The Gavin-Williams Co., San Diego, Cal., is now located in the new building at Fifth and D Streets.

The Grable-Young Co., San Diego, Cal., has moved into a new quarters at 1198 West Sixth Street.

Sachs Bros., have opened a new garage on the State highway between Del Mar and La Jolla, Cal., known as the Torrey Pines Garage. The building is but a short distance from the foot of the famous Torrey Pines Grade on the El Camino Real, the main highway between Los Angeles and San Diego.

The Cambria Spring Co., 913-21 South Santee Street, Los Angeles, Cal., has again outgrown its quarters and has taken over the building formerly occupied by the S. B. T. Garage, 920-22 South Los Angeles Street. The new building backs to the Santee Street location and the plant will now run through the entire length of the block.

The Stewart Truck Sales Co., Los Angeles, has opened the southern California agency for the Stewart truck at 1330 South Flower Street with W. Scott Johnson, a veteran truck man, as manager.

Display Helps for the Dealer



The Edward A. Cassidy Co. is distributing this garage hanger which is lithographed in color. In addition to advertising the G. P. muffler cut-out it serves a useful purpose in that it incorporates the sizes of exhaust pipes on practically every car on the market

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Future Awaits the Dealer in the Land of the Southern Cross

By David Beecroft

THIS is a story on the car dealers of South America, written by David Beecroft, managing editor of Motor World, who spent nearly three months investigating business conditions on the southern continent. It is of interest to every United States dealer, for there is opportunity for energetic Americans in the Motor marts of the southern Americas.

BUENOS AIRES, ARGENTINE, June 30—The Argentine Republic is of greater interest to the motor car dealers in the United States to-day than ever before. It is of interest to them because U. S. A. motor cars have been selling in greatly increased quantities during the past year and the prospects are that within the next few years there will be a great increase in the sale of our cars in this country.

Up to a year ago any U. S. A. dealer had little reason to be interested in Argentine, because there was little opportunity for him there, but to-day things are different, and it now looks as if the low-priced U. S. A. car is going to sell as rapidly to the farmers in Argentine as it has to the farmer in the Mississippi valley.

Investigate First

Before any U. S. A. dealer makes up his mind to visit this country to see if it is worth while moving to Buenos Aires to take the Argentine agency for a U. S. A. car, he should give the matter very careful investigation. There are great possibilities here, but there are also great handicaps to be overcome, and Argentine is no country to plunge into head first and with both eyes shut. It is a harder country to do business in than the U. S. A., but notwithstanding this, **there are great possibilities for the young man in the car, truck and accessory business.**

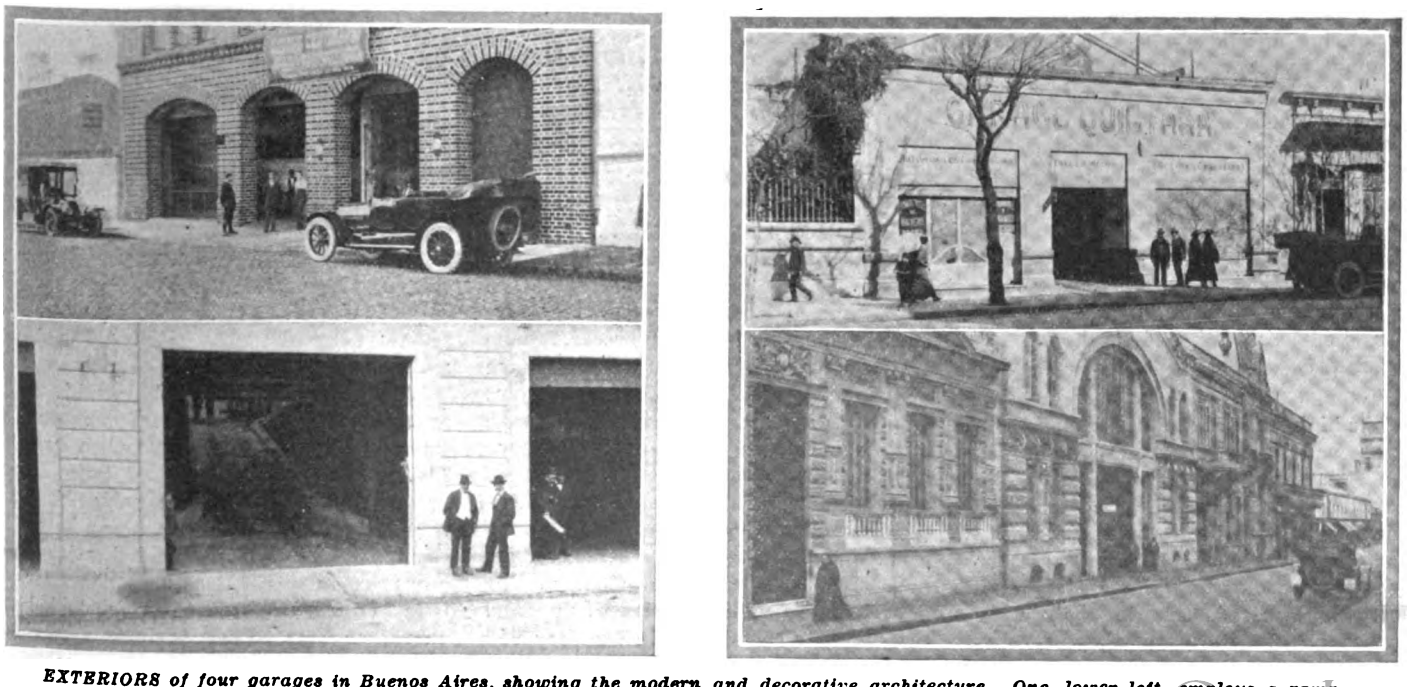
The selling of motor cars is not new here. The car is as old here as in the United States, so first eradicate from your mind any thought that Argentine is a new land for motor cars. It is an old land—and yet it is a new land. Argentine has been sold European cars from the days before they were sold in New York or Boston, which were the first American cities to buy the French and German cars. You see more European cars in Buenos Aires than in any of our cities. The streets here are literally filled with them. Nearly all of the taxis are European. Every day you see many European makes that have never been sold in the U. S. A. There are such Italian makes as Scat and Spa and such German makes as Horsch and Adler, names unfamiliar in either New York or Boston.

So it is with English makes, for here are Napiers and Humbers and Wolseleys, and Siddelys and Deasy's and nearly a dozen others that are practically unknown to us. The same is true of French cars and also Belgian, and one or two makes from Spain and Switzerland.

Many European Cars

B. A., as Buenos Aires is generally called, is a literal hot-bed of European cars. The Benz, Renault and Fiat are heavy sellers here, but there are many Mercedes, English Daimlers, Rolls-Royces, Panhards, Clements, Berliets, Isottas, Pipes, Delaunays, Peugeots, and a score of others. You will see whole rows of taxis of such makes at Fiat, Renault, Berliet, Delahaye and Benz.

B. A. is a city of very fine cars, handsome limousines, berlines and landaulets. Here the closed car is more popular than the open car. The Argentine woman prefers the closed type to the open varieties. She is not so fond of the great outdoors as is the U. S. A. woman. Here golf, tennis, surf bathing and mountain resorts have not influenced the women to the same extent they have at home. This has had a direct result in the car purchasing of the people. As a result you



EXTERIORS of four garages in Buenos Aires, showing the modern and decorative architecture. One, lower left, employs a ramp

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see many finer limousines here than in New York. The cars are immaculate inside and outside. You could scarcely find cleaner cars. Several of the garages here have vacuum cleaners for the insides of the cars. The upholstery must be spotless every day, and the chauffeur sees to it that in and out the car is as spic and span as it can be.

Argentine a Good Buyer

The Argentine was a good buyer of high-priced goods, and is to-day, although now he is not buying as he used to. Previous to the financial chisis of 1911 nothing was too good for the wealthy Argentine. French and German factories had no car too fine for him. He wanted the best. He bought more expensive cars than Paris, Berlin or London. He placed orders with the finest European body builders to give him the last word in style and the last touch in finish and the last iota in good workmanship. He wanted only the best and cared little for what it cost.

But since 1911 there has been a change. On that date they stopped buying high-priced cars here and they have not started since. They stopped because of the financial crisis, and while the crisis is not acute, the war came at a time when finances were getting under way again and stopped any come-back of the high-priced car for the present. and the way people are now talking it is questionable when the high-priced job will come back, if it ever does.

Why the Crisis

A word on the crisis: It was due to a falling off in the price of land, and also to too long credits. Argentine is essentially a country of land. Land offered the great possibilities of making money. People speculated in land. All spare money was invested in land. The majority bought too much land. But prices kept going up and up. So long as they went up all was well, but when the shrinkage started the troubles came. Well, to make a long story short, land prices are to-day very low, almost where they were in 1890. Naturally, millions have been lost. Men who based their wealth on a per-acre value found the value cut in half and lower. As the wealthy people here are big land-owners, it naturally affected them seriously. They had to curtail, and the high-priced motor car—their luxury—felt the pinch first.

The high-priced car stopped selling entirely and has not started again. You can visit many dealers here and see five, six and a dozen high-priced cars on the floor that have been there since 1911. Some have not sold a single car. Others are worse off and have thirty or forty high-priced cars in their warehouses, or depositories, as they call them here. There are others who are in a still worse classification and have cars that have never been taken out of customs. This situation is true in Buenos Aires, it is true in Montevideo, the capital, or Uruguay. It exists to a worse extent in Rio de Janeiro, the capital of Brazil. You find it in Santos, a city of 500,000 population in Brazil. You also find it in a few Argentine cities that are much smaller than B. A., among them Rosario.

It is a very serious situation and has been serious for several years. Put yourself in their place. Turn back in your mind to 1911 and then think of not selling a car since. Where would you be at? Well, many B. A. dealers are in that predicament. But a different method of doing business prevented many dealers here from going into bankruptcy in spite of the fact that they have sold no cars for so long.

Here is the reason: Here the biggest dealers are not exclusive motor car dealers, as in Chicago, Kansas City, St. Louis or San Francisco, not to mention New York, Boston or Philadelphia. Here the big dealer is a machinery dealer. He sells threshing machines, land rollers, stationary steam engines, stationary gasoline engines, plows, cultivators, lathes for garages or factories, valves for water systems; in fact, everything in the machinery line, including farm machines, wagons, buggies, etc. They generally have huge places of business and carry very large stocks on hand. With them the motor car was only an incident.

The motor car was perhaps the tail of the business, farm machinery the head, and mill machinery the body. Some sold electrical machinery, others railroad supplies, and a few machinery for shore factories.

Why They Didn't Fail

It was because of this wide nature of their business that they did not go broke. They were able to live through a crisis of 5 years and could go on for 5 years more without selling a motor car. Some of them are very wealthy. They have big capital back of them. Some are large landowners, and one or two of them have large warehouses and import their own gasoline, have factories of their own in different parts of Argentine for the manufacture of sundry articles, and in general are big business men. Some of them have $35,000 worth of motor cars on the floor and are willing to let them stand there a year or so more before they will cut the price very much.

Naturally, many of the dealers' places here are quite mixed up affairs. From the street you would never think they sold motor cars. There is frequently no sign above the doors or on the windows advertising any make of motor car. You stop and look in the window and you may not see a car. When you step inside you may see a line of cars along the wall near the back of the store. In front of the cars are lathes, fanning mills, ditch-digging machines, steam engines and stationary gas engines, and hanging from the ceiling are plows, corn cultivators, and scores of other smaller implements. In a few places where electric supplies are sold there are two-score electric chandeliers hanging from the ceiling, and when you sit in the car you have to lower your head for fear of striking the chandeliers. It is often a true case of a bull in a china shop.



INTERIOR of a typical Buenos Aires taxicab garage. The sign says "No smoking"

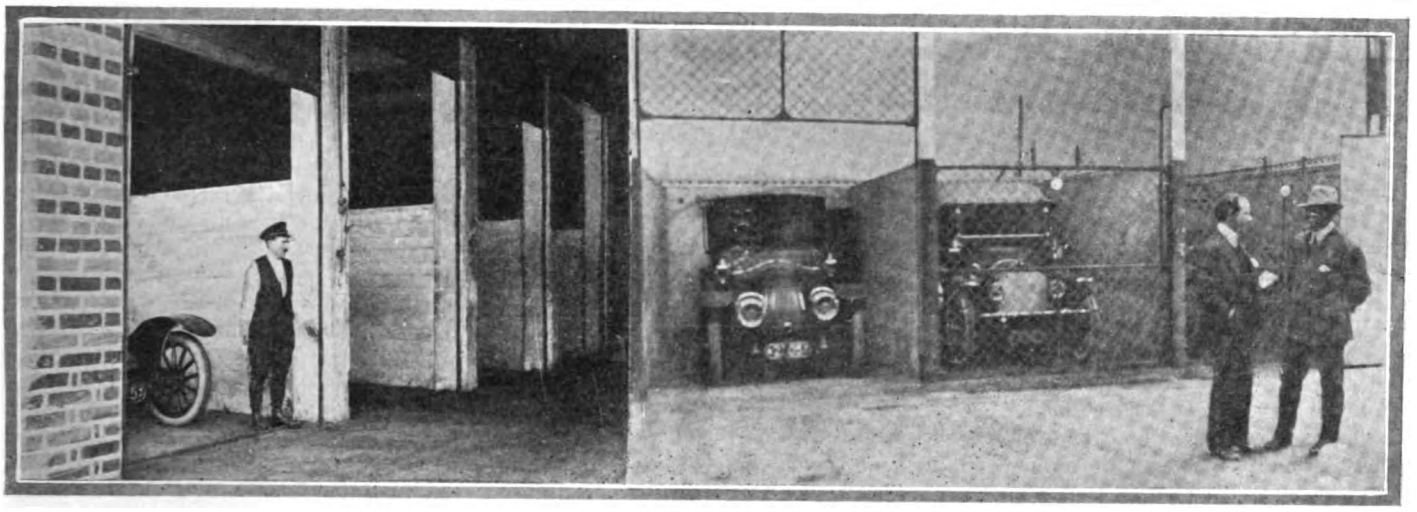
Lax Salesmanship

I have seen well-dressed men and women walk into these machinery houses and go back to the car, open the doors, try the body, look around and then walk out, and nobody come near to ask even that stupid question: "Are you interested in motor cars?"

This has happened not in one, but in a great many places, and in cities in Argentine and also in Brazil. I expect the reason is that these men are often luke-warm on the motor car. They have been stung with it, and they do not think it worth while to have on the floor a salesman to care for those customers who casually drop in. Such is the situation in several dealers' places in B. A., in Rio and in Santos to-day.

What these dealers will do with the numbers of old high-priced European cars on their hands is difficult to say. The bodies are generally old types and naturally the chassis are equally old. It is getting more difficult each day to sell them and yet there is no indication of any price-cutting. It seems a characteristic of business here to prefer to hold on rather than to sell early at a sacrifice. Some of the models are very heavy.

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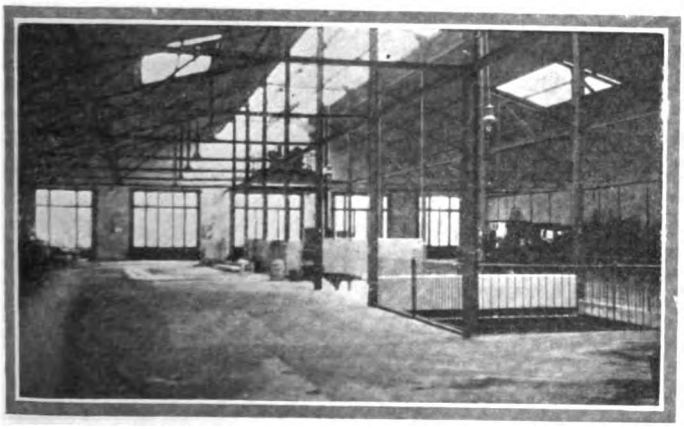
STALLS FOR CARS are used by quite a number of Buenos Aires garages. Those at the left have a steel roller curtain in front, while those at the right use a wire mesh door. The sidewalls are concrete

the bodies are high and ungainly, and it will be difficult to dispose of them even at sacrifice prices when the stylish lines of the U. S. A. car become better known here.

What of the War's End?

Whether the ending of the war will bring these expensive cars back into the market is problematic. Here many of the motor-wise heads think otherwise. They are convinced that the day of the high-priced car in Argentine is over. They are convinced that the saturation point has been reached. They do not believe the high-priced job will ever sell again here as it has in the past. They believe that the dealers stocked up with such machines will have to sacrifice them and that already this movement has started.

But they do not believe that the interest of Argentine in the motor car is waning, but that it is just now entering a new stage of development, and this brings us to the question to be considered in our next instalment, namely, "The present invasion of the U. S. A. light car and the possibility of selling it in the future, not only in Argentine, but in many other countries, namely, Brazil, Chile, Uruguay, and the West Coast countries."



METAL ROOFING with sky-lights makes the second floor of this garage airy and light

THE NEW H. A. L. TWELVE

(*Continued from Page 11*)

a key located in the floor in front of the driver's seat. Just back of the gearbox on the driveshaft is mounted the speedometer driving gear, meshing with the flexible speedometer shaft gear which is bracketed to the back side of the gearcase.

The driveshaft is nickel-steel tubing, having a 2-in. outside diameter and a wall thickness of ¼ in. It is stronger and lighter than a solid shaft of similar size, and also prevents whipping. There is a universal joint mounted at either end.

The rear axle is a Timken floating construction, fitted with spiral bevel driving gears carried on Timken roller bearings. The axle housing is a steel pressing with axle tubes in unit with the differential case. A large plate at the rear gives complete access to the differential gears and driving gears for adjustment or repair. The ratio is 4 5/11 to 1.

Long, flat rear springs of semi-elliptic form are fitted, these being underslung from the axle and becoming flat when loaded. They consist of ten leaves 2½ in. wide and are 57 in. long. From this it will be seen that the car should ride very easily, since road shocks tend to force the springs to the reverse side of the horizontal; thus a dampening effect upon the shocks is produced, and at the same time this spring action is best for the spring. The tapered frame narrows at the front in order to give a small turning radius and a firm body support throughout the entire body length as well. Four substantial cross-members brace the frame, in addition to the support it receives by the motor; and since the channel is deep and the flanges have a width of 1⅞ in., there seems little possibility of frame distortion under ordinary operating conditions.

At the rear is mounted a 23-gal. gasoline tank, suspended by steel straps from the rear cross-member. Fuel is fed to the carbureter by the Stewart vacuum system.

In connection with the outward appearance of the car, mention should be made of the distinctive type of radiator used, which is moderately high and narrow, and which blends well with the general sloping lines of the car. There are auxiliary tonneau seats which fold into the back of the front seat, and another attractive feature is the symmetrical grouping of the instrument on the board. All the equipment of the modern car is included.

Stutz Raises Roadster Price

INDIANAPOLIS, July 31—The Stutz Motor Car Co. announces that the new models will have wire wheels as standard equipment, improved carbureters to take care of present low-grade fuel, longer rear springs, increased roominess in the bodies, and an entirely new roadster. A standard wheelbase of 130 in. has been adopted for all models, which will consist of the Bulldog special, with four- and six-passenger bodies, and the new roadster The price of $2,550 for the Bulldog is the same, while the new roadster price is $2,275, an increase justified by a longer wheelbase and many refinements. The roadster has a modified turtle deck with a depression in it for carrying the spare wheels, instead of the exposed tank and trunk, as formerly.

Nash Incorporates His Company

BALTIMORE, July 29—The Thomas B. Jeffery business, which was purchased by C. W. Nash, will be operated by the Nash Motors Co., which has been incorporated in this State at $24,999,500.

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Brand New Briscoe Four at $625

Four and Five-passenger Bodies— Gearless Differential—30 H. P. Motor— Gearbox in Unit with Axle

BRISCOE has a brand new car fitted with a four-cylinder motor and priced at $625 either with a five-passenger touring body or a four-passenger roadster type. It is a distinctive car in a number of respects, both in chassis design and body arrangements.

Following the latest body contour, the new Twenty-four, as it is called, has a rather high and narrow radiator and a sloping hood and body.

There is a 3⅛ x 5⅛ four-cylinder block motor having a detachable cylinder-head that gives access to the valves; an inverted type of cone clutch; three-speed gearset in unit with the rear axle; floating type of rear axle, in which is incorporated the Bailey gearless differential; elliptic front and rear springs; tapered frame, and 30 x 3½-in. tires all around. The motor is said to develop 30 hp.

The bottom of the motor is inclosed by a pressed steel pan which acts also as the oil reservoir. On the right is carried the Splitdorf gear-driven generator, with the ignition distributor mounted in unit, and on the left is the starting motor, also a Splitdorf unit. It connects to teeth in the flywheel face. The right side being the valve side, the manifolds are placed here, with the carbureter mounted quite high up, so that there is little or no interference with the reaching of the tappets.

With direct oil feed to the bearings and gears, the lubricating system is a combination of splash and force feed. The oil pump is positioned on the right forward side of the crankcase and is driven off the camshaft. The oil leads to the gears and sight-feed gage run outside on the right. In accordance with usual practice for this kind of oiling, the troughs under the connecting-rods are kept supplied, and the rod ends throw the oil up into the cylinders and onto the various bearing surfaces, from which it eventually drains back into the crankcase. To tell the height of the lubricant in the supply, there are two indicating levers located on the right side of the motor just below the oil pump. There is also an indicator which tells whether or not the oil is flowing as it should. This occupies an unusual position in that it protrudes through the toe board within sight of the driver and ahead of the control levers. Thus it is out of the way and can be readily seen, but the piping is reduced to the minimum. The oil filler and breather is in a new place, too, it being forward on the right and high up, so as to be accessible for filling. It enters the cylinder block just below the exhaust manifold and above the cover plate that houses in the valve tappets.

Briscoe Four

Price—	
Touring	$625
Roadster (four-passenger)	$625
Color	Dark green
Make of Motor	Own
Number of Cylinders	Four
Shape	L-head
How Cast	Block
Bore	3⅛
Stroke	5⅛
S. A. E. Horsepower	15·64
Ignition	Splitdorf distributer
Engine Starter	Splitdorf
Lighting System	Splitdorf
Clutch	Inverted cone
Gearset, three-speed unit with rear axle	
Wheelbase	105
Front Tires	30 by 3½
Rear Tires	30 by 3½ non-skid
Wheels	Wood
Steering	Left
Control	Center
Type Rear Axle	Floating

The radiator top tank is large, and the water flows to it from the large water outlet connection that extends the length of the top of the cylinder casting, as already pointed out. There is also a large water inlet which is attached to the left side of the cylinder block and extends all along it, so as to give good water distribution, and, further, it is of sufficient size to insure against restriction of the flow.

Drive of the generator is unusual, for it is from the rear end of the camshaft through gear connection. The generator is close to the flywheel on the valve side of the engine, and the gearing is housed in the extension of the right rear supporting arm of the engine.

The clutch presents some differences over average practice, principally in the fact that it is inverted. The cone is leather-faced and has six spring plungers acting against the under side of the leather at equal intervals to insure easy action and prevent grabbing.

There is a light torsion bar running from the front of the axle housing to the intermediate frame cross-member, this assisting in taking the torque and drive. Compactness is very noticeable in the gearbox, which has three speeds, with the countershaft mounted directly below the mainshaft. The latter runs on taper roller bearings and ball bearings, while the countershaft is carried on plain bushed bearings. Control rods run parallel with the drive shaft from the H-gate that is attached forward to the intermediate cross-member of the frame. These control rods are of quite large diameter and should not have any tendency to whip. Special provision has been made in their mounting, so that there is no likelihood of rattle. Although the pressed-steel rear axle presents no unusual features outwardly, it is fitted with the Bailey gearless differential, which acts, through a series of ratchets and pawls, so that the wheel having the most traction gets the most power, in contradistinction to the standard differential, in which the free wheel receives the bulk of the power. This device is now quite well known and needs no lengthy description here. The axle is a floating design, in which the weight of the car is carried entirely on the axle tubes, with none to be sustained by the axle shafts, they being given the single function of driving the wheels. Hyatt roller bearings carry the axle shafts, acting in conjunction with ball-thrust bearings, which care for the thrust.

A straight taper is given the frame from front to rear, thus allowing for a moderate turning diameter and for rigid attachment of the narrow radiator that fits snugly between the side members. Besides, a sloping frame makes the best kind of support for the tapering body, holding it well along its entire length.

The four-passenger body is deserving of special mention on account of the originality displayed in the arrangement of the front seat back. The aisle between the two front seats allows access to the rear seat and is normally closed by a hinged portion of the pack of the forward seat. This, when closed, affords a back rest all the way across, but when it is desired to get into the rear compartment the entire center upholstery section hinges out of the way and gives an aisleway that is plenty wide enough.

Camping Site at Tractor Field

ST. LOUIS, July 24—A site for camping parties has been laid out on the ground reserved for the Farm Tractor Show here Aug. 1 to 4, open to all visitors bringing camping materials. Water and other conveniences are at hand. Practically all of the State agricultural and road officials will be present during the 4 days. Sufficient land has been acquired for the exhibit to insure all exhibitors space for private demonstrations. Special demonstrations by electric light have been arranged for city men. Aug. 2 is St. Louis and St. Louis County day, Aug. 3 is Agricultural day, and Aug. 4 is Good Roads day.

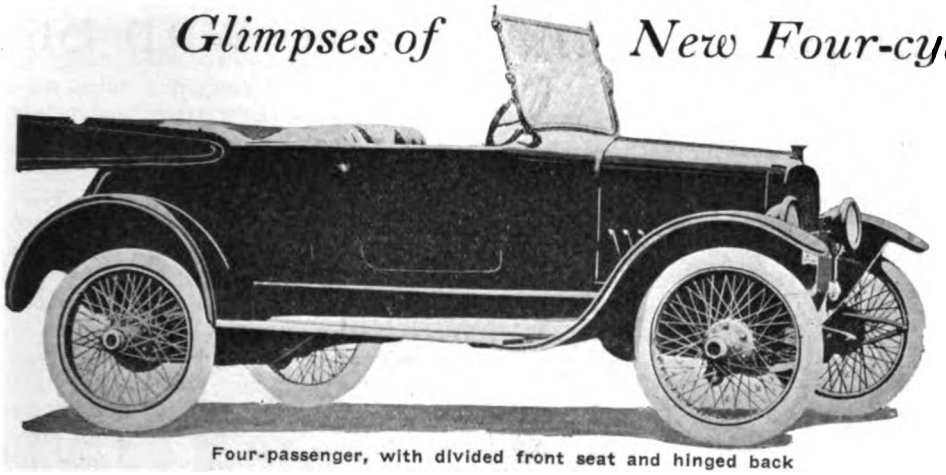
Show at Oregon Fair

TACOMA, July 29—Motor car dealers throughout the State of Oregon will again exhibit at the State Fair at Salem, Ore., which this year will be held Sept. 25 to 30. Joseph M. Rieg, who managed the two previous exhibitions given in connection with the State Fair, will again manage the show. The shows in the past have been profitable to the dealers, as a great many sales were made during the week.

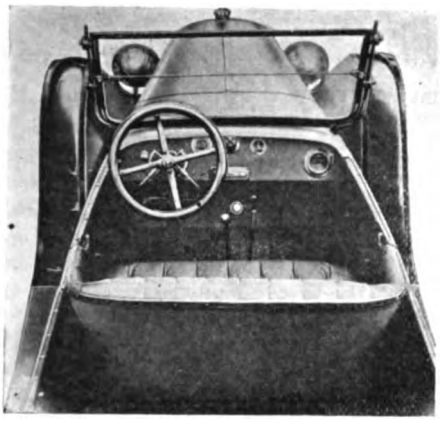
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Glimpses of New Four-cylinder Briscoe

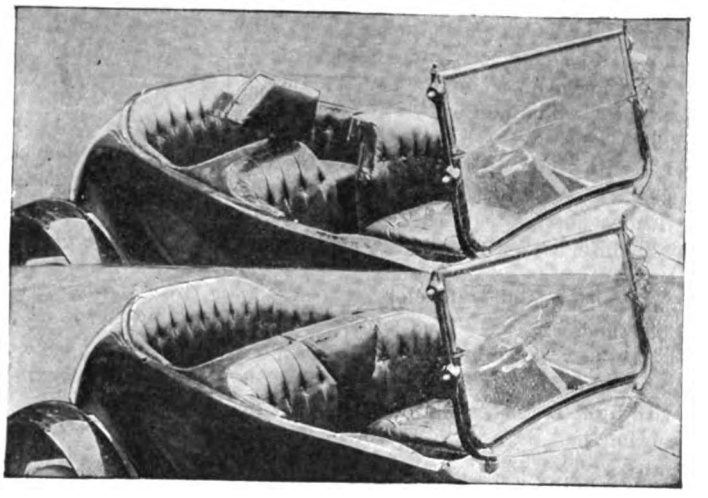
Four-passenger Body Has Hinged Front Seat Back to Give Access to Rear—Chassis Construction is neat —Gearbox on Rear Axle



Four-passenger, with divided front seat and hinged back

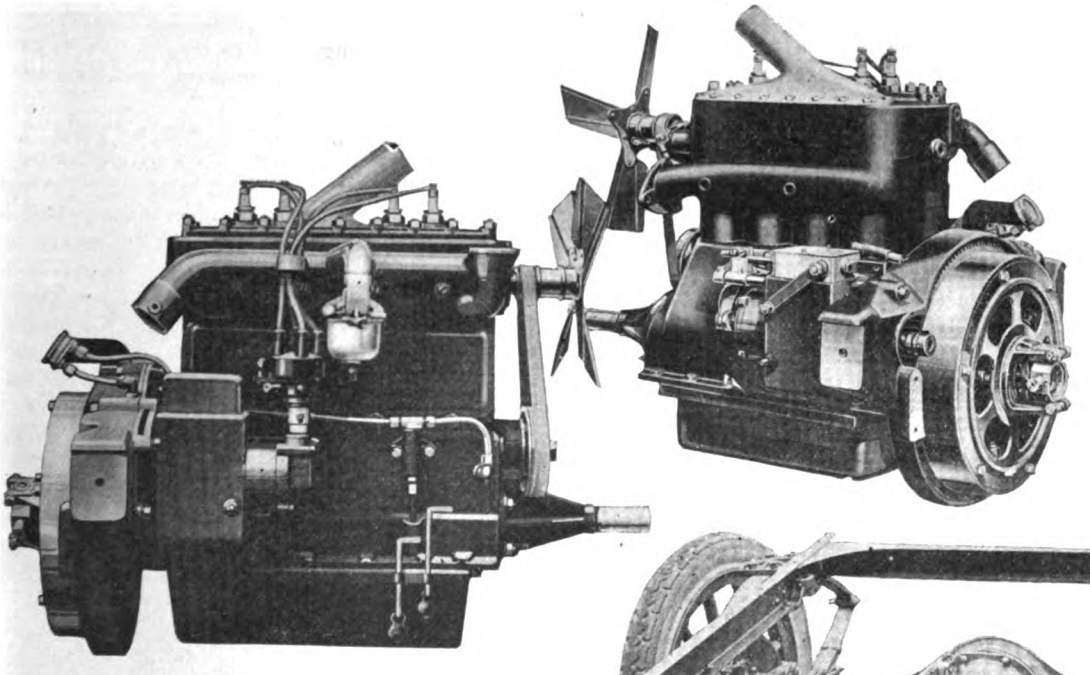


Forward view of five-passenger, showing control and cowl mechanism and unbroken contour from radiator back

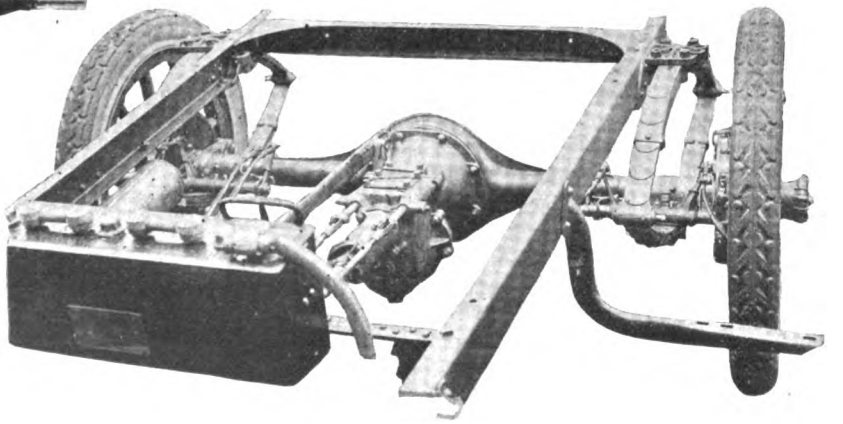


Upper—Detail showing how back of seat is hinged so that the advantages of an unbroken double cowl and a passageway from front to rear compartments are both obtained

Lower—Rear end of chassis, showing full elliptic springs, gearbox on rear axle, and transverse mounting of storage battery on a cross-member of the frame.



Two views of the motor, showing the high mounting of the carbureter, the simplicity of the piping, and the neatness of the design. The ignition unit and the generator are combined



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Haynes Twelve Motor Interchangeable with Six

Valve-in-head Motor Gives Accessibility—Prices $1,985 up—Many Bodies

ALTHOUGH one experimental twelve motor was displayed at the shows last winter, it is not until now that the Haynes Automobile Co., Kokomo, Ind., has found it advisable to offer its newest creation to the buyer. The reason for the delay can be credited to the fact that production of the six has thoroughly taxed every facility of the factory. A vastly increased floor space, available in several newly-constructed buildings, is now being utilized for the construction of the new twelve motor.

The new power plant is interchangeable with that of the six and the chassis specifications for 1917 will be continued without change. In the motor lies the only difference between the two models, even the supporting members being the same. The same bodies are also used in both models.

The new motor is exceptionally light in weight. It is of the high-speed type, with light reciprocating parts. Great attention has been paid to the matter of quick acceleration.

The cylinders are in two sets of six, each series block cast, of valve-in-the-head construction with removable cylinder-head. The bore and stroke are 2¾ x 5 in., giving a piston displacement of 356 in. and an N. A. C. C. h.p. rating of 36.3. All the cylinders are separately ground after boring; the operation has been considered necessary to insure equal compression and consequently more perfect motor balance.

Pistons in the twelve motor are aluminum alloy, carrying three non-leaking piston rings, with an oil groove to drain the oil to the reservoir, minimize the chance of oil entering the combustion chamber and the consequent formation of carbon deposits.

The valve construction is a departure from Haynes practice inasmuch as the valves are in the head. The reason why overhead valves were adopted was because they permitted accessibility of the motor accessories which could not possibly be gained in a side-valve design.

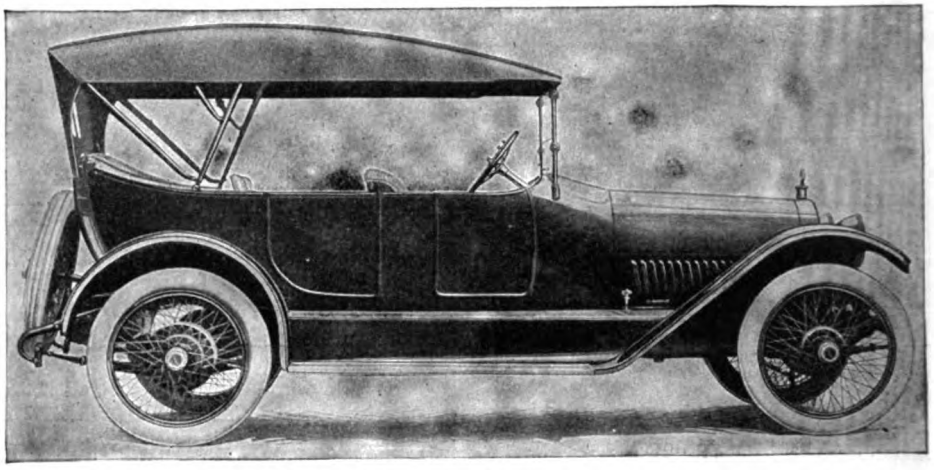
The same type of crankshaft is used on the twelve as on the six. Two connecting-rods are arranged side by side on the same crank-pin. Each is readily adjusted without reference to the other—an arrangement which cannot be obtained in the forked-rod construction. The cylinders are staggered, so that opposite connecting-rods will not play on the same center line.

A split crankcase is used, with all crankshaft bearings carried in the upper half. This section is aluminum, while the lower half is seamless pressed steel.

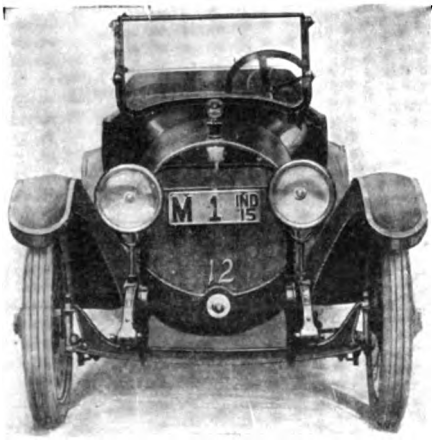
Lubrication is of the force-feed and splash type, a constant flow of oil at all times being assured by the use of a plunger type of pump with a capacity of ½ gal. per minute. According to the manufacturer, the temperature of the oil can be kept at a constant low point from the fact that air can strike the reservoir directly, there being no pans to retain the heat. Instead of using a mud-pan the pressed steel crankcase half is fitted tightly between the motor and the car frame.

The Leece-Neville starting and lighting system is used. There is a generator for charging the battery and a motor for cranking the engine. Starting is through the Bendix system of drive. Ignition is through a distributer fed by the storage battery.

The chassis construction in both six



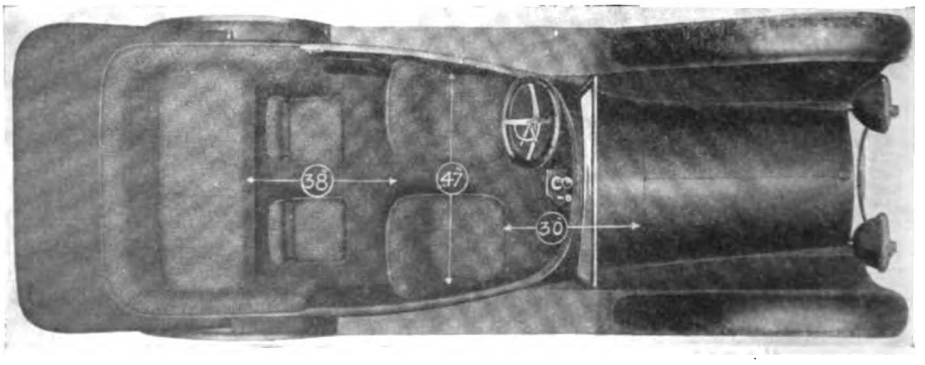
New Haynes light twelve with seven-passenger body



Front view of new car showing Cord tires

HAYNES, LIGHT TWELVE

Touring—	
Five-passenger	$1985
Seven-passenger	$1985
Roadster	$1985
Coupe, five-passenger	$2650
Sedan, seven-passenger	$2750
Color—	
Body	Brewster green
Tenders and chassis	Black
Make of motor	Haynes
Number of cylinders	Twelve
Shape	Overhead valve
How cast	Blocks of six
Bore	2¾
Stroke	5
S. A. E. horsepower	36.3
Ignition	Delco
Carbureter	Rayfield
Engine starter	Leece-Neville
Lighting system	Leece-Neville
Clutch	3-plate, dry-disk, Raybestos-faced
Gearset	Selective, 3 speeds and reverse
Wheelbase	M40, 121 in.; M41, 127 in.
Front tires	Goodyear cord, 34 x 4½
Rear tires	Goodyear cord, 34 x 4½
Wheels	Wire exclusively
Steering	Worm sector
Control	Left steer, center shift
Make of axles	Haynes
Type rear axles	Floating



Bird's-eye view of touring car showing liberal dimensions. Note seat covers as standard equipment

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and twelve, with the exception of the new twelve motor, is exactly the same as in the 1916 models. Features in the construction are floating rear axle with spiral bevel drive, three-plate dry-disk clutch, cog-adjusting bevel pinion, three-speed selective gearset, etc.

Haynes models at present include five- and seven-passenger touring cars, a three-passenger roadster and a sedan, with promises of something in the nature of a surprise in new closed bodies and a four-passenger roadster to be brought out later. Seat covers are featured on all models as regular equipment. Both five- and seven-passenger models are equipped with adjustable individual front seats. Auxiliary seats in the large cars are of the stowaway type and are entirely out of sight when not in use. The seats drop down into the floor and all that remains visible are two rings, used for pulling them up again.

The wheelbase is 127 in., with a turning radius of slightly over 21 ft. Tires are Goodyear cord, 34 x 4½, on the light twelve and Goodyear or United States optional on the six. Prices of the light twelve are: Five-passenger, $1,985; three-passenger roadster, $1,985; seven-passenger, $2,080; five-passenger sedan, $2,650, and seven-passenger sedan, $2,700.

Ready At Tacoma

TACOMA, July 29—While there is still more than a week in which to make entries in the Montamarathon and Golden Potlatch trophy 300-mile race to be held on the Tacoma Speedway Aug. 5, indications point to a field of more than twenty starters. Secretary George Dunn has announced the following signed entrants:

De Palma, Mercedes; Henderson, Maxwell; Chandler, Crawford; Rawlings, West Duluth Special; Moore, Peusun; Barsby, Hudson Special; Milton, Duesenberg; Franchi, Delage; unnamed, Gandy Special; DeAlene, Duesenberg; Rickenbacher, Maxwell; DeVigne, Delage; Lewis, Crawford; Sorenson, Morse; Taft, Omar; Johnson, Crawford; unnamed, Gandy Special; O'Donnell, Hoskins Special; Price, Gandy Special.

In the Hardware Store



By 'Phone.

Customer: *Have you first-class jacks?*

Clerk: *Certainly.*

Customer: *Send me one of your best, right away.*

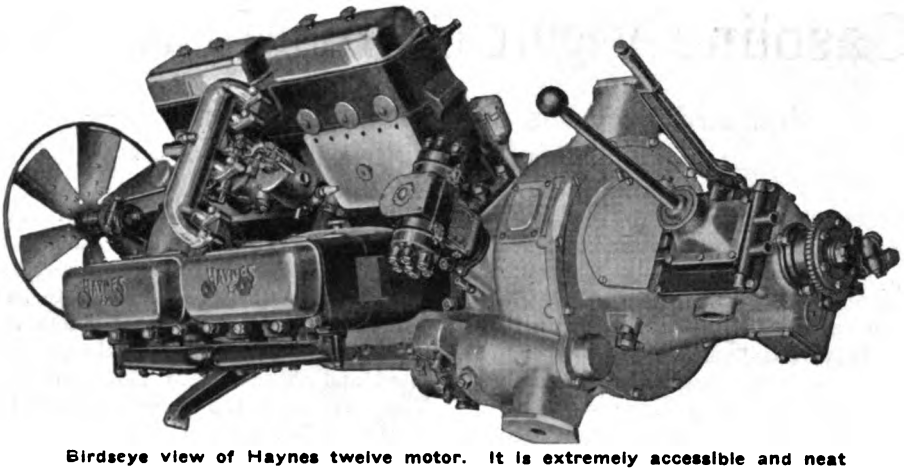
Clerk: *All right.*

(One Hour Later)
By 'Phone.

Infuriated Customer: *How did you think I wanted a boot-jack?*

Clerk: *We'll send a man over to show you how to apply it, right away.*

Infuriated Customer: *Not necessary. It has already been applied to the man who delivered it.*



Birdseye view of Haynes twelve motor. It is extremely accessible and neat

Marmon Makes Coast-to-Coast Run

SAN FRANCISCO, July 29—S. B. Stevens, chairman of the Motor Reserve Division of the American Defense Society, finished a trans-continental run in his Marmon car at 5 p. m. this evening. He left Columbus Circle, New York, at 1.30 a. m., Monday, July 24, and completed the trip in 5 days, 15 hr. and 30 min., allowing for the 3-hr. loss due to difference in time. The object of his trip was to demonstrate the value of good roads in quick mobilization. The car was a Marmon stock job and is the privately-owned vehicle of Stevens, although the co-operation of the Nordyke & Marmon organization was afforded the car and drivers on the trip across the country.

Five drivers divided the time, the greater part of the distance being driven by Stevens. The other drivers were Walter Bieling, Robert Creighton, Wm. Bins and Fred Barbour. A distance of 3390 miles was covered at an average speed of 25.1 m.p.h.

57 Gas is "Naphtha"

TOPEKA, KAN., Aug. 1 — Frank Cumiskey, State oil inspector, after a conference with Governor Capper, issued an order to local inspectors to stamp all refined petroleum testing less than 58 as naphtha. Dealers will be notified that when they receive purchases of gasoline stamped "naphtha" they must sell it as naphtha.

Ford Reduces Prices and Improves Bodies

Reductions from $35 to $95—Touring Now $360—Roadster $345—May Make Body Changes

DETROIT, Aug. 1—Starting with today, new prices on Ford cars prevail. The reduction varies all the way from $35 on the chassis up to $95 on the sedan. The touring car has been reduced $80, from $440 to $360. The runabout is now $345 instead of $390. The chassis alone sells for $325, whereas it formerly sold for $360. The coupelet is $505 instead of $590, the town car $595 instead of $640 and the sedan $645 which is a $95 reduction from the former price of $740.

Accompanying the change of price there will also, it is said, be a change of appearance, as the new Ford cars will be fitted with new hoods and crowned fenders which will give a new outline. The radiator shape also will be remodeled in a moulded form.

Former and Present Prices of Ford Cars

	Aug. 1, 1912	Aug. 1, 1913	Aug. 1, 1914	Aug. 1, 1915	Aug. 1, 1916	Canada
Touring	$600	$550	$490	$440	$360	$495
Roadster	525	500	440	390	345	475
Chassis	†	†	†	360	325	450
Coupelet	...	...	750	590	505	695
Town car	...	740	690	640	595	*780
Sedan	...	...	975	740	640	*790

*No change this Aug. 1. †Not sold.

Cleveland To Have Fall Show

CLEVELAND, Aug. 1—Cleveland, which holds annually in January an automobile show of metropolitan proportions, is to have in September its first pretentious fall show.

The Cleveland Chamber of Industry, one of the active civic organizations, is sponsor for an Industrial Exposition and Fair, to be held under canvas at Edgewater Park, Sept. 2-9. One feature of this exposition will be the automobile show.

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Gasoline Fight on in Milwaukee

Standard Oil Aims Shaft at the Independents—Variance in Prices

MILWAUKEE, WIS., July 29—Full page advertisements were published in every Milwaukee daily newspaper during the last week by the Standard Oil Co. of Indiana, headed, "You are Paying Too Much for Gasoline." The advertisements point out that to pay more than 18.6 cents per gallon is paying too much.

The heavy advertising campaign is believed to be another step in the war that has been waged between the Standard and the independent oil men for many months. The city of Milwaukee is literally sprinkled with filling stations, and at prominent intersections both the Standard and independents maintain stations at which gasoline is sold at 1 cent above tank wagon prices. Motorists no longer buy gasoline from garages; that is, very few do, because they can get their fuel cheaper at the filling stations and have only a few blocks to go to get it.

There is considerable variance in prices in Milwaukee. The Standard Oil Co.'s filling station price on Red Crown is 18.6 cents per gallon. The Bartles-Maguire Oil Co., a large independent, which operates numerous filling stations, is charging 18.6 cents for tank wagon delivery and 19.6 cents at filling station for the lowest test gasoline it handles. This tests between 57 and 59. The cheapest gasoline sold by the Wadhams Oil Co., another large independent, with many filling stations, is a 60 to 62 test gas, selling at 22 cents per gallon, tank wagon basis, and 23 cents, filling station. Standard Oil advertises that Red Crown is 18.6 cents at filling station, "or we will deliver it to your private garage at the same price."

The page advertisements say: "When your dealer sells you another brand of gasoline at 19.6 cents, 23 cents, 25 cents or 30 cents a gallon, claiming it to be better than Red Crown, he is misrepresenting the facts. . . . . Red Crown gasoline is the only motor fuel to be had that is manufactured under a process developed from scientific data, worked out by the most eminent petroleum chemists and automobile engineers available. The Standard Oil Co. has spent years of time and millions of dollars to make Red Crown gasoline and to make it uniform at all times. It never varies. You never have to adjust your carbureter when you use Red Crown."

Gives Up "Auto Inn"

OCEANSIDE, CAL., Aug. 1—Merrill's Garage, Third and Hill Streets, is the name under which the garage owned by Chas. D. and W. H. Merrill is now operated. It was formerly known as Merrill's Auto Inn, but the proprietors found that motorists believed it to be a hotel, so they changed the name and moved from Third Street between Tremont and Cleveland, to Third and Hill. The owners of the garage operated a filling station on the site of the new garage before moving from the old location. The new place has a floor 100 x 60, two entrances, and a stock room in which is carried a stock of tires and accessories valued at $3,000.

Challenges All Wisconsin!

MILWAUKEE, Aug. 1—The Olson & Pauly Auto Co., 441-443 Jackson Street, State agent for the Ross 8, has issued the following challenge: "We will forfeit $100 to any stock car, 1916 model, that can equal the Ross 8 in hill climbing, carrying the same load of passengers on high gear, and also accelerate or pick up speed as fast, from a standing start, on high gear, in a given time or same distance as the Ross 8. This defi is hurled at any and all stock gas cars in Wisconsin, regardless of price or number of cylinders, four, six, eight or twelve, or size, and we will go to any part of Wisconsin or any favorite hill or ground."

"Harry Newman" Goes Ballooning

MILWAUKEE, July 29—A huge silk balloon, shaped like a Zeppelin airship, attached to a huge sign bearing the words, "Harry Newman Recommends Preparedness," and anchored to the roof of the Harry Newman, Inc., garage and headquarters at 700-704 Grand Avenue, Milwaukee, during the Milwaukee preparedness parade, July 15, broke loose, carrying with it the mammoth banner. Four days later the balloon was sighted in Lake Michigan off Bailey's Harbor, near Sturgeon Bay, Wis., approximately 350 miles north of Milwaukee as the crow flies. The coastguard crew picked up the balloon and returned it to the Newman house. The "stunt" aroused great interest throughout eastern and northeastern Wisconsin and hundreds of people scrambled to sight it on its flight with the wind.

Rubber Club Holds Outing

BOSTON, July 29—The seventeenth annual outing of the Rubber Club of America was held July 17-18 at Boston and Lowell. Akron was represented by a number of leading rubber men. The Rubber Club of America is the successor to the New England Rubber Club, which was organized 17 years ago as a social body, but within the past 4 years has developed into a business organization with offices in New York City. Rubber companies represented were Goodrich, Goodyear, Firestone, Pennsylvania, Swinehart, McGraw, Republic and Mohawk.

May Adjust Texas Freights

AUSTIN, TEX., July 29—The Texas Railroad Commission has issued official notice that it will give a hearing on Sept. 12 to consider a readjustment of the freight rates on motor cars, less than carload shipments, too large to load in ordinary box cars, and requiring automobile cars. A rate of 1½ times the first-class rate is proposed for automobiles, motor trucks and motor wagons, set up or sufficiently knocked down to load in box or stock cars, or when requiring automobile cars or flat cars or when such cars are demanded by shippers. The minimum weight is to be fixed at 5000 lb.

Deny Overland Garage Permit

BUFFALO, July 29—A letter from Judge Albert Haight of the Court of Appeals went far towards determining the City Council in denying the petition of the Overland Stores Co. for permission to erect a public garage at Bryant and Main Streets. Judge Haight's property adjoins a site on which the Overland company is building a brick building, to be used as display rooms and a repairshop. Its petition also included the request that it be allowed to store 10,000 gal. of gasoline on the premises.

Judge Haight said in his letter to the Council that he did not object very strenuously to a repairshop, but did not like the idea of having 10,000 gal. gasoline at his back door.

Portland Has a New Row

PORTLAND, ME., July 29—Preble Street in this city is now becoming a second motor row, rivaling Forest Avenue in the number of salesrooms. The removal this week of the Pierce-Arrow agency to Preble Street places it with the Pathfinder, Auburn, Commerce truck, Allen, Metz, Saxon, Goodrich tire and Excelsior and Henderson motorcycles.

The E. E. Wentworth Corp., which has the entire Maine territory for the Overland, moved into its new salesrooms, 551 Congress Street, a few days ago, where it has one of the finest places in the city.

The Maine Motor Car Co., after some demonstrations at Boston by its officials, has signed a contract to handle the Marmon in Maine as a dealer for Frank E. Wing, New England distributer.

The Maxfer Truck & Tractor Co. was organized here this week, capitalized at $45,000.

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Steal Fords and Then Mix Up All the Parts

Car Thieves in Louisville Evolve an Original Plan for Covering Up Their Tracks

LOUISVILLE, KY., July 29—Had King Solomon visited the Police Court this week and heard the case which involved the identity of two Fords, memories of the two women who claimed the same baby, no doubt, would have flashed before his mind. Five owners—Deputy Sheriff Lee Barbour, Dr. J. P. Shacklett, Walter Bliss, Dr. Charles K. Beck and C. M. Rankin—had their cars stolen at some time during the past month and reported their loss to the Detective Department. After some tall manipulating of the arms of the law four of the cars were brought to headquarters. Three men were ar rested in connection with the case.

Testimony of the witnesses showed that the cars stolen had been torn to pieces and reassembled, after having been taken to a garage. Dr. Shacklett, the first witness, testified that he looked at the four Fords that had been found in the garage and he had found that car No. 1 had his chassis. His fender was on car No. 2, as was his wheel. The radiator of his car was on car No. 3, he stated. The top of the doctor's car was on car No. 4. Owing to the great many serial numbers on different parts of the automobile to which reference had to be made so often, both witnesses and counsel became fatigued during the trial. Two of the men on trial, R. C. Collins and Ralph Thornton, were held to answer to the grand jury in the sum of $1,500 each. The third man was dismissed.

Baker Visiting America

NEW YORK, July 31—Fred W. Baker of the Baker Rim Co., Ltd., Stourbridge, England, manufacturer of the Rebak rim for automobile wheels, has arrived in New York and expects to spend a month in this country investigating the automobile rim business. Baker has made several previous trips to this country, visiting our automobile shows.

Dealer Holds a Maxwell Day

KANSAS CITY, MO., July 29—The Acton-Parke Auto Co., Maxwell dealer, held a Maxwell Day, in which nearly 400 Maxwell owners participated. There was a downtown parade and a ride over the boulevards to Fairmount Park, and a water festival at the park, valuable prizes being given to the winners of various contests. Mrs. Mary L. Weber won $100 for having the best decorated Maxwell in the parade. The event was on Saturday and the downtown streets were crowded, the parade arousing a great deal of interest. It was preceded by policemen on motorcycles, clearing the way, the machines being decorated, as were all the Maxwells in the parade. C. B. McLaughlin is manager of the Acton-Parke company.

Jersey Interested in Roads

ATLANTIC CITY, July 29—The committee appointed by the Governor sat last week in the rooms of the Automobile Trades Association of Atlantic City to hear the views of residents relating to the good and efficient road construction and maintenance throughout this State, in the proposed hard surfacing feature of the Egan Bill and other legislation that might be passed.

The Egan Road Bill was gone into at great length and thoroughness. Other plans of topography were laid out as presented to the Legislature at the past session and other new ideas beneficial to the State and the traveling public.

The general idea is that the State would supervise all main arteries of the system, taking the control thereof from the county or municipality entirely insofar as they are the main artery.

Also it considered licensing fees of cars, chauffeurs' examination and fees, reciprocity between this State and other States.

Pearl D. Karshner

KANSAS CITY, MO., Aug. 1—Pearl D. Karshner, manager of the Karshner Motor Car Co., Stutz dealer, died recently in Kansas City, aged 40. He is survived by his widow, by a son Kenneth by a former marriage, and a sister, Mrs. David Black. Karshner was one of the stockholders of the Kansas City Speedway & Exposition Co.

Ends Band of Thieves

DALLAS, July 31—City Detective Edward Erwin has, he believes, broken up a gang of automobile thieves in Dallas, which, within the past few months, has sold, according to his figures, cars netting them a profit of at least $6,000. The gang worked in Dallas and Fort Worth. It would remodel cars in different ways to make them difficult to identify and then would sell them in nearby towns. The leaders are members of well-known families. Two arrests have already been made.

New Piston Ring Company

ST. LOUIS, Aug. 1—Ford-Davis Mfg. Co. has been organized with $30,000 capital to make piston rings. Plant will be at 2315 Locust Street. E. W. Oelfcken is the largest stockholder.

Another Desert Race Planned on the Coast

Will Run in Fall from Los Angeles to Salt Lake City—Not Revival of the Phoenix Classic

SAN BERNARDINO, CAL., July 31—There is to be a great desert road race staged in the Southwest this fall and it will not be a revival of the Phoenix road race either. There is to be a race from Los Angeles to Salt Lake over the famous Arrowhead Trail, a road that cuts in on the National Old Trails route between this city and Needles.

Chas. Biglow, field secretary of the Arrowhead Trail Association, which organization is promoting the great event, was in Los Angeles yesterday for a conference with Al. G. Waddell, representative of the contest board of the A. A. A. and a car is going out to pathfind the route within the next few days. The dates asked for by the Arrowhead Trail Association are Oct. 8, 9 and 10. The race is to finish at Salt Lake at noon of the third day, Oct. 10, which is the opening day of the Mormon Conference. One night control is to be at Sly, Nevada and the second is to be at St. George, Utah.

It is planned to have a large enough purse to offer $5,000 first money. The Salt Lake Railroad is to run the "Howdy Special," which was always a feature of the Phoenix races and it is expected to be the greatest road race ever staged in the West.

Changes in New York Overland

NEW YORK, July 31—The Willys-Overland Co., as a result of taking over its own branches in this city and surrounding territory, has made many changes in its local organization.

E. M. Lied, formerly zone manager in this territory, has been appointed assistant manager of the local branch in the Circle Building, Broadway and West Fifty-ninth Street. H. F. Harris, formerly assistant manager of the L. Michael Co., Chicago, becomes controller.

R. D. Willard, formerly manager of the Carl H. Page Co.'s branch in Philadelphia, has been appointed sales manager. S. D. Miller, also a member of the Carl H. Page Co., having managed the Brooklyn branch, joins the Overland forces as manager of the Newark branch.

L. F. Seeback, formerly manager of the Brooklyn branch of the C. T. Silver Co., remains in that city as manager of the new Willys-Overland branch.

The Brooklyn branch is temporarily located at 338 Flatbush Avenue, while the Newark branch is at 35-37 Halsey Street. The company expects to enlarge its territory by establishing branches in Yonkers and other nearby cities.

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Association News

Toledo To Have Tractor Test

TOLEDO, Aug. 1—A practical demonstration of farm tractors will be held in Toledo Aug. 8 by the Toledo implement dealers. The demonstration is expected to attract 5000 people and is to introduce the tractor to the farmer who handles 80 acres or more of land. Ten machines will be demonstrated. A 20-acre farm at Front and Dearborn Streets has been selected for the demonstration.

Getting Ready For Jobbers

ST. LOUIS, July 31—The National Association of Automobile Accessory Jobbers' entertainment committee of the Motor Accessory Trade Association met at the Missouri Athletic Association Friday afternoon and approved a general outline for the entertainment of the delegates for the convention in October. Plans are being made for a series of rides to different parts of the city and surrounding country, a moonlight boat ride on the Mississippi and a dinner at Sunset Inn, the show resort which is located on the historic General U. S. Grant farm. The committee expects that more than 300 accessory dealers will be present. The committee is: L. E. Allmon, president of the St. Louis Association; R. E. Lee, secretary; W. K. Norris, John F. Shuford, W. L. Niekamp and Fred Campbell.

Car Show at Kansas Fair

HUTCHINSON, KAN., Aug. 1—The automobile dealers of Hutchinson have made arrangements with the management of the Kansas State Fair here for an annual motor car show in connection with the fair. The dealers have been given space in the grounds and will erect a stucco building, 40 x 240.

Lee Back On the Job

ST. LOUIS, July 31—Robert E. Lee was elected secretary of the Automobile Manufacturers and Dealers Association of St. Louis by the unanimous vote of the directors July 27. Lee was the organizer of the association and served 5 years as secretary, resigning in October, 1914, because of other duties. The secretary also is manager of the annual show and has had charge of all shows except that of last year. Lee also is secretary of the Motor Accessory Trade Association, of which he was organizer.

Since the members of the Manufacturers and Dealers voted to hold the annual show after that of Chicago instead of in October, as has been the St. Louis custom, there has arisen something of a dissenting opinion. The dealers regret that they will have no opportunity to show their inclosed cars in a show. This feeling is doing much to promote the Locust Street Auto Fair during the fall festivities in October. Arrangements are progressinging nicely whereby all dealers will be allotted space in Locust Street showrooms with non-competing lines.

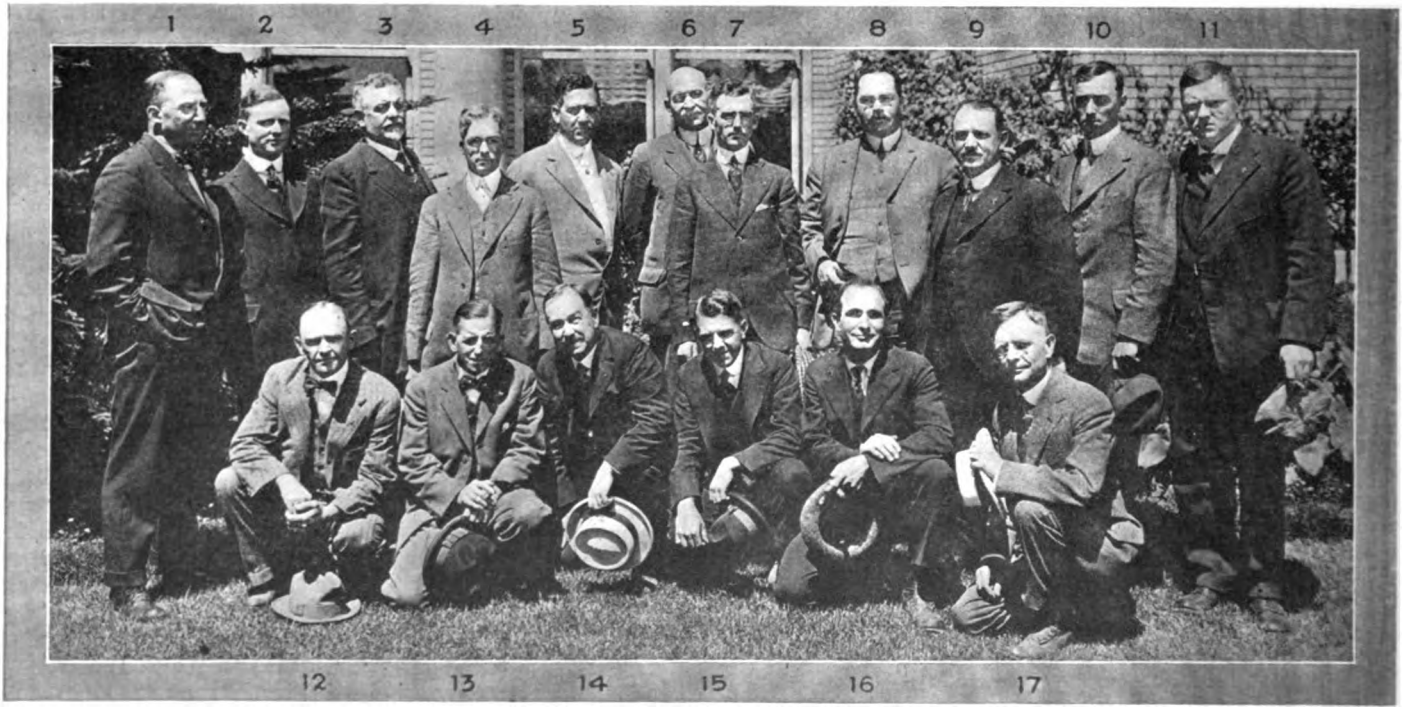
Washington Dealers to Meet

TACOMA, Aug. 1—Definite arrangements have been completed for the holding of the second annual convention of the Washington Automobile Chamber of Commerce in Tacoma, Wash., scheduled this year for Aug. 4, preceding the Montamarathon races.

Indications already are that the attendance will exceed any meeting of the State dealers ever held, and inquiries are being received daily at the club's headquarters as to the scope of plans. Practical talks by capable men, followed by an open forum for the discussion of questions of peculiar interest to car dealers, will comprise the major features of the program.

At the present time there are upwards of 275 established firms in the State that will be represented.

Alameda County (Cal.) Trade Association Chooses Executive Committee



1—*Norman Pearl, Norman Pearl Co., Oakland.*
2—*D. M. Waite, Manager Down Town Garage, Oakland.*
3—*George Rodehaver, Berkeley.*
4—*E. S. Sharp, Manager Union Oil Co., Oakland.*
5—*Charles Burman, H. O. Harrison Co., Oakland.*
6—*C. F. Cole, Central Garage, Hayward.*
7—*F. R. Quigley, Pennsylvania tire distributer, Oakland.*
8—*H. F. Clarrage, Vance & Clarrage Co., Oakland.*
9—*Charles Hebrank, Osen & Hunter Co., Oakland.*
10—*W. D. Foster, Auto Electric Equipment Co., Oakland.*
11—*Ralph Spaulding, Berkeley.*
12—*Robert Martland, Martland-Priest Co., Oakland.*
13—*J. H. Pulsifer, Pacific Kissel Kar Branch, Oakland.*
14—*R. M. Seeley, membership chairman, Oakland.*
15—*Herbert S. Smith, secretary and business manager, Oakland.*
16—*M. C. King, San Leandro.*
17—*B. Davison, publicity, Oakland.*

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CASSIDY GETS WORLD DISTRIBUTION OF KIMBALL JACK

NEW YORK, Aug. 1—The Edward A. Cassidy Co., 30 East Forty-second Street, has just completed arrangements with the F. W. Mann Co., Milford, Mass., to market the Kimball ball-bearing automobile jack throughout the world on a long-term exclusive sales contract. Plans now under way for an extension of manufacturing facilities will increase the annual production to 150,000 jacks. Further extensions will be made as needed.

The Kimball jack will be standard equipment on the Franklin car, the H. H. Franklin Mfg. Co., Syracuse, having contracted for 10,000, and several other equipment contracts are pending.

The addition of this jack to the Cassidy line is in accord with this company's policy to handle only accessories of a "shelf" character and for concerns which have large production capacity. This is the fourth item to be carried, the others being the Long horn, the G. P. muffler cut-out and the Cassco engine-driven tire pump.

Studebaker Enlarging

DETROIT, July 27—The Studebaker Corp. has awarded contracts for construction work and will add 40,000 sq. ft. to the floor space of the Studebaker factories. An extra floor, 50 x 300 ft., is to be added to one of the three-story buildings at present used as a warehouse for materials so that the Studebaker plants may be better prepared to stock up on materials in advance of immediate needs.

Baby Republics Coming

ALMA, MICH., July 31—The Republic Motor Truck Co. is planning on increasing the capital stock of the company in order to take care of its increasing volume of business. Two new buildings will be erected, which will give the company altogether 200,000 sq. ft. of floor space. The company is ready to go into the light delivery truck field with a ½-ton truck which it is said will sell at a low price. The company is planning on placing 25,000 of these baby Republics on the market the first year.

Rumely Tractors For Canada

SOUTH BEND, IND., July 31—The Advance-Rumely Co. of Laporte, has received an order for seventy-five cars of tractors and separators to be shipped to Canada as soon as possible. Vern Bush of the sales department stated that the order in dollars and cents would amount to over $150,000.

Union Truck Perfects Organization

BAY CITY, MICH., July 26—The Union Truck Co. perfected its organization to-day, when officers were elected as follows: James R. Tanner, president; H. E. Woodworth, vice-president and general manager; E. C. Tibbetts, secretary, and George Beaulier, treasurer. These officers and C. B. Chatfield, H. E. Buck and W. H. Boutell form the board of directors. The first trucks made by the new company were completed recently and given some severe road tests, and it is said they gave entire satisfaction to its designer.

Allen Holds Dealer Convention

FOSTORIA, OHIO, July 29—The dealers of the Allen Motor Co. held their annual convention at the factory last week. New cars were inspected and business and sales sessions were held.

Factory News of the Week

Firestone Holds Outing

AKRON, July 29—Twenty-five thousand people of Akron attended the annual outing to-day of the Firestone Tire & Rubber Co. The affair was a large family picnic of the Firestone employees and their families.

Four-Wheel Tractor Organizes

CLINTONVILLE, WIS., July 31—The Four-Wheel Tractor Co., a new Wisconsin corporation organized in Antigo, Wis., recently, and later purchased by Clintonville interests, has perfected its organization by the election of the following officers and directors: President, Charles Topp; vice-president, W. H. Finney; secretary, A. B. Mayhew; treasurer, L. C. Larson; directors, F. M. Hyde, Henry Zarling and Alex Stewart. A plant is now being provided and production will start within 30 days.

New Factory For Continental Truck

SUPERIOR, WIS., July 31—The Continental Motor Truck Co., Superior, Wis., expects to break ground Aug. 1 for its new $50,000 factory. The shop is to be ready Nov. 1, at which time the output of trucks will be largely increased.

Collins a G. M. C. Director

NEW YORK, July 28—At a meeting of the board of directors of the General Motors Co. yesterday, R. H. Collins, Flint, Mich., was elected a director to fill the vacancy caused by the resignation of Thomas Neal of Detroit. Collins has been general sales manager of the Buick Motor Co. The General Motors Co. closes its fiscal year this month with net earnings of approximately $25,000,000. The earnings amounted to $14,457,000 in 1915, while its output this year has been 120,000 cars, or an increase of 44,000 over the 76,000 built last year.

A balance of $25,000,000 this year would, after the payment of the dividends on the 7 per cent preferred stock, leave a surplus for the common equivalent to $146 a share, as against $81 a share a year ago.

Victor Rubber Increases Stock

SPRINGFIELD, OHIO, July 29—The Victor Rubber Co. has increased its capital stock from $300,000 to $750,000 and has declared a 100 per cent dividend on its common. The production of pneumatic tires is to be doubled.

Texas Road Under Way

DALLAS, TEX., Aug. 1—D. E. Colb, secretary of the Texas State Highway Association, has completed the log of the proposed paved highway from Laredo to Texarkana, nearly 800 miles.

Prescott a Stutz Director

NEW YORK, July 29—Sherburne Prescott has been elected a director of the Stutz Motor Corp., succeeding K. R. Howard.

STEWART-WARNER BUYS V-RAY PLUG BUSINESS

CHICAGO, July 29—The Stewart-Warner Speedometer Corp. has bought the V-Ray Co., Marshalltown, Iowa, and will extend the manufacture of that product.

Scripps-Booth Is Reorganized

NEW YORK, July 29—The Scripps-Booth Corp. has been organized under the laws of the State of New York with a capitalization of 70,000 shares, no par value, of which 25,000 shares are to be offered for public subscription at $50 per share. The Scripps-Booth Corp. is a consolidation of the Scripps-Booth Co., Detroit, and the Sterling Motor Co., also of Detroit. The corporation will have no bonds or preferred stock and no floating indebtedness.

Goodrich Earns $4,800,000 in 6 Months

AKRON, July 29—The B. F. Goodrich Co. during the first 6 months of 1916 made net profits of $4,800,000, an increase of 20 per cent over the same period of 1915. The increase alone is equal to the 6 months' dividend on the $27,000,000 preferred.

Holt-Welles Recapitalizes

NEW YORK, Aug. 1—The Holt-Welles Co., in order to expand its business, has increased its capital from $50,000 to $200,000. The company makes Browne and Browne-Branford carbureters. W. M. Williams has been made assistant secretary-treasurer and Henry Soeldner production manager. E. H. Stickels is president and sales manager, Paul Welles secretary, Calvert Holt treasurer, and Arthur B. Browne laboratory engineer.

PROMINENT MEN OF THE TRADE WHO ASSUME NEW DUTIES

Otis C. Friend has resigned as sales manager of the Mitchell-Lewis Motor Co., Racine, Wis., to become vice-president and general manager of the new United Motors Co., New York, beginning the middle of August.

B. C. Swinehart, for the past 3 years manager of the Philadelphia branch of the Republic Rubber Co., has been recalled to the main factory at Youngstown, where he will take charge of the solid tire sales. H. D. Worthington, assistant manager of the Philadelphia branch, succeeds Swinehart.

Charles S. Pike has been made sales promotion manager of the Paige-Detroit Motor Car Co., Detroit.

J. J. Kennedy has resigned as manager of the Motor Car Accessory Department of the Interstate Electric Co., New Orleans.

H. S. Frame, until recently with the sales department of the Maxwell Motor Co., Detroit, has been appointed to take charge of the retail department of the Maxwell company's store in Kansas City, Mo.

L. P. Murray, sales manager, has been made Middle Western manager of S. F. Bowser & Co., Fort Wayne. J. G. Rodman has been promoted to Central manager. E. J. Little has been made Eastern manager and E. H. Briggs becomes executive assistant.

Don T. Hastings has recently moved to Indianapolis from Detroit to act as consulting engineer to the Empire Automobile Co. Hastings was previously assistant chief engineer to the Hupp Motor Car Co.

Charles Eastman, formerly with the Utah-Idaho Motor Company of Salt Lake City and a well-known figure in automobile circles on the Pacific Coast, has been made manager of the new factory branch of the Garford Motor Truck Company in Seattle, Wash.

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Packard Earnings $6,000,000

DETROIT, July 31—In a comparative statement of its capitalization, net worth, dividends and surplus for the 7 years beginning Sept. 1, 1909, and ending at the close of the current fiscal year on Aug. 31, 1916, the Packard Motor Car Co. shows aggregate earnings of $18,636,506, after deducting more than $9,000,000 for depreciation during this 7-year period. The earnings for the present fiscal year, 9 months of which are based on actual figures and the last 3 months estimated, amount to $6,050,000, as compared with $2,769,518 for the year 1914 to 1915, which was the best previous earnings for the company.

In offering this statement, F. R. Robinson, comptroller of the company, points out that the figures for the fiscal year—1915 to 1916—contain a conservative estimate covering the last quarter of the year and after paying regular preferred and common cash dividend and deducting the 10 per cent common stock dividend declared Feb. 1, 1916, and the 50 per cent common stock dividend to be distributed Aug. 1, the balance in the surplus account the end of the year will undoubtedly exceed $6,376,344. In the 7 years the capital stock of the company has been increased from $5,000,000 common and $5,000,000 preferred to $11,656,930 common stock and $8,000,000 preferred. In the same period the net assets have increased from $10,766,847 to $26,003,274.

Ford Adds 34 New Branches

DETROIT, July 31—The Ford Motor Co. marks an expansion of its branch sales and service organizations by the addition of thirty-four new branches, effective Aug. 1.

The cities selected for the Ford establishments are: Akron, Ohio, Albany, N. Y., Troy, N. Y., Baltimore, Birmingham, Ala., Des Moines, Duluth, Fresno, Cal., Grand Rapids, Havana, Cuba, New Orleans, Oakland, Peoria, Ill., Richmond, Rochester, N. Y., Sacramento, St. Joseph, Mo., Salt Lake City, San Antonio, Scranton, Pa., Sioux City, Iowa, Spokane, Springfield, Mass., Tacoma, Toledo, Trenton, N. Y., Worcester, Mass., and Youngstown, Ohio.

With the establishment of these new branches the total number reaches eighty-five, besides the twenty-eight branch factories.

Leak-Proof is Enlarging

ST. LOUIS, July 31—The McQuay-Norris Mfg. Co. is doubling the capacity and floor space of its piston ring factory.

Fisher to Issue $5,000,000

DETROIT, July 22—To care for further expansion, the Fisher Body Co., already the largest body manufacturing concern in the world, is preparing to float an issue of $5,000,000 of preferred stock through Hallgarten & Co., New York bankers.

Krit Dividend About 40 Per Cent

DETROIT, July 22—Final reports in the case of the Krit Motor Sales Co., the bankrupt selling organization for Krit cars, were filed in the United States District Court here this week and show approximately $13,000 of the company's assets remaining on hand. The total receipts for the sale of the property were $81,126 and the total disbursements $67,883, of the latter $65,047 representing dividends to creditors amounting to 37½ per cent. Indications are that another dividend of about 4 per cent will be declared before the closing of the trusteeship. The Union Trust Co. was appointed trustee, following the placing of the company in bankruptcy on Dec. 28, 1914.

New Factory for Howe Light

CHICAGO, Aug. 1—The Howe Mfg. Co., maker of a spot light, is to have a new factory, giving a manufacturing capacity of 200,000 lamps annually.

Emerson-Brantingham to Make Bodies

ST. LOUIS, Aug. 1—The Emerson-Brantingham Co., Rockford, Ill., notifies customers here that after Aug. 1 the company will make motor car bodies and fenders. The company for 62 years has been a maker of farm implements and recently has been making Big Four and Emerson tractors, which will be continued.

Coming Events

General Events

September	Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.
Oct. 2-3-4-5	St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.
Oct. 12	Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Races, Contests and Tours

Aug. 5	Tacoma; speedway races, Tacoma Speedway Assn.*
Aug. 11-12	Pikes Peak, Col.; hill climb, Pikes Peak Auto Highway Co.*
Aug. 12	Portland, Ore., track race, Hiller-Riegel Co.
Aug. 17	Boise, Idaho; track race, North West Auto Assn.
Aug. 26	Kalamazoo, Mich.; 100-mile track race.
Sept. 1-2	New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*
Sept. 4	Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.
Sept. 4	Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.
Sept. 4	Newark, N. J.; track race, Olympic Park Racing Assn.
Sept. 4	Des Moines, Ia.; speedway. Price Speedway Co.
Sept. 4	Indianapolis Speedway race.
Sept. 4-5	Spokane, Wash., track racemeet, Inland Auto Assn.
Sept. 9	Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway
Sept. 16	Providence, R. L., speedway racemeet, Narragansett Park Speedway.
Sept. 18	North Yakima, Wash.; track race, Washington State Fair.
Sept. 29	Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.
Sept. 30	New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.
Oct. 7	Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.
Oct. 7	Philadelphia Speedway race.
Oct. 14	Chicago; speedway races, Speedway Park Assn.
Oct. 19	Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.
Oct. 21	Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.
Nov. 16-18	Santa Monica; Vanderbilt Cup and Grand Prix races.
Nov. 30	Los Angeles, Cal.; speedway races, Ascot Speedway Assn.
Dec. 25	Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

July 31-Aug. 4	St. Louis, Mo.
Aug. 7-11	Fremont, Neb.
Aug. 14-18	Cedar Rapids, Iowa.
Aug. 21-25	Bloomington, Ill.
Aug. 28-Sept. 1	Indianapolis.
Sept. 4-8	Madison, Wis.

Shows

Aug. 2-9	Hollywood and West End, N. J.; show, Atlantic Exhibition Co.
Aug. 28-Sept. 1	Des Moines, Iowa, show, State Fair.
Sept. 2-9	Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.
Sept. 4-8	Hartford, Conn., annual automobile and truck show, under the auspices of the Connecticut Fair Assn.
Sept. 4-11	Indianapolis, Ind., show, Indiana State Fair, Indianapolis Automobile Trade Assn.
Sept. 11-16	Milwaukee, Wis, second annual Fall show, Milwaukee Automobile Dealers, Inc.
Jan. 6-13	New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.
Jan. 27-Feb. 3	Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Motor Car Securities Quotations

	July 29, 1915 Bid	July 29, 1915 Asked	July 29, 1916 Bid	July 29, 1916 Asked
Ajax Rubber Co. (new)	..	..	63	66
J. I. Case T. M. Co., pfd	70	79	85	90
Chalmers Motor Co., com	90	92½	175	185
Chalmers Motor Co., pfd	96	97½	98	101
*Chandler Motor Car Co	..	..	169¾	187
Chevrolet Motor Co	..	..	208	212
Fisk Rubber Co., com	..	..	..	100
Fisk Rubber Co., 1st pfd	..	..	114	120
Fisk Rubber Co., 2d pfd	..	..	120	..
Firestone Tire & Rubber Co., com	506	512	915	920
Firestone Tire & Rubber Co., pfd	109	111	111	114
*General Motors Co., com	177	179	500	525
*General Motors Co., pfd	103	105	115	116½
*B. F. Goodrich Co., com	51	53	71½	72
*B. F. Goodrich Co., pfd	103½	104½	113¾	114¾
Goodyear Tire & Rubber Co., com	268	271	222	230
Goodyear Tire & Rubber Co., pfd	105	106½	105	106
Grant Motor Car Co	..	..	9	11
Hupp Motor Car Co., com	..	..	6½	7
Hupp Motor Car Co., pfd	..	..	80	100
International Motor Co., com	15	17	6	9
International Motor Co., pfd	37	42	18	25
*Kelly-Springfield Tire Co., com	..	..	71	73
*Kelly-Springfield Tire Co., 1st pfd	84½	87	95	98
*Lee Tire & Rubber Co	..	..	43½	44½
*Maxwell Motor Co., com	33	34½	81¼	81½
*Maxwell Motor Co., 1st pfd	83	83	86¾	87
*Maxwell Motor Co., 2d pfd	29	31	57	58
Miller Rubber Co., com	198	199	200	205
Miller Rubber Co., pfd	104	106	104	106
Packard Motor Car Co., com	110	115	175	185
Packard Motor Car Co., pfd	..	106¾	109	104
Paige-Detroit Motor Car Co	..	..	44	47
Peerless Truck & Motor Corp	..	..	22	24
Portgage Rubber Co., com	38	37½	113	116
Portgage Rubber Co., pfd	92	95	115	117
Regal Motor Car Co., pfd	..	..	17	21
Reo Motor Truck Co	17	18½	38¾	37¾
Reo Motor Car Co	30¾	32	42	43
Saxon Motor Car Co	..	..	74	77
Standard Motor Co	..	..	5	6
Stewart-Warner Speed. Corp., com	63	64½	101	103
Stewart-Warner Speed. Corp., pfd	105	107	..	..
*Studebaker Corp., com	84	85	127	127¼
*Studebaker Corp., pfd	101	102½	109½	111
Swinehart Tire & Rubber Co	88	92	85	87
United Motor Corp	..	..	67	67¾
*U. S. Rubber Co., com	45	46	53¼	53¾
*U. S. Rubber Co., pfd	101¾	103	108½	109
White Motor Co. (new)	103	105	53¼	53¾
*Willys-Overland Co., com	134	135½	59	60
*Willys-Overland Co., pfd	103	105	105	106

*At close July 29, 1916—Listed N. Y. Stock Exchange.

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MICHELIN



Page Advertisement in the Saturday Evening Post of August 5th

Big advertisements like the above appearing regularly in The Saturday Evening Post and newspapers everywhere are telling motorists that the Michelin Dealer offers more for the money than does any competitor.

Write for full particulars.

Highest Quality, Low Price and Big Advertising make the Michelin proposition the greatest ever offered to the trade

MICHELIN TIRE COMPANY, Milltown, N. J.

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A DIAMOND IN A LEAD SETTING?

Ridiculous! Of course it is. Who would put a rare stone in a cheap setting?

The setting of the

GOLDEN GIANT

is in harmony with the exceptional quality of this Spark Plug.

There could be no more fitting setting for the Golden Giant than its shell of 24 K gold plate. It proclaims to Spark Plug buyers **that the maker is proud of his product.**

The Gold Plate compels favorable attention. It will attract first, and then sell Spark Plugs for you.

Let us tell you how bigger profits and bigger sales have been made by all dealers who have already bought the **gold-plated plug with the Blue Adamant Insulator.** Let us tell you how every dealer who sells this Plug is satisfying his customers for all time, and making friends by each sale.

Write your name across the face of this ad, then mail it to us. It is the cue for us to lay our proposition before you.

Benford Mfg. Co.
MT. VERNON, NEW YORK



Packed in a handsome individual tin container

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500 NEW DEALERS for Velie Biltwel Six

Bigger—Better—More Power

ALTHOUGH the announcement of the new 1917 Velie Biltwel cars was made barely a month ago, more than five hundred new dealers have joined the Velie Sales organization. Buyers and dealers alike are eagerly seeking the opportunity to obtain the new six with its remarkable specifications and equipment at $1085. Such is the demand aroused by the famous Velie values—even greater this year than before. Only the splendid facilities of A Mile of Velie Factory can cope with the market which this year will *again* triple the Velie output.

1917 Cars Are Now Going to Velie Dealers

We are taking care of the demand—promptly and efficiently. Even now the new 1917 Velie Biltwel is appearing in large numbers in every community where the Velie has a connection.

Eight Body Styles Give the Dealers a Complete Line

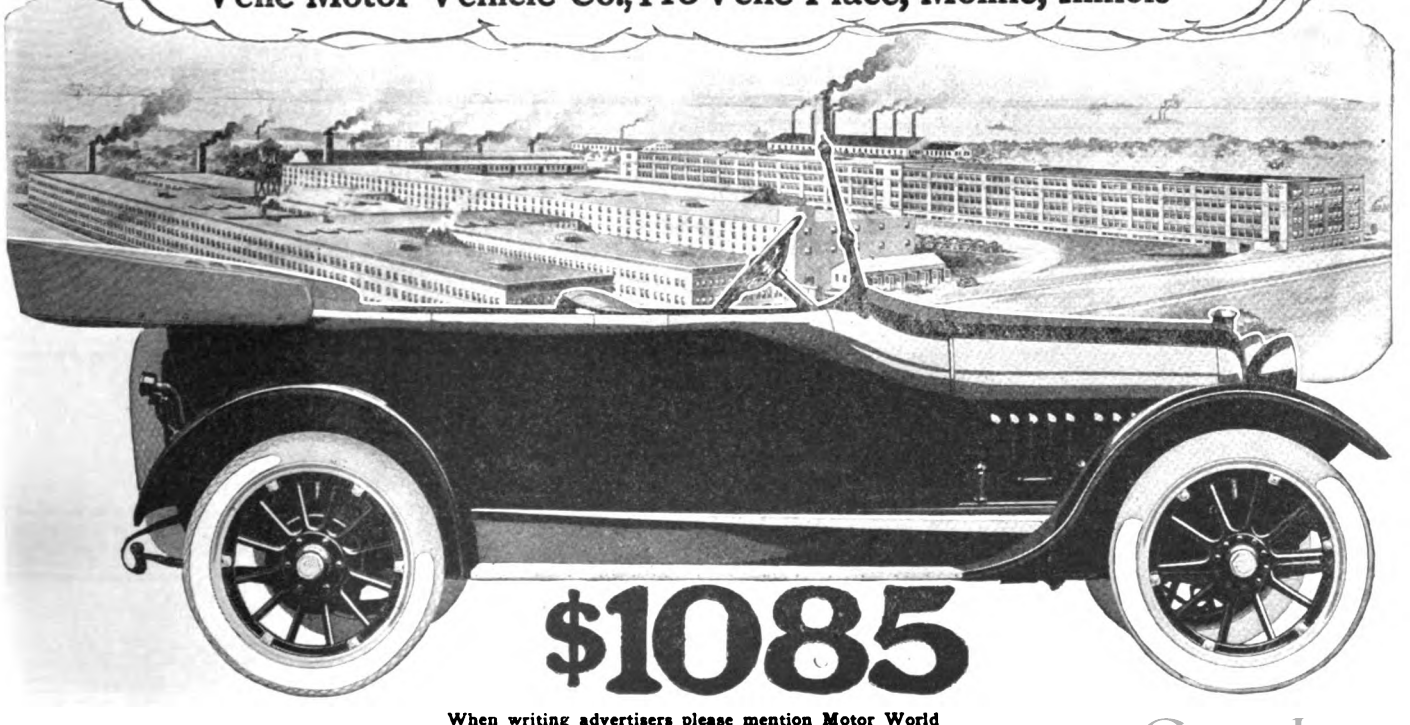
Model 28, five-passenger Touring, $1085; four-passenger Companionable Roadster (original and exceptionally smart type), $1085; two-passenger Roadster, $1065. Enclosed bodies, exclusively designed: Cabriolet, $1485; Touring Sedan, $1685; four-passenger Sociable Coupe, $1750; Town Car, $2200. Model 27, seven-passenger Six, completes the line; 124-inch wheelbase, 45 h. p., 35x4½-inch tires, 4-speed transmission. The utmost in luxury and refinement. Price $1550.

Such an opportunity was never presented to dealers before. **A car of strictly high-priced features—at low price.** Backed by one of the most substantial organizations in America. Presented by a big national advertising campaign. If your territory is open write or wire for our liberal proposition. Better still, come to the factory.

Velie Biltwel Features Explain the Unprecedented Demand

Six-cylinder Velie-Continental Motor
Timken Axles front and rear
Removable Cylinder Head for Inspection
Helical Gears in Motor—no chains
Enclosed Multiple Dry Disc Clutch
Hotchkiss Drive—no noisy torque arm
Spiral Gears in Floating Rear Axle
Remy Automatic Ignition—Push Button Starter
Double Bulb Headlights—Dashlight
All Wires Enclosed in Metal Conduits
Rear Gasoline Tank—Vacuum Feed
Simple Rocking Gear Shift Lever
Luxurious Body, 4 inches longer
Unusually Wide Doors—easy to enter
High-Grade Leather Upholstery
Cushions Deep Tufted—Real Curled Hair
Long, Flexible Underslung Springs
Expanding Tire Holder—no Straps
Mirror Body Finish—20 Operations Deep
Light of Weight—Economical of Fuel
Everything in and on—ready for the road

Velie Motor Vehicle Co., 115 Velie Place, Moline, Illinois



$1085

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To dealers living in Hilly Country:

How would you like the agency in your locality for a car that was a poor hill-climber?

"No thanks," say you.

Very well. ***That's*** off.

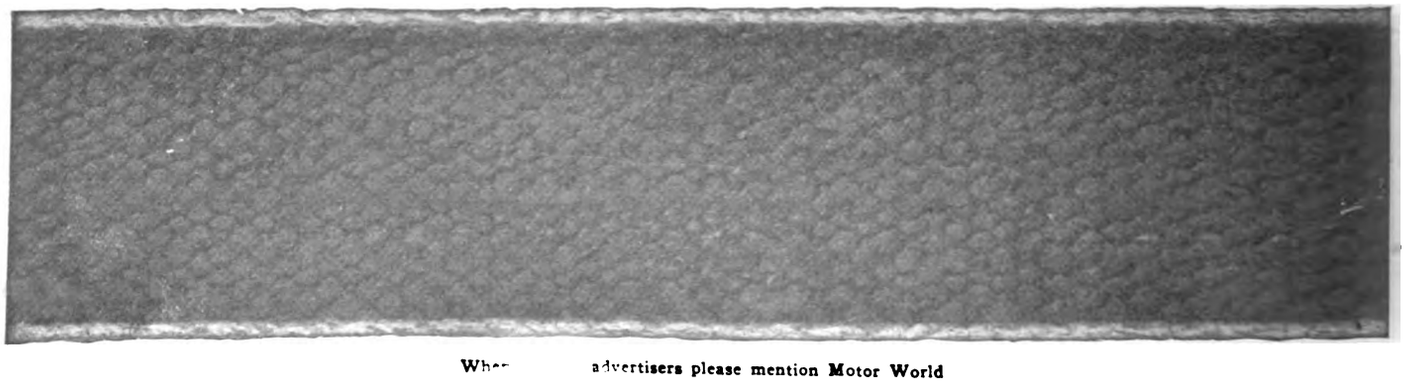
But, for every car that's going ***up*** your nearby hills, there's another coming ***down***.

"Well," you say, "What of it?"

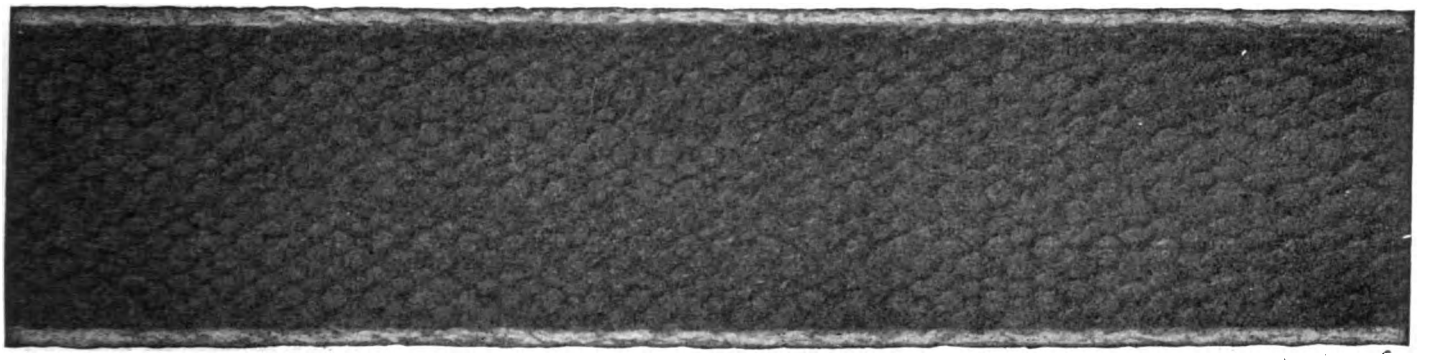
This is the what-of-it:

A hilly-country dealer pushing a poor hill-climber is no more ridiculous than a hilly-country dealer who pushes poor-**WEAR**ing brake lining!

Up hills on power—***down*** hills on brake-lining. Maybe that thought never struck you before. Think it over.



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The sales of Raybestos today are strongest in hilly sections. That is because motorists in those districts are quickest to learn where **WEAR** ***is*** and where **WEAR** ***isn't.***

Raybestos **WEAR** means far more than mere "safety" down hills. It guarantees ***continued*** safety—as far as a brake lining can. And continued safety is the only kind that counts.

The Raybestos method of weaving and the Raybestos secret compound are found in no other brake lining. That's worth keeping in mind.

Living in hilly country, the chances are that you already know all this. But there are still a few dealers who are taking unnecessary risks in recommending some other brake lining.

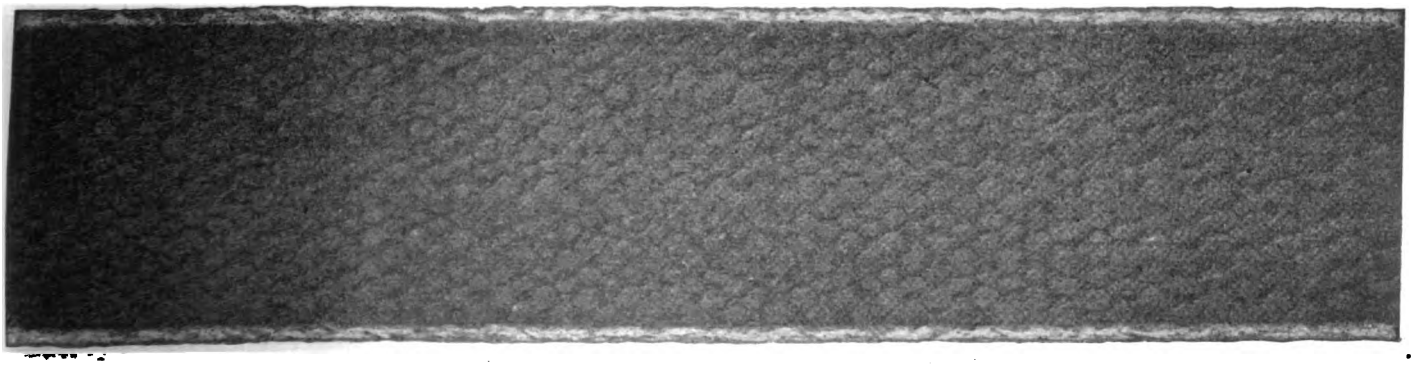
We thought they might appreciate having the matter brought to their attention.

The Royal Equipment Company **Bridgeport, Conn.**

Raybestos

Brake Lining

(Sold by over 12,000 Garages)



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More than twice the volume of business.

More than twice the number of users.

Tiolene

"The Oil That's Clean"

Users of oil and dealers in oil, think quick and act at once by writing to your nearest distributor.

M. W. 14

Kindly send price on Tiolene.

Drum.....

½ Drum.....

Name.....

Address.....

Car.....Year.....

TIOLENE DISTRIBUTORS

General Automobile Supply Co.	New York City
Cornplanter Refining Co.	Nashua & Manchester, N. H.
Richards & Conover Hardware Co.	Kansas City, Mo.
Richards & Conover Hardware Co.	Oklahoma City, Okla.
Western Merchandise & Supply Co.	Chicago, Ill.
Jackson Motor Supply Co.	Pittsburgh, Pa.
Robertson Hardware & Steel Co.	Portland, Ore.
Sangarsa & Co. (S. Am. Distribution)	New York City
Joseph Strauss & Son	Buffalo, N. Y.
Treman, King & Co.	Ithaca, N. Y.
H. L. Hadden Co.	Milwaukee, Wis.
Burhans & Black, Inc.	Syracuse, N. Y.
N. M. Townley, Jr.	Paterson, N. J.
Detsch & Co.	Washington, Montana, Idaho
R. McC. Bullington & Co.	Richmond, Va.
H. M. Rhea	Chambersburg, Pa.
The Columbia Auto Supply Co.	Washington, D. C.
Pacific Implement Co.	San Francisco, Cal.
The Chapin Co.	Calgary, Alta., Can.
Canadian Selling Co.	Montreal, Que., Can.
Standard Supplies, Ltd.	Ottawa, Ont., Can.

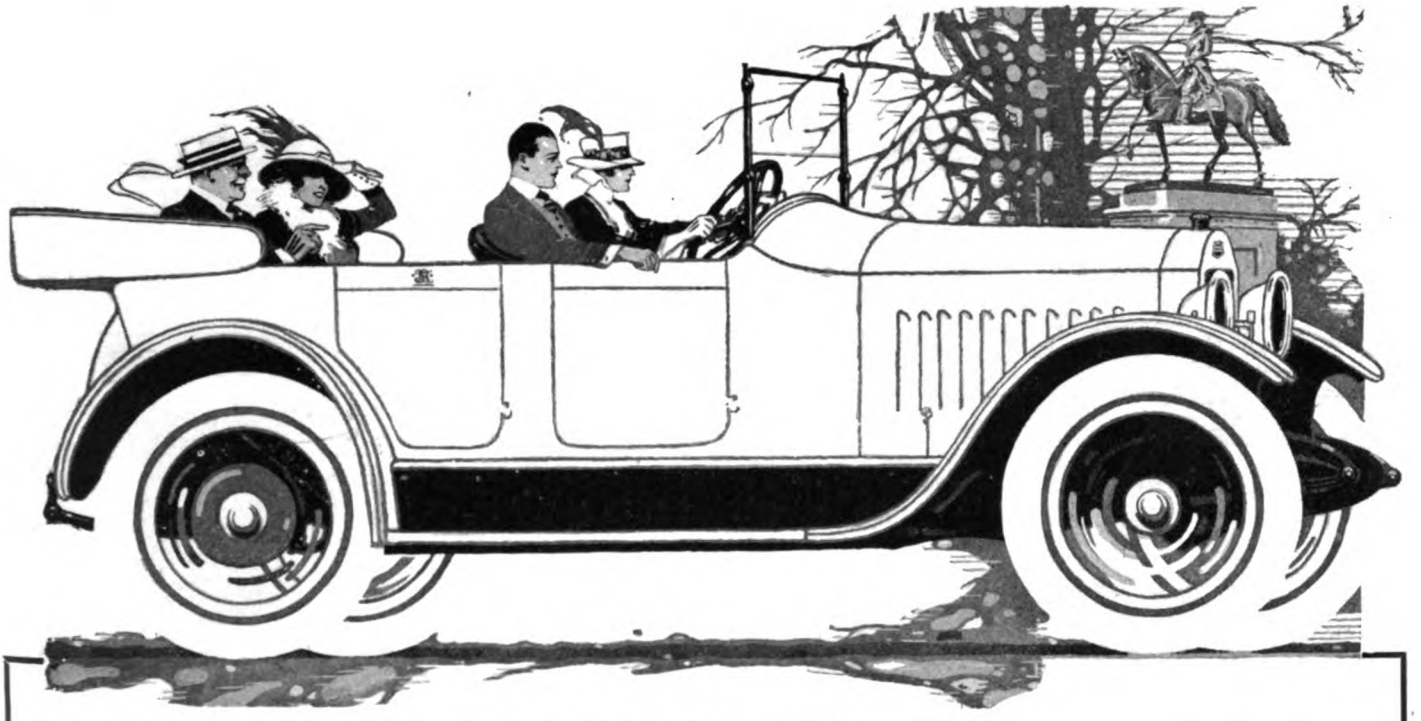
FOREIGN REPRESENTATION

Santiago A. Panzardi	San Juan, Porto Rico
W. A. Dettmann	Rocky Point Road, Arncliffe, N. S. W.
Crystal Oil Co.	Barcelona, Spain; Milan, Italy
Eddie E. Johnston	Belize, British Honduras
J. Didier & Co.	Lyons, France
J. Roberts & Son	New Market, Auckland, New Zealand
Handel En Industrie Mij. M. Adler	Amsterdam, Holland; Dutch East Indies

TIONA OIL COMPANY, Binghamton, N. Y.

"The Tiona Oil Co. was 20 Years Young July 18th

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LIBERTY SIX

$1095

Largest Dealers Indorse New Liberty. $3,500,000 Worth of Liberty Cars Already Bought

The best indorsement a motor car could ask is the approval of big distributors. The New Liberty has won this approval.

Sales amounting to over three and a half million dollars since the first Liberty announcement is a tremendous expression of dealer confidence.

The dealers who selected the Liberty stand high in the industry. Successful dealers from New York, Detroit, Chicago, Los Angeles, San Francisco, Sioux City, Pittsburgh, Toledo, Rochester, Columbus, New Orleans, Minneapolis and other important centers investigated the Liberty.

They came. They saw. They signed. These men recognize the selling value of the Dominant Liberty Owner Features

Here's the big reason why they chose the Liberty:

"Never in my whole sixteen years' automobile experience have I been able to create such a distinctly favorable impression by a demonstration as I am doing every day with this car."—John F. Plummer, New York.

We propose to continue to select good dealers and to stick by them! We are interested in talking with dealers who have a regard for the character of the car they sell and the company they represent.

Five-Passenger Touring Car, $1095. Four-Passenger Close Coupled, $1095. Also Several Distinctive Types of Enclosed Cars

Liberty Motor Car Company, Detroit

PERCY OWEN, President

LIBERTY

Dominant Liberty Owner Features

1—Light operating balanced clutch—it yields to a finger pressure.

2—Powerful brakes, but easy operating—a pull with one finger on the emergency brake will instantly stop the car.

3—Silent and smooth gear shift—no clashing of gears.

4—Ease of steering.

5—Cradled comfort of spring suspension on rough roads.

6—Wide doors.

7—Comfortable, wide and deep seats—genuine leather. You sit IN the Liberty not ON it.

8—Plenty of room and comfort in driving position.

9—A windshield weather-tight all around.

10—Advanced ideas in simplicity of chassis design.

11—Beautiful body lines, long and low.

Continental-Liberty motor, 3 1-8 x 4 1-2, Timken axles and bearings; Delco equipment; wheelbase, 115 inches; 32 x 4 tires.

Five-Passenger Touring Car, $1095.

Four-Passenger Close Coupled, $1095.

Also distinctive types of Enclosed Cars.

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The "Fountain of Youth" For Your Tires

DON'T neglect the small cuts and punctures. Your tires will have a new lease of life if you give them immediate attention with

Firestone Accessories



Take Firestone Cementless Tube Patches—for example. They are so easy to put on, are full of "give" and stick indefinitely.

Other helps in the line are Firestone Hook-On or Lace-On Boot, Inside Blowout Patch, Cure Cut, etc. Get complete list from any dealer.

Dealers: Our proposition helps you serve the public and makes money for you. Write

Firestone Tire and Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio
Branches and Dealers Everywhere

Firestone Cementless Tube Patch Free

Easy to put on; sure to stay tight. To prove the success of Firestone patches we will send one free to any car owner or dealer. Ask for Book "Mileage Talks."

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KING
EIGHT CYLINDER

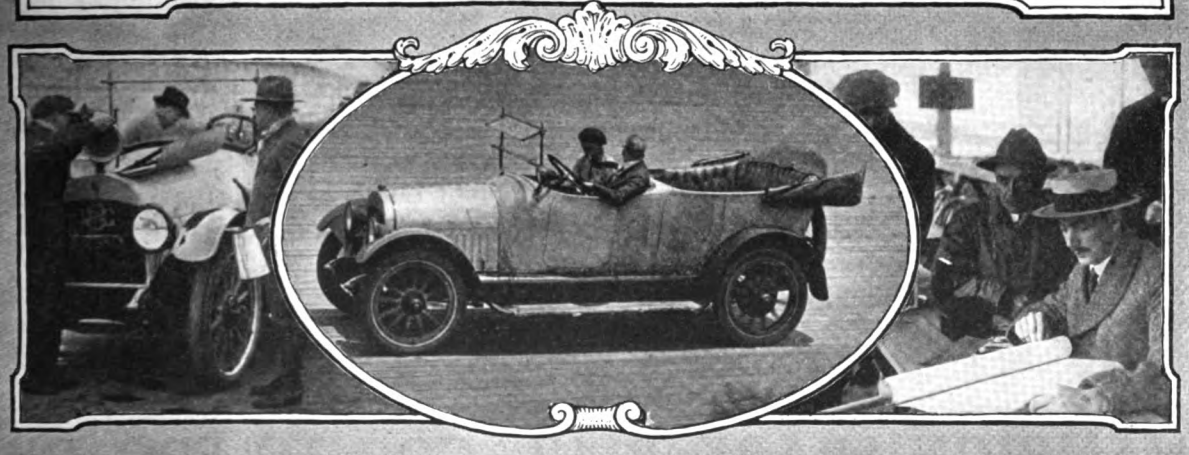
10,850 MILES
Without Stopping the Motor

By a Registered STOCK car under OFFICIAL A. A. A. sanction and supervision.

The following pages contain announcements of the Manufacturers who supplied many of the vital parts which helped make this achievement possible.

These elements are all Standard Equipment on the KING and their wonderful endurance and efficiency is a credit both to these Manufacturers and to the King Company—whose Engineering Department selected them as worthy of the car.

KING MOTOR CAR COMPANY - - DETROIT



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10,850 MILES KING WITHOUT A STO

109,000,000 SPARKS

delivered continuously for 14 days and nights by the *same set of plugs.* This is the wonderful record of

Champion

"TOLEDO MADE FOR THE WHOLE WORLD'S TRADE"

DEPENDABLE SPARK PLUGS

in the eight cylinder KING'S 10,850 mile non-motor-stop run under OFFICIAL A. A. A. sanction and supervision.

Never before in the annals of motordom has there been such an amazing spark plug achievement. 10,850 miles amounts to about two years' service in the hands of the average owner, and in all that mileage **not a single one of the eight** CHAMPION SPARK PLUGS **was changed.** When it is considered that never for one instant did the motor stop to cool or rest, this record is almost incredible—but the American Automobile Association officially attests its truth.

For 336 continuous hours, day and night, through rain, fog and boiling sun, the eight CHAMPION PLUGS supplied the vital sparks regularly and efficiently, as the KING MOTOR reeled off this great mileage at an average rate of 34 miles per hour, excluding stops.



The appreciation of the King Motor Car Company is shown in the telegram sent at the end of the run:

> "It is the most wonderful official Spark Plug Record of a stock car under triple A supervision, and speaks volumes for your product."

The CHAMPION'S right to the phrase "Dependable Spark Plugs" is proved a thousand times over by this trial, and it is this dependability, endurance and all-around service that has made the CHAMPION Standard Equipment on not only the KING but four out of every five of the new cars being built this season.

When you replace a plug insist on the CHAMPION. Your dealer best knows which model is best suited for your particular motor. Be sure the word "CHAMPION" is on the porcelain, not merely on the box.

CHAMPION SPARK PLUG CO., TOLEDO, OHIO

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0,850 MILES KING WITHOUT A STOP

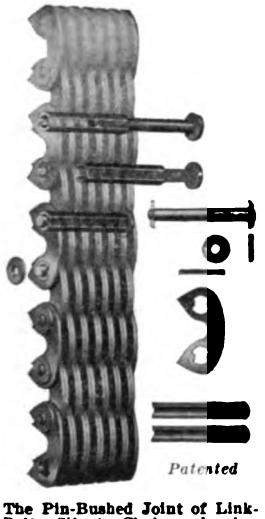
Link-Belt Silent Chain

The Standard Engine Transmission in the King "8" Motor

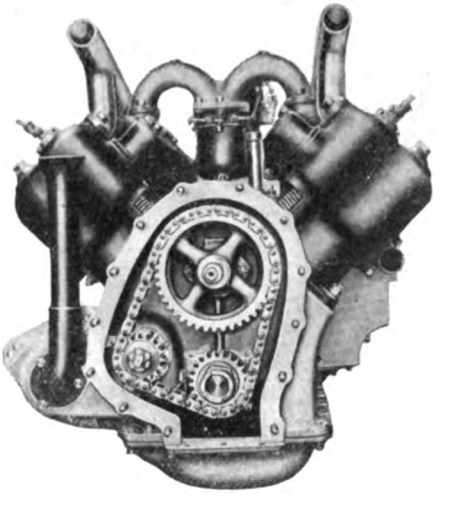
The uniform, smooth operation of the cam shaft and generator of the King "8" depends largely upon the Link-Belt Silent Chain Drive.

The reason for the great success of Link-Belt Silent Chain is its peculiar patented Pin-Bushed-Joint construction—a round pin and two case-hardened semi-circular bushings. You can identify Link-Belt Silent Chain readily.

Look for the name on the washers. Look for the liners in the joints.



The Pin-Bushed Joint of Link-Belt Silent Chain, showing the pin, bushings and washers.



King "8" Motor, showing Link-Belt Chain.



Strand of Link-Belt Silent Chain.

More than 35 operations and inspections are required before Link-Belt Silent Chain is ready for use on the King motor—every operation is safeguarded through inspection or test. It is made almost as carefully as a watch, in the most modern and efficient chain plant in the world by highly proficient workmen on specialized machinery. Everything humanly possible is done to secure perfection. Upon the accuracy with which the chain is made depends the quiet operation of the drive.

Silent Chain Drives for King Motors fully described in King Book No. 254.



Remember, to identify Link-Belt Silent Chain: Look for the name on the Washers. Look for the Liners in the Joints.

LINK-BELT COMPANY

DETROIT
732 Dime Bank Building

PHILADELPHIA
Nicetown Station

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0,850 MILES KING WITHOUT A STOP

LEGRAM

"We did not even have to inspect your bearings on the entire test"

King Motor Car Co.



HYATT

QUIET ROLLER BEARINGS

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10,850 MILES KING WITHOUT A STO

Atwater Kent Ignition



Perfect Score in King Test

(See Newspapers and Automobile Publications)

11,000 miles (including idling distance) in 14 days without stopping motor *and without touching any part of the Ignition System!*

One hundred and twenty millions (120,000,000) of accurately timed, uniformly hot sparks at the rate of 1360 sparks per minute or 22 per second—with the motor firing as smoothly at the end as at the beginning of the run—good for perhaps another ten thousand miles!

This is undoubtedly the most rigid test to which any ignition device has ever been subjected.

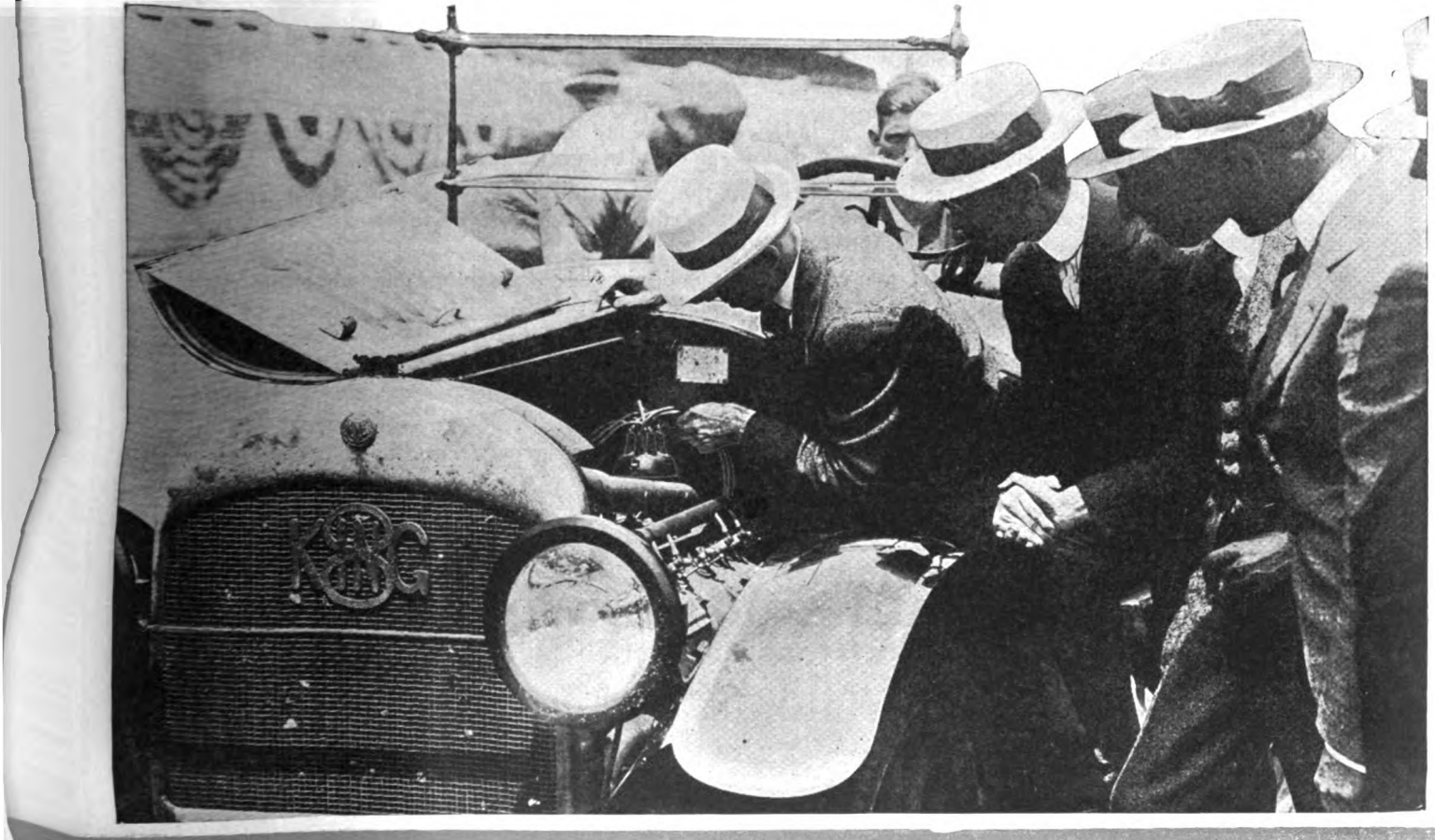
The performance of any car depends absolutely on the unfailing efficiency of its ignition system. That is why King and many other standard cars are ATWATER KENT equipped.

Furnished also for magneto replacement on any car—a wonderful opportunity for dealers, garages and repair shops. A special outfit for Ford cars.

President Ward and Chief Engineer Chase of King Company inspecting ignition system at end of 10,850 mile non-stop run.

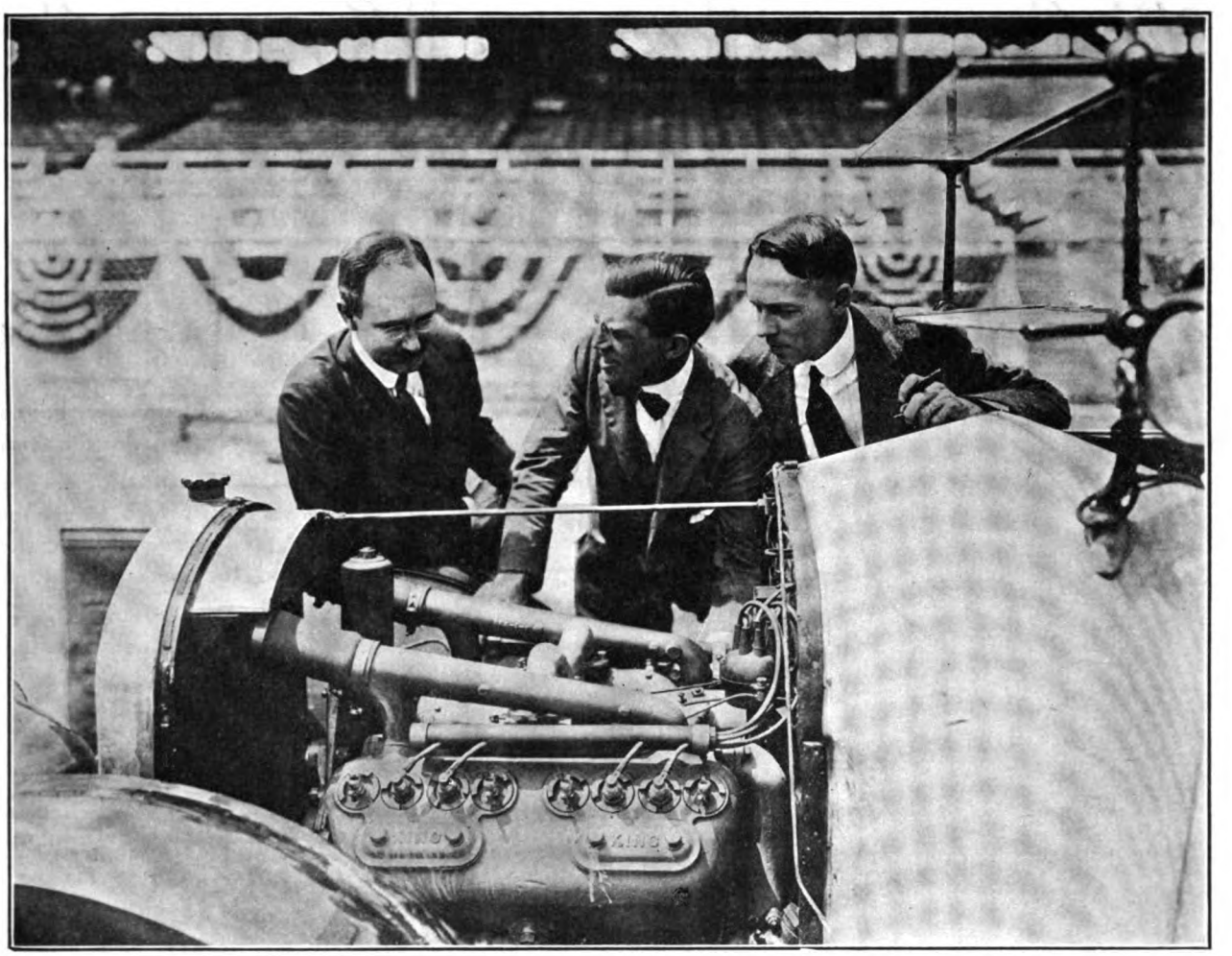
WRITE US FOR DETAILS

ATWATER KENT MFG. WORKS, Philadelphia, U. S. A.



TWO YEARS' SERVICE IN TWO WEEK

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PRESIDENT ARTEMAS WARD, JR., LEFT; T. P. CHASE, CHIEF ENGINEER KING MOTOR CAR CO., AT RIGHT, AND DAVID W. SOWERS, PRESIDENT SOWERS MFG. CO., CENTER

Here is an actual snap-shot showing the cylinders of the engine in the stock King car which made the ten thousand eight hundred and fifty mile non-stop car owners' service test.

We find this was snapped just after the completion of the run at the Sheepshead Bay Motor Speedway. That the run had been successful is shown by the pleased expressions on the faces of three of the men most interested in this wonderful endurance test.

We could fill this page and a good many hundred more with what we think, and what our customers have told us they think about our cylinder castings, the service they give, and the service we give, but it seems to us that the above photograph tells the story better than words.

Mr. F. E. Edward, the Technical Director of the test for the American Automobile Association, advised that the cylinder bore dimensions which he took after the run checked exactly with those taken before.

That the cylinders in question were from regular production, is shown from the fact we knew nothing about the proposed test until after the run had been started.

REFERENCES—Any of our customers

Sowers Manufacturing Company

Engineers and Founders

Buffalo, N. Y.

Specialists in Jacketed Apparatus, Cylinder Castings, Rough or Machined

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10,850 MILES KING WITHOUT A STOP



What Kept It Running?

A remarkable test, to be sure. And think of the part the battery played!

Ignition had to be perfect—otherwise the engine might have stopped.

Lights burned almost continuously. Generator was being driven at high speed.

If the battery failed the test was ruined. But a Willard doesn't fail, even in a severe test.

The stock Willard Battery used was on the job every minute. Water was added three times, as a precaution. And the battery finished in the same perfect condition as it started.

F. E. Edwards, chairman of the run and a member of the A. A. A. Contest Committee, together with Messrs. Shipper and Elsner of this committee, inspected the battery after the test and pronounced it excellent.

The distance covered—10,850 miles—equals two years' mileage of the average owner. But the battery never failed. And why?

Because every part of the electrical system worked in harmony. A Willard Battery will do its work always under those conditions. It depends on the system as much as the system depends upon it. The name Willard is an assurance of battery performance—in hard test or ordinary driving.

Willard Storage Battery Company

Cleveland, Ohio

New York: 228-230 W. 58th St.
Chicago: 2524-30 So. Wabash Ave.
Atlanta, Ga.: 8-10 East Cain St.
San Francisco: 1433 Bush St.
Minneapolis: 36-38-40 So. 10th St.
Indianapolis: 316-318 No. Illinois St.
Detroit: 736-38-40 Woodward Ave.

Direct Factory Representative in Philadelphia, Boston, Dallas, Kansas City, Omaha, Seattle. Service Stations in All Principal Cities in the United States and Canada.

Willard Storage Batteries are for sale by car dealers, garages and all Willard Service Stations and Factory Branches.

Willard STORAGE BATTERY

TWO YEARS' SERVICE IN TWO WEEKS

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10,850 MILES KING WITHOUT A STOP

CAPACITY GURNEY ENDURANCE

ANOTHER DEMONSTRATION

A King "8" Stock Car equipped with

GURNEY
BALL BEARINGS

recently ran for two weeks without once stopping the motor, covering nearly 11,000 miles at an average speed of over 32 miles an hour.

At the end of this remarkable test—approximating two years' actual service—the bearings were in perfect condition, ready to repeat the trip.

These recurring demonstrations of superiority in actual service explain the presence of Gurney Bearings wherever the highest character of performance is required.

GURNEY BALL BEARING COMPANY
JAMESTOWN, N. Y.
Chicago, Ill. New York City



WARD LEONARD

Automatic Controller for Dynamo Lighting & Electric System

on the KING Car

Standard King Equipment since electric systems have been used

THIS controller automatically keeps the dynamo output constant, regardless of engine and dynamo speeds. ***It causes*** a ***continuous charging*** of the ***battery*** to its ***maximum capacity*** and ***automatically maintains*** the ***battery*** in a ***perfectly charged condition.***

Ward Leonard Electric Co.
MT. VERNON, N. Y.

A. J. FISK, Western Representative
967 Woodward Avenue
Detroit, Mich.

In covering this distance of 10,850 miles without a motor stop the dynamo armature on the King car revolved 382,200,000 times. There are 28 commutator bars and two brushes. Therefore there were 10,700,000,000 bar-passes under each carbon brush. At the end of the test the dynamo commutator and brushes had a perfect polish—positive proof that the Ward Leonard controller operated perfectly and prevented the slightest overload in amperes or heat at any time.

During the two-week test the controller and dynamo did not require or receive the slightest inspection. All Ward Leonard controllers are shipped sealed. The seal of the controller on the King record breaking car has not been broken.

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0,850 M[illegible] KING W[illegible] A S

1172.76 Miles Average per Gallon of Gargoyle Mobiloil "A"

THAT is the remarkable record made by Gargoyle Mobiloil "A" in the King car in its two weeks non-stop test, over a distance of 10,850 miles.

It is one of the most complete demonstrations of the importance of Correct Lubrication that has ever been made. Gargoyle Mobiloil "A" is the oil specified in the Vacuum Oil Company's Chart of Recommendations for the King "Eight."

Only a correctly lubricated motor could have stood up under this test.

Only a lubricant of the highest lubricating efficiency and of the correct body could have shown such a remarkable wearing quality.

Why We Recommend Gargoyle Mobiloil "A" for King "Eight"

Gargoyle Mobiloil "A" is a rich, medium body oil exactly suited to the design, construction and lubricating system of the King motor.

Its body and character suit the piston design and clearance limits of the King motor.

It is of sufficient body to seal the piston rings and maintain compression under the heat of service.

The Force Feed system of lubrication is employed in the King motor. The body of Gargoyle Mobiloil "A" insures a sufficient supply of oil to all reciprocating parts without flooding the cylinders. If a lighter oil were employed, the quantity of oil forced out of the bearings would be excessive, with the result that large quantities of oil would be thrown to the cylinders and work into the combustion chambers, resulting in excessive

—smoking at exhaust
—carbon deposits
—consumption of oil.

"Gives Best Results"

KING MOTOR CAR COMPANY

Builders of King Cars — Detroit, U.S.A.

July 10th, 1916.

Vacuum Oil Company,
61 Broadway,
New York City.

Dear Sirs:-

In our Car Owners Service Test of an Eight Cylinder King Car at Sheepshead Bay Motor Speedway on June 29th, Gargoyle Mobiloil "A" was used for cylinder lubricating. We believe that much of the success of the test was due to the high lubricating efficiency of Gargoyle Mobiloils.

The car maintained an average of 1172.76 miles per gallon of oil during the entire test and this despite the fact that at the end of the 4000th mile the oil was drained from the crankcase and new oil poured in. The lubricating efficiency of the oil had been but little impaired and we believe that had it been left in the consumption of oil would have been much less.

We have no hesitancy in recommending Gargoyle Mobiloil "A" for use in the King motor. It gives the best results.

Yours very truly,
KING MOTOR CAR COMPANY
L. E. Jones
Assistant Chief Engineer

Because Gargoyle Mobiloil "A" is of the highest lubricating efficiency and of the correct body, its use in the King test resulted in—

1 The greatest horse power efficiency.
2 The smoothest operation.
3 No repair trouble.
4 Minimum consumption of fuel.
5 Minimum consumption of lubricating oil.

At the end of the test the motor was found to be in perfect condition, ready to make the run all over again.

Gargoyle Mobiloils Best For Your Motor, Too

The manufacturers of the King "Eight" are convinced that no other lubricant gives such good results in that motor as Gargoyle Mobiloil "A."

It is important that your car be correctly lubricated in order that it shall give you the maximum of service.

If your car is a King, Gargoyle Mobiloil "A" will give you correct lubrication. If your car is of some other make the grade of Gargoyle Mobiloils specified by the Chart of Recommendations (on display at your dealer's) will insure you correct lubrication.

The Vacuum Oil Company's Chart of Recommendations specifies the correct lubricants for the motor, transmission and differential of every car.

GARGOYLE
Mobiloils
A grade for each type of motor

VACUUM OIL COMPANY, Rochester, N. Y., U. S. A.

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

Domestic Branches:

Detroit	Chicago	Minneapolis
Boston	Philadelphia	Pittsburgh
New York	Indianapolis	Kansas City, Kan.

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0,850 MILES KING WITHOUT A STO

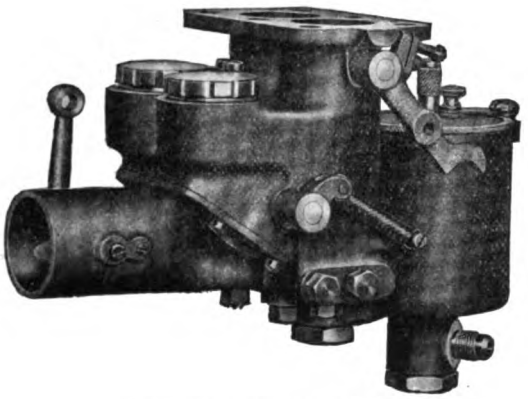
TRADE

PENBERTHY

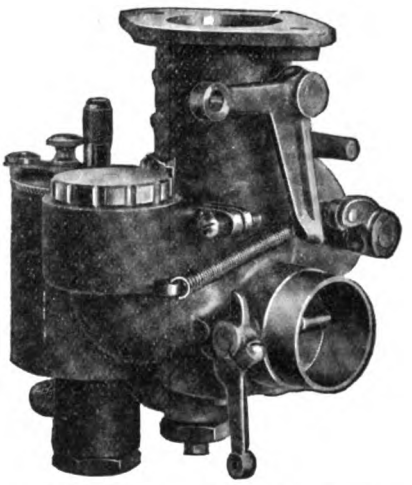
MARK.

BALL and BALL

CARBURETORS



2-STAGE CARBURETOR



SINGLE STAGE CARBURETOR

Standard equipment on "King-8." In recent 10,850 mile non-stop run at Sheepshead Bay, they tell us, it gave good satisfaction at all times. 'Nuf ced!

Our offer is to demonstrate we have something better!

MADE IN ALL SIZES BY

PENBERTHY INJECTOR CO.

Established 1886

DETROIT, MICHIGAN, U. S. A.

TWO YEARS' SERVICE IN TWO WEEKS

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JOLTS

BY THE MILLION CAN'T BREAK IT DOWN

HERE'S PROOF

Form 1204

CLASS OF SERVICE	SYMBOL
Day Message	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a day message. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT
GEORGE W. E. ATKINS, VICE-PRESIDENT BELVIDERE BROOKS, VICE-PRESIDENT

RECEIVED AT A266 NY FO 101 BLUE EA NEWYORK NY 237PM JUNE 30 1916

CARTER CARBURETOR CO
STLOUIS MO

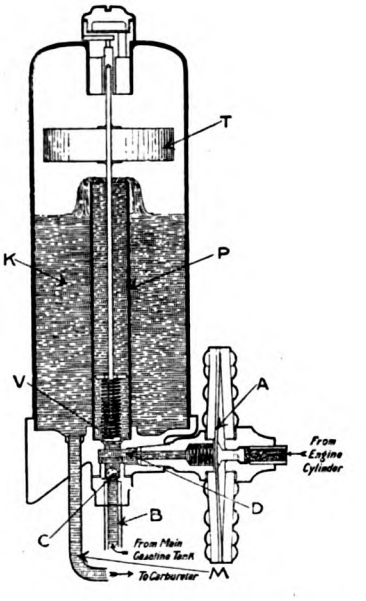
GREATEST FUEL FEED TEST EVER MADE UNDER SANCTION AND SUPERVISION OF TRIPLE A COMPLETED YESTERDAY WITH CARTER AUTOMATIC GRAVITY

TANK KING EIGHT REGISTERED STOCK SEVEN PASSENGER CAR IN FOURTEEN DAYS AND NIGHTS RUNNING COMPLETED 10850 MILES WITH ABSOLUTELY NO

MOTOR STOP CARTER TANK FED FUEL FOR 336 CONTINUOUS HOURS AT MOTOR SPEEDS VERYING FROM 300 TO 2000 R P M COMPLETING 27602035

IMPULSES WE CANNOT CONCEIVE OF A MORE ABSOLUTELY CONVINCING PROOF OF THE STAMINA RELIABILITY AND TAYING POWER OF THE CARTER SYSTEM

KING MOTOR CAR COMPANY



THIS was a standard tank taken at random from the King Motor Company's stock room without the knowledge of the Carter Carburetor Company.

At the end of the test it showed no appreciable wear.

The Carter Gravity Tank will give you the same staunch service.

One size for all engines—capacity thirty gallons per hour.

Manufactured and Guaranteed by

Carter Carburetor Company, St. Louis, Mo.

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10,850 MILES KING WITHOUT A STO

KING
EIGHT CYLINDER

10,850 MILES
Without Stopping the Motor

A KING "Eight" registered STOCK car made this unparalleled record in a Car Owners' Service Test conducted under OFFICIAL A. A. A. sanction and supervision.

The trial was made at the Sheepshead Bay Speedway beginning at 12:14 P. M. June 15th and finishing at 12:14 P. M. June 29th.

For two weeks the sturdy KING ran day and night through rain, fog and boiling sun, without requiring a single replacement or adjustment.

10,850 miles equals about two years' service in an owner's hands, yet in this entire mileage the car was stopped (with the motor running) for a total of but 15 hrs. 25 min. 41 sec. On this basis the test demonstrated that a KING "Eight" requires only *nine minutes per week* of an owner's attention for *all* service—Gasoline, oil, water, tires, battery, etc.

And most astounding of all, the KING made this 10,850 miles with a total *labor* expense of considerably *less than ten dollars.*

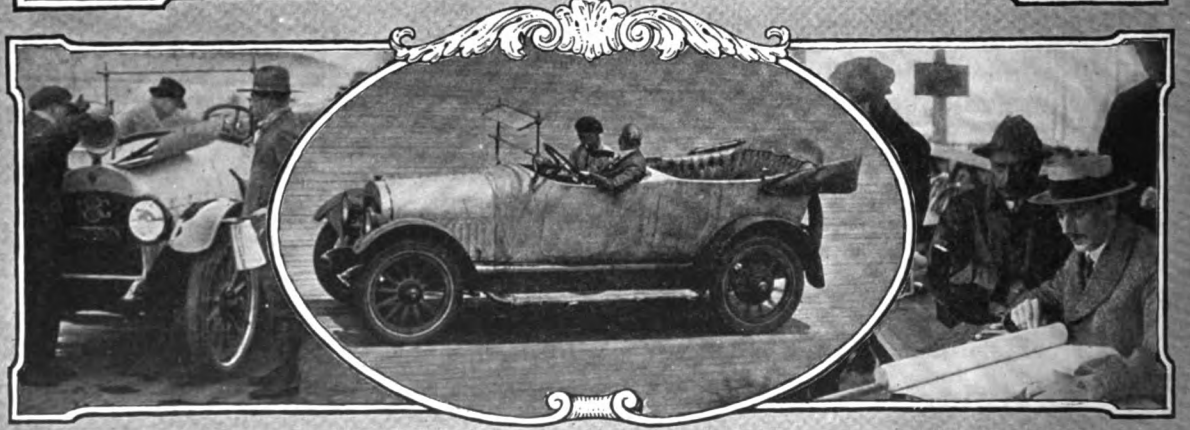
During the entire 10,850 miles a weight equal to five passengers was carried and the car maintained an average speed of 34 miles per hour, excluding stops.

An examination made after the test proved the car to be in perfect running condition and ready for another trial of the same or greater length.

This great King Achievement tops off the series of remarkable road tests recently conducted on the Pacific and Atlantic seaboards and makes a record for this pioneer "Eight" which to prospective car purchasers can mean nothing less than ABSOLUTE SATISFACTION IN PERFORMANCE, SERVICE and OPERATION ECONOMY.

7-Passenger, 60 Horse Power Touring Car, $1350

KING MOTOR CAR COMPANY - - DETROIT



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FEDDERS RADIATORS

WHEN we began making Radiators—19 years ago—we adopted our policy of "Quality First."

Knowing this to be our policy, and knowing our ability to live up to it, some of the leading car manufacturers have used FEDDERS RADIATORS from the very beginning.

Since then we have continuously added new customers and enlarged our output, but our policy remains unchanged, and our first patrons are still our patrons, after 19 years.

And numbered among them—and among the others who have since become believers in Fedders Quality and users of Fedders Radiators—are the makers of America's finest motor trucks and pleasure cars.

Aside from the dominance of Fedders radiators in all ordinary branches of Motor usefulness, we are happy in being able to point to recent demonstrations of their proficiency in the racing field, under conditions calling for every good quality in superlative degree.

First and second places in the Astor Cup Race were won by Stutz cars, equipped with Fedders stock radiators. Both cars broke the world's record, making over 102 miles an hour for 350 miles.

First in the Metropolitan Trophy Race at Sheepshead, May 13th, was captured by a Fedders equipped Maxwell, driven by Rickenbacher, who averaged better than 96 miles an hour for 150 miles.

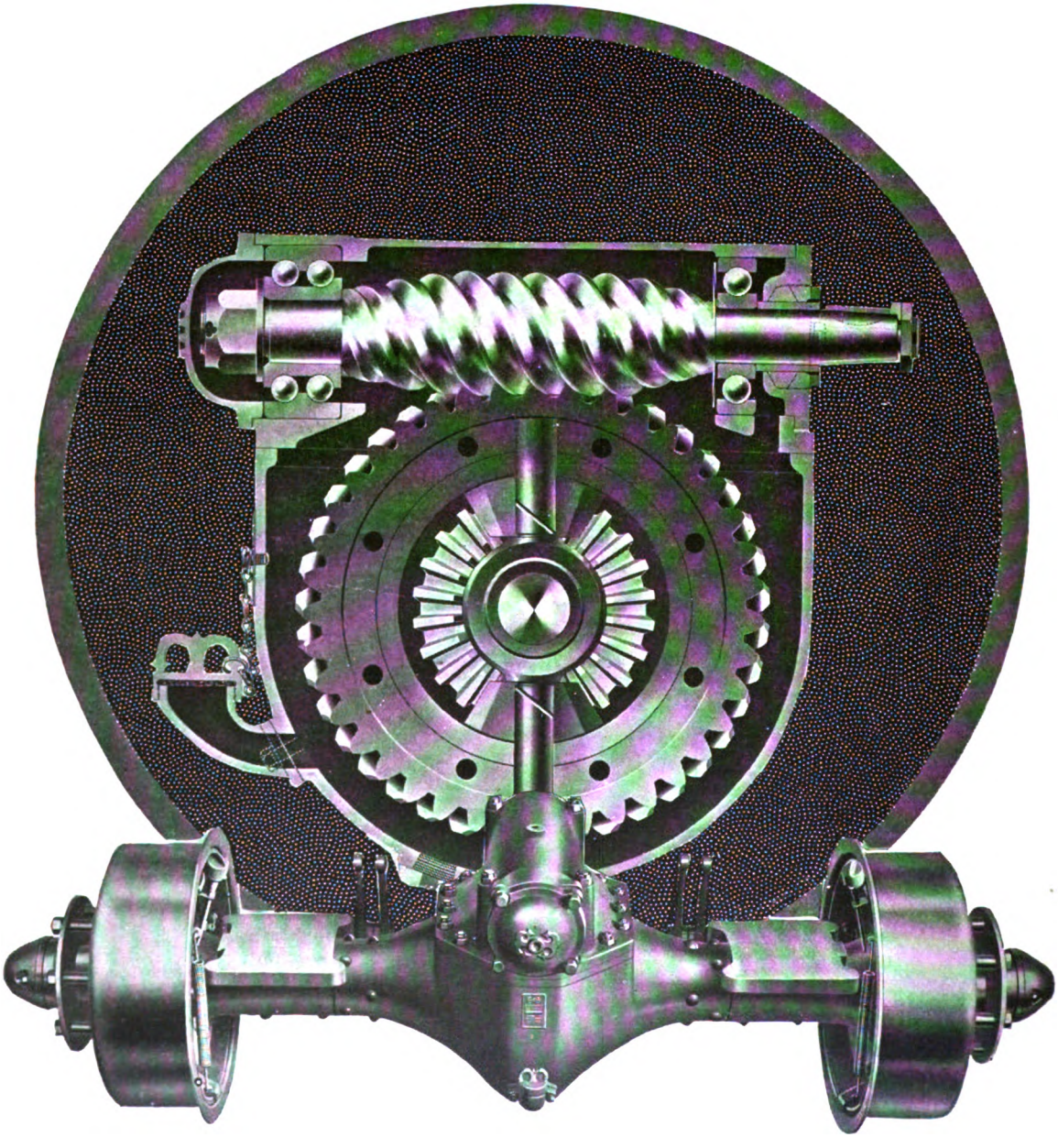
And so it goes—

FEDDERS MANUFACTURING CO.
Buffalo, N. Y.

FEDDERS RADIATORS

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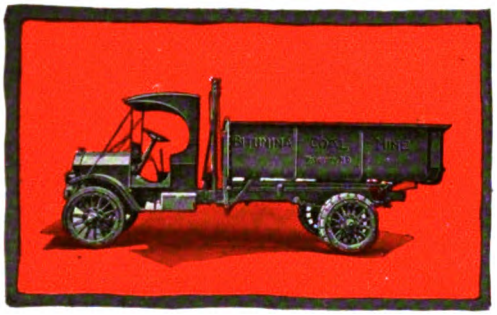
SHELDON
Dominates the



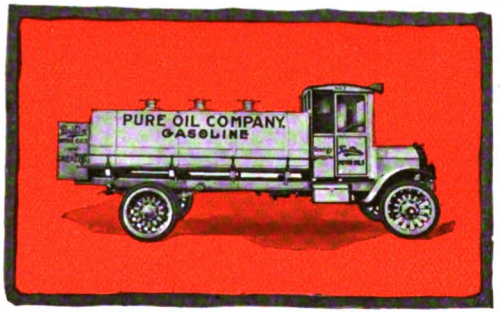
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Worm Drive Truck Field

Illustrated herewith are three Sheldon equipped worm gear driven trucks, manufactured by H. E. Wilcox Motor Co. of Minneapolis.



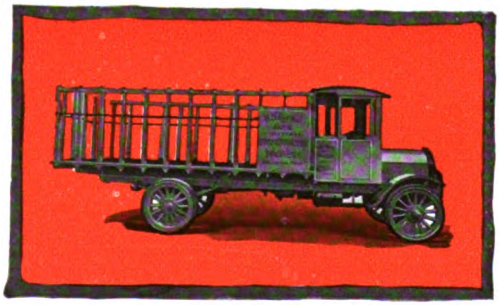
WILCOX TRUX



are all Sheldon worm driven from the three-quarter up to the three and a half ton sizes, and they embody all the features of Sheldon design and construction.

Early estimates of the dominancy of worm gear as a type of final drive are more than being borne out—and it is certain that more than half of all the trucks produced in 1916 will be worm gear driven.

This represents most of the output of 93 of the leading manufacturers of motor trucks in this country and is conclusive evidence of the all around superiority of the worm as a type of final drive.

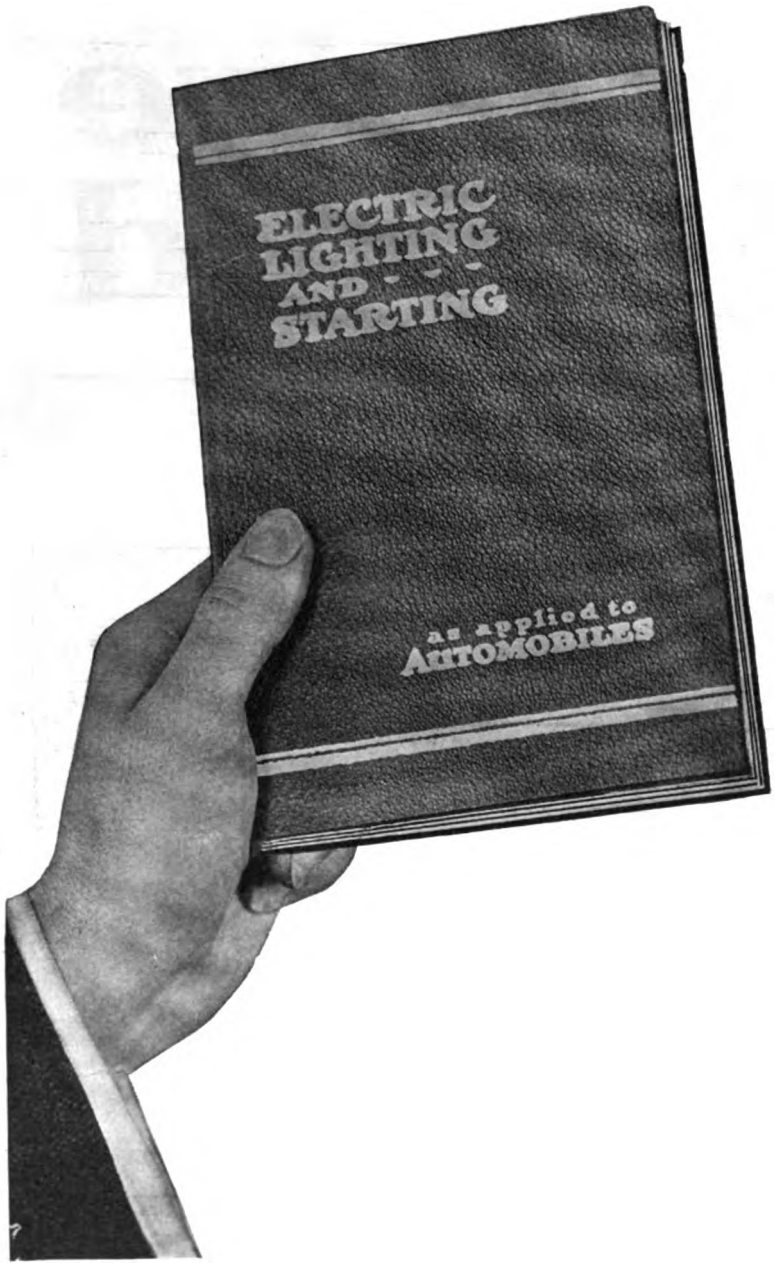


The SHELDON AXLE AND SPRING COMPANY

Manufacturers of Springs and Axles for more than 50 Years

WILKES-BARRE PENNSYLVANIA

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BOILED-DOWN SERVICE

WHAT YOU SHOULD KNOW ABOUT ELECTRIC STARTING AND LIGHTING

ELECTRICAL FACTS

The author of this work spent weeks in the service stations of practically every important lighting and starting system manufacturer, for the sole purpose of getting facts on diagnosis and repair of electrical troubles. The book tells how to locate troubles and repair them.

Not a superfluous word is included. Exactly how to find and how to repair it—this is all you want to know and this is what is given.

This boiled-down service handbook will enable YOU to locate electrical troubles and repair them without having to wade through masses of irrelevant matter. It will save time, money and patience.

Size 5x8 inches—Fits your pocket.

Two bindings—

Flexible leather .....75 cents
Heavy cardboard....50 cents

Book Department

THE CLASS JOURNAL CO.

239 WEST 39th STREET, NEW YORK
MALLERS BLDG., CHICAGO, ILL.

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There is no porcelain to break away and score cylinders in the mica insulated

SPLITDORF SPARK PLUGS

They're easily cleaned and it is never necessary to throw them away.

Look for the name SPLITDORF on the Green Jacket which is hexagonal in shape. Refuse imitations or "just as good" substitutes. The SPLITDORF Trade Mark appears on every SPLITDORF PLUG, and the Trade Mark [illegible] SPLITDORF GUARANTEE.

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We are taking on the best dealers in every locality for the

FOSTER OWL LIGHT

We are furnishing these dealers with what has proven to be absolutely the best selling acessory of its kind on the market.

We are making these dealers a proposition which is fair, square, and which insures profits with a minimum expenditure of time and sales energy. Any dealer who can handle a quality product at a quantity price should be able to sell hundreds of Foster Owl Lights right in his locality.

The Owl Light has a world of exclusive selling points. It is unquestionably the greatest little searchlight ever built. In workmanship, material and performance, it has never been equaled. In neatness, compactness and beauty of line it stands today the searchlight in most popular demand by American and foreign motorists.

SOLD ON 10 DAY—MONEY BACK TRIAL

The patented Foster Universal Swivel, an exclusive Owl feature, is alone worth the price of the light complete. It is the *one* positive action searchlight swivel which cannot loosen, rattle, slip, nor bind. It holds the Owl Light indefinitely in any position you put it.

Another Owl selling point that is swamping dealers with orders is the unique reflector construction which makes the Owl Light much more powerful than considerably larger searchlights.

The Owl Light is sold on ten days' trial—money back if not satisfactory. At home and abroad it is invariably the first choice of the motorist owning a high price car. Some idea of Owl Light superiority is to be gained from the fact that the French Army is using Owl Lights at the front.

Put a Foster Owl Light on your demonstrator or wire one up and put it in your sales window and watch the business start coming.

Let us send illustrated booklets describing fifty different uses for the Owl Light. Hand these out to your customers and they will create sales for you.

NOW ONLY $5



Better Than Ever

Send attached coupon for sample light proposition and complete information regarding our dealer's proposition. GET IN TOUCH WITH US NOW. Every car in your town needs an Owl Light—Every car owner will want an Owl the minute he sees one.

C. H. Foster Accessories Co.
2303 Michigan Blvd. CHICAGO

(COUPON

C. H. Foster Accessories Co.

2303 Michigan Blvd. CHICAGO

Send me your sample Owl Light proposition, also full particulars regarding dealer's sales plan.

Name .....

Address .....

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19,856 of these sturdy "RED SENTRY" 1-gal. pumps line the streets and highways of this country.



"RED CHIEF"
A 5-gal. self-measuring Pump for inside use.



You can't buy a finer advertisement or a better money-maker than this "CHIEF SENTRY" 5-gal. curb pump.

No matter what size your garage is or where it is located, the matter of proper storage and handling of your gasolene and lubricating oils is highly important and from our complete line you can select

An Outfit to Meet Your Particular Requirements





Pumps for curb or inside use that accurately measure any amounts from pints to 5 gallons at a stroke.

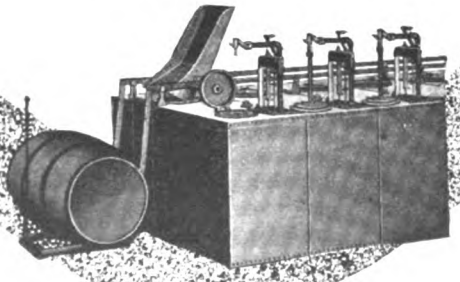
Underground, basement and first floor storage tanks in all sizes from 2 bbls. up. Portable wheel tanks, 1 bbl. capacity.

We are the originators of the oil handling equipment business and during our 31 years' experience have accumulated a valuable store of information which is at your disposal gratis. Any one of our men will be glad to explain how problems such as you may have are worked out in similar garages all over the country. An interview or inquiry places you under no obligation and it undoubtedly will be worth your while.

S. F. Bowser & Company, Inc.

Fort Wayne, Ind.

Branch Offices All Centers—Representatives Everywhere



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The ROAMER

The Smartest American Car—$1,800

THE instant appeal of the RoameR to the more fastidious class of motorists has assured its success.

Built originally for the export trade, the RoameR offers those desiring something out of the ordinary in their cars, the very latest, and smartest.

The chassis in design and quality is on a par with the best of Europe.

The body and lines are European to the last detail—in fact, designed by those responsible for the success of one of the highest-grade foreign cars.

Bodies may be finished according to the taste of the individual, with high-grade hand-buffed upholstery to match, and wire wheel equipment, without any additional cost.

Specifications

6 cylinders, 3⅛ inch x 5 inch.
Bosch Magneto.
124-inch Wheel Base.
Bijur Electric Starter.
Stewart Vacuum Feed.
Wire Wheels.

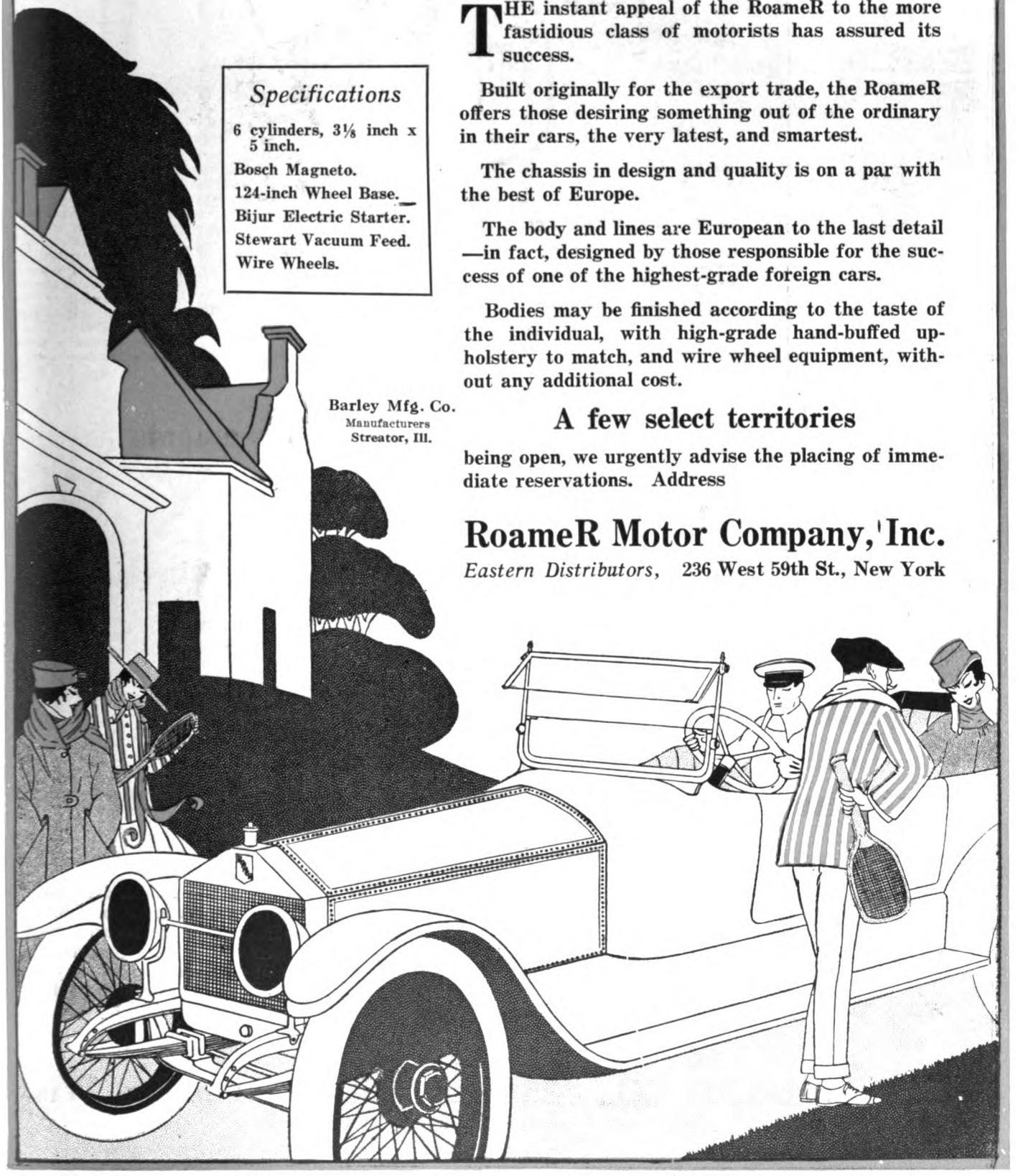
Barley Mfg. Co.
Manufacturers
Streator, Ill.

A few select territories

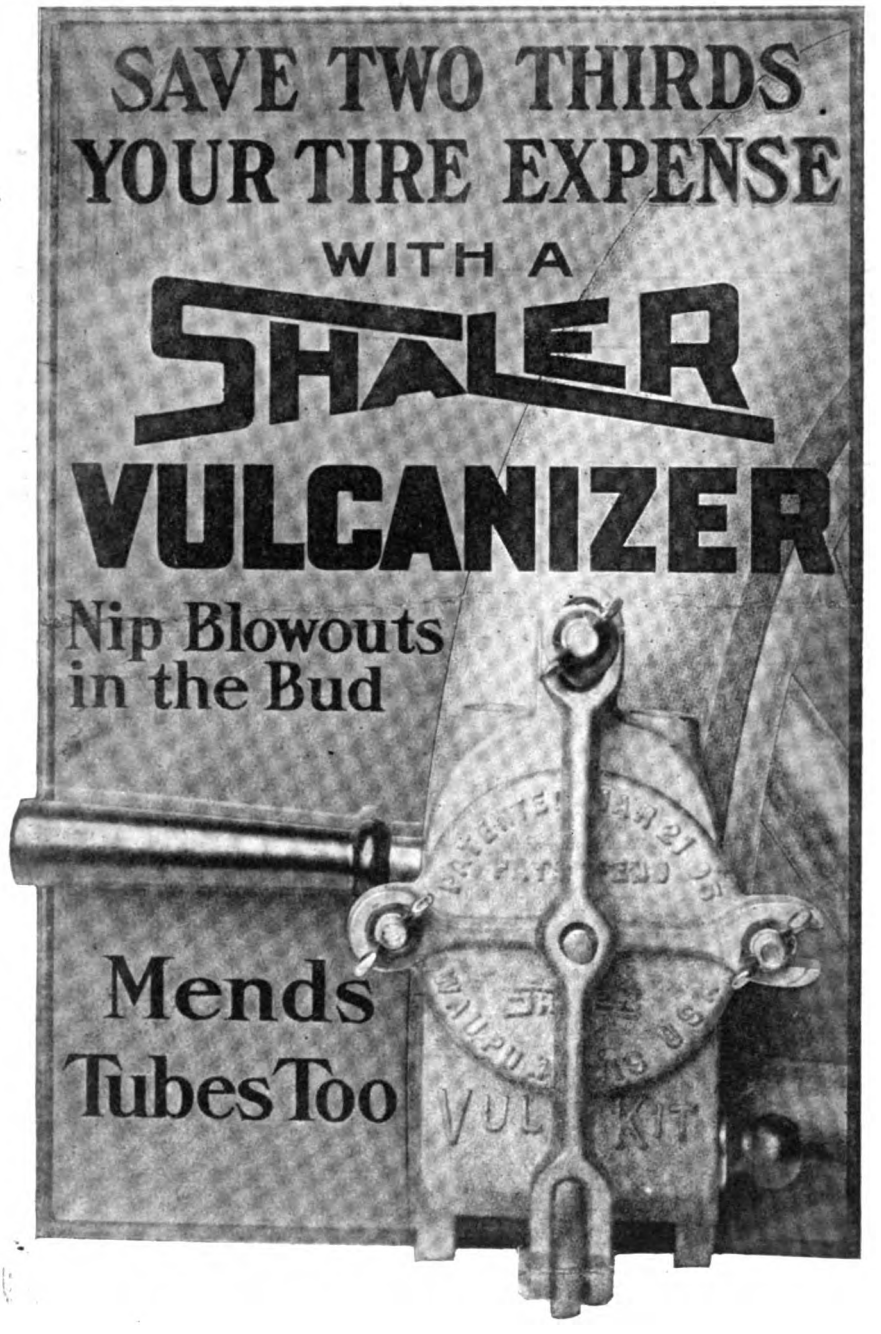
being open, we urgently advise the placing of immediate reservations. Address

RoameR Motor Company, Inc.

Eastern Distributors, 236 West 59th St., New York



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This metal display stand for your counter or window places a sample vulcaniser in full view of every customer in a novel way that is sure to attract and hold attention. It shows a regular stock size Vul-Kit or Ford-Kit apparently mending a tread cut in a fully inflated tire.

Put This on Your Counter or in Your Window

It Will Make Many Sales for You

Complete Stand FREE to Dealers.

Ask for it today

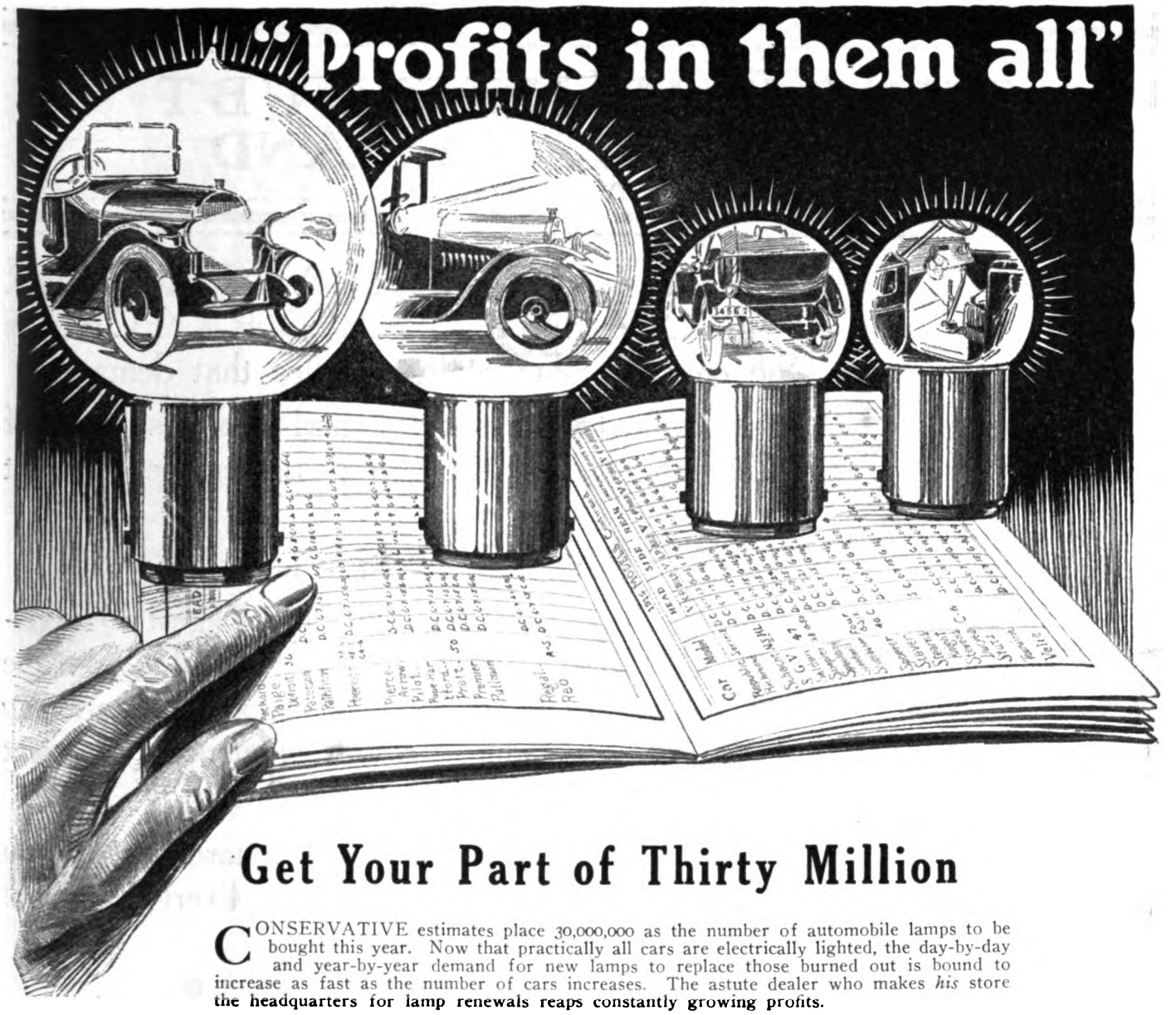
Here is a splendid way to increase your sales and profits on this popular accessory. The Shaler Tire Repair Kit is needed by every motorist to carry in his tool box to eliminate tire trouble on the road and double his mileage. And the motorist must buy it from his dealer because no car comes equipped with a tire-saving device. Put this attractive display stand on your counter or in your window and let your customers know that you handle this popular accessory. They will buy their own from you and send their friends to you also.

Complete Catalog Mailed on Request

C. A. SHALER CO., 425 Fourth Street, Waupun, Wis.

Oldest and Largest Vulcanizer Manufacturers

Digitized by Google



Get Your Part of Thirty Million

CONSERVATIVE estimates place 30,000,000 as the number of automobile lamps to be bought this year. Now that practically all cars are electrically lighted, the day-by-day and year-by-year demand for new lamps to replace those burned out is bound to increase as fast as the number of cars increases. The astute dealer who makes *his* store the headquarters for lamp renewals reaps constantly growing profits.

Small Stock Moreover the initial investment is so small that anyone can put on his counter the lamp assortment with enough selected sizes and types of lamps to supply all needs. Reordering to keep this stock complete is so simple as to be almost automatic.

Easy Terms With our little booklet as a guide, any clerk can instantly supply the right lamp for any car—the name and year of the car being the only information needed. Another helpful sales aid is the lamp chest, in which the car owner can carry a set of six spare lamps for his car. With this chest, it's easy to sell six lamps at once, as the lamps are specially selected to fit the customer's car.

Write Now No matter how many or few auto accessories you may have handled, write us for full particulars. If you think you can also handle flashlight lamps to advantage, write also for complete information on the flashlight Assortment, another lamp renewal proposition as full of profit possibilities as the auto lamp assortment. The sooner you get your assortment of lamps the quicker you'll be prepared to take advantage of your share of the big fall renewal business.

EDISON LAMP WORKS
of General Electric Company
Harrison, N. J.

EDISON MAZDA LAMPS

Made in U. S. A. and backed by MAZDA Service

6013

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THERE IS NO DOUBT ABOUT THE DEMAND

—for this kind of a truck. And REMEMBER —the INTERNAL-GEARED RAYFORD is the only one that really satisfies that demand.

In *addition* to the simplest and strongest form of "Converted Ford" truck, it possesses the very last word in final drive.

And it is the *lowest-priced.* The

INTERNAL-GEARED
RAYFORD
COMMERCIAL CHASSIS
A FORD + $300.

is undoubtedly the biggest DEALER'S OPPORTUNITY on the market at this moment, and *you should act this moment* if you want to get the very cream of the trade.

We will treat you fairly and squarely, give you exclusive territory, immediate deliveries, liberal discounts and generous terms.

Rayford Company
Palethorp and Indiana Aves.
PHILADELPHIA, PA.

Mail This Coupon TODAY!

Rayford Co.,
Palethorp and Indiana Aves.,
Philadelphia, Pa.

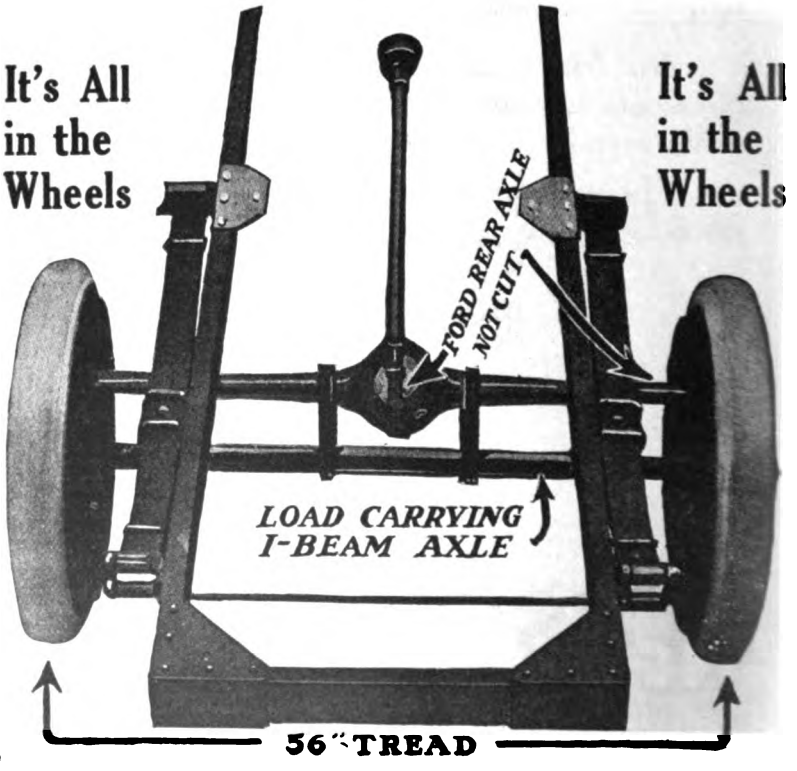
Dear Sirs:

Please send particulars regarding agency for the Internal-Geared Rayford.

Name .....

Address .....

.....



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Now a STROMBERG Carburetor For FORDS

and 4/10 Miles on a Gal. of Gas

ALL official *Ford* economy records smashed! 37 4/10 miles on one gallon of gasoline—37 4/10 miles under difficult conditions full of stops and starts. And the *NEW STROMBERG* Carburetor for *FORDS* did it in an economy test made at Chicago, April 1st, which was officially observed by F. E. Edwards, a representative of the A. A. A.

The car was a regular Model T 1915 Ford, carrying three persons and weighing a total of 2170 lbs. In a speed test with the same adjustment, it was accelerated to 43 miles per hour.

After several years of experimenting, we have perfected a Carburetor which overcomes completely all old-time difficulties—a Carburetor which will positively astonish you with its economy and power, flexibility and acceleration, simplicity and reliability.

No More Difficulty in Starting—this new Stromberg is constructed so that you can start your Ford easily, even in the coldest weather.

The price is only $18 with all necessary attachments. Interesting proposition for dealers. Write today.

Stromberg Motor Devices Co.
Dept. K, 64 East 25th Street, Chicago

STROMBERG MOTOR DEVICES CO., Dept. K, 64 E. 25th Street, Chicago

Please send me free literature and details of your Money-Back plan.

Name .....

St. Add. or R.F.D. .....

City .....

(P.S.—If you wish to try one at once, send $18 herewith.)

New STROMBERG CARBURETOR Does it!

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

Up-to-Minute Cars

John W. Bate's efficiency serves Mitchell dealers in many ways. Here is one.

At the Shows last winter we exhibited an up-to-date model called "*The* Six of '16."

After the Shows—about April 15th—we brought out a newer model, and called it the Mid-Year Mitchell. That model embodied 73 new conceptions—ideas and touches—suggested by other Show models.

So, for the spring selling season we had all the best features which have yet come out. We had all the best ideas in design and equipment combined in a single car. We had then a more up-to-date model than any 1917 model we've seen.

Still More Additions

Since that Mid-Year model came out we have kept it right up to the minute. Quite a number of new things have been added. One is the slant windshield and the lower top. Another, leather hand pads on the doors.

All the time we are watching for new ideas. So the Mitchell is always the newest among the new-model cars.

The 26 Extras

In addition, the Mitchell has 26 features which other cars omit. Such things as a power tire pump, ball-bearing steering gear, reversible headlights, an extra-cost carburetor, an engine primer at the driver's hand, a locked compartment, a light in the tonneau, etc.

These make the Mitchell the most complete car that's sold.

They give to the Mitchell many extra attractions. They give to the dealer appealing talking points.

Our Banner Month

July will be the banner month in our history. That is the time when most cars find a slackening demand. Ours is constantly increasing. It has trebled since last July.

That is partly due to our remarkable advertising. We are spending $500,000 on this Mid-Year model only.

In unoccupied territories we want to hear from dealers who seek and deserve an alliance. It will be a wise move for such dealers.

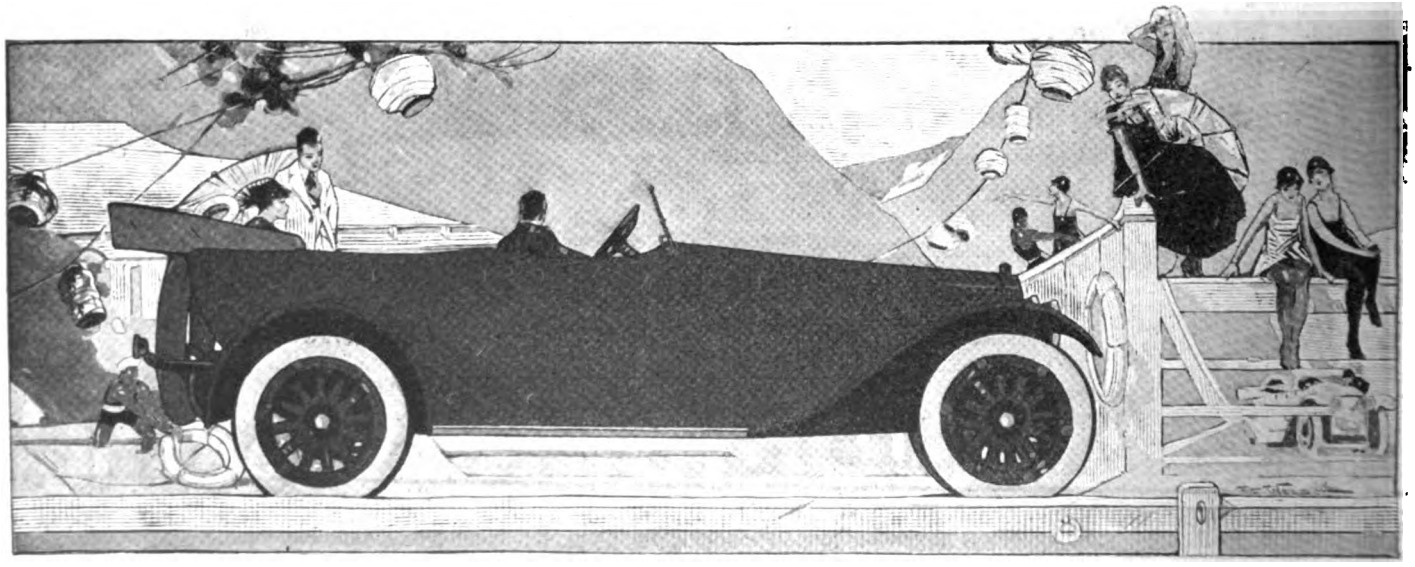
MITCHELL MOTOR CO., Inc.
Racine, Wis., U. S. A.

$1325 F. o. b. Racine

For 5-Passenger Touring Car or 3-Passenger Roadster

7-Passenger Body $35 Extra

High-speed economical Six; 48 horsepower; 127-inch wheelbase; complete equipment, including 26 extra features.



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U. S.

BALL BEARINGS

Only Quality Bearings

Particular stress is laid upon the fact that in the new and modern U. S. Ball Bearing plant, shown below, only bearings of quality are produced.

In manufacturing organizations of any kind, or type, where both quality products and cheap products are produced, there is always danger of cheap labor, or cheap material, or cheap methods occasionally becoming mixed with the quality products.

To safeguard against such contingency, the U. S. Ball Bearing Manufacturing Company confines its efforts entirely to the highest quality bearings possible of manufacture.

U. S. Ball Bearing Manufacturing Co.

(Conrad Patent Licensee)

Palmer St. and Kolmar Avenue, Chicago

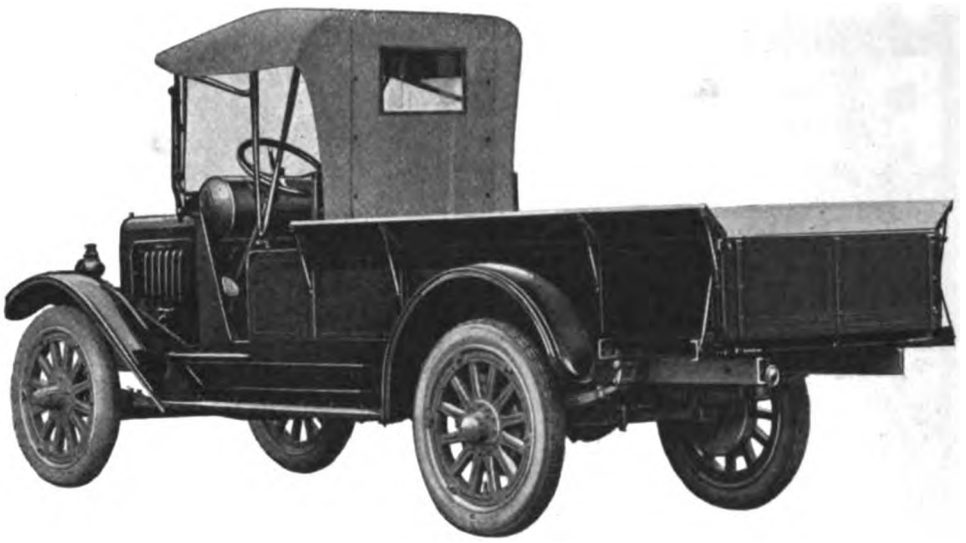
Interior view shows one corner of the race grinding rooms.

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DENBY

TRUCKS

FOR TRAIL OR PAVEMENT



1-ton (with open express body) $1020

Specifications:

Wheelbase: 119 inches.

Load Space: 96 x 46 inches.

Horsepower: 27 on brake test.

Drive: Denby internal gear.

Wheels: Square-spoke artillery type.

Tires: 34 x 4½ pneumatic; solid optional.

Carburetor: Zenith.

Ignition: High-tension magneto.

Other Models:

1½-ton $1,575
2-ton 1,790
2½-ton 2,090

Descriptive literature of any Denby model, or of special body or wheelbase modifications, will be mailed on request.

THIS 1-ton Denby is not merely a "good roads truck." Some of its best work is being done over mountain trails, or in suburban localities where the roads are very poor.

There is plentiful power to take the truck and its load anywhere. But Denby design has taken care of the two factors of fuel consumption and tire mileage in a way that results in astonishingly low maintenance expense.

We believe that no other truck will equal Denby performance in these respects. Why not let your local Denby man test this belief in your own business, and let results tell the story?

NOTE—In the Panama-California Exposition Commercial Car Endurance Contest, held in July, the Denby made the only perfect score in the 1½-ton class.

The distance was 142 miles, with many steep hills—including the famous Torrey Pine Hill. The Denby climbed this on intermediate, and averaged 13.11 miles per gallon of distillate for the run, carrying its full load.

Denby Motor Truck Company

Dept. F **Detroit, Michigan**

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Selling Like WILD FIRE

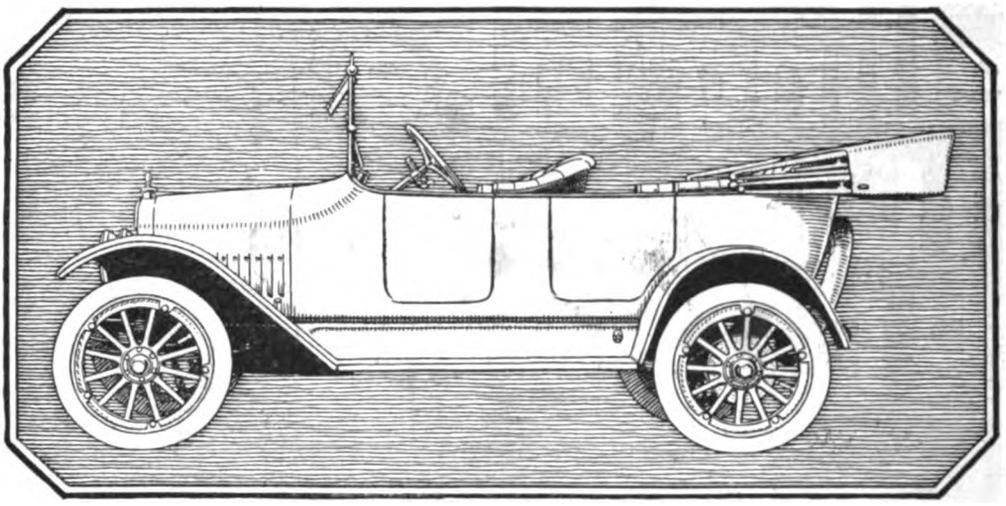


$175
F. O. B.
OWENSBORO

Mr. Ford Dealer—Can you afford to overlook the ever-increasing demand of your customers for a high-grade body for the ever reliable Ford? We say you owe it to your trade and to your pocketbook to get in touch with us immediately regarding this Amesbuilt Cloverleaf 3-Passenger Roadster Body for Fords. It's selling like wild fire. *Write or wire.*

THE F. A. AMES CO. **Owensboro, Ky.**
INCORPORATED

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$595

THE Maxwell price of $595.00 was announced July 1st.

We felt that the public would at once show its appreciation of this exceptional automobile value.

But we were not prepared for the veritable storm of enthusiasm with which our action was greeted.

From thousands of cities, towns and hamlets the country over, came letters and telegrams from prospective buyers and automobile dealers.

Our sales department reports an unprecedented demand for Maxwell Cars. Our distributors everywhere foresee a volume of business heretofore without parallel in their entire experience.

All this makes us very happy. We have striven to build a motor car of character, and of unusual value—a motor car that we could be proud to endorse with our name and reputation.

Having accomplished this, our aim was to offer such a car at a price that could only be made possible by scientific manufacturing, standardization and a great volume of business.

We take this means of thanking the public for the generous recognition given our ideals, our product and the Maxwell Institution.

Roadster, $580; Touring Car, $595; Cabriolet, $865; Town Car, $915; Sedan, $985.
All prices f. o. b. Detroit. All cars completely equipped, including electric starter and lights.

Maxwell

Motor Company Inc.-Detroit, Mich.

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Advance In Price

WESTERN UNION TELEGRAM

GEORGE W. E. ATKINS, VICE-PRESIDENT
NEWCOMB CARLTON, PRESIDENT
BELVIDERE BROOKS, VICE-PRESIDENT

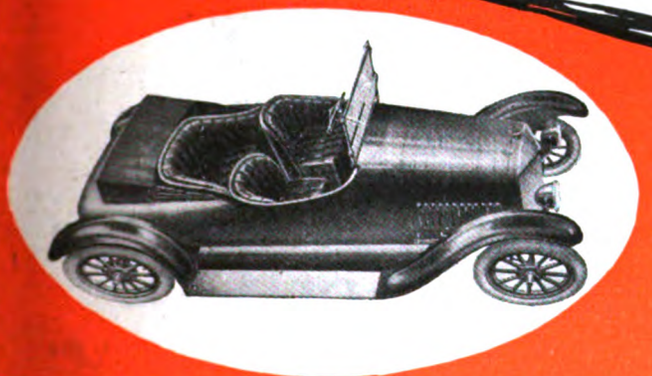
Form

BUSINESS MANAGER, MOTOR WORLD,
NEW YORK CITY.

OWENSBORO, KY.
AUGUST 1,1916.

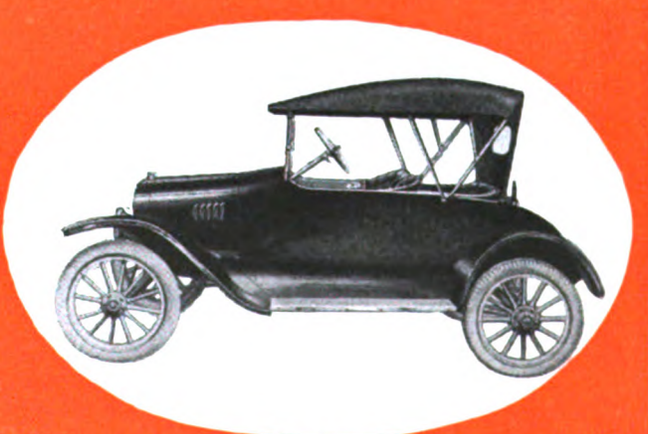
OWING TO BIG ADVANCES IN PRICES ON RAW MATERIAL, WE ARE COMPELLED TO INCREASE THE PRICE ON OUR AMESBUILT CLOVERLEAF 3-PASSENGER BODY FROM ONE HUNDRED AND SEVENTY-FIVE DOLLARS TO TWO HUNDRED DOLLARS. EFFECTIVE AUGUST 10.

THE F. A. AMES COMPANY



Note These Specifications

Construction—20 gauge cold rolled, stretcher sheet steel. Ample legroom. Pure stream lines. Bull nose radiator shell, linoleum covered, running board, aluminum bound.
Sills—Selected hardwood frame, substantial, reinforced and ironed by hand.
Doors—Nicely hinged, entrance from both sides.
Upholstery—Extra quality imitation leather stuffed with natural curled hair.
Top—One-man top, highest-grade mohair with Jiffy curtains and dust hood.
Windshield—Cowl fitting, folding, rain vision, ventilating windshield.
Gasoline Tank—Filler pipe and cap, also gas-line furnished. Tank carried in rear.
Hood—Graceful streamline hood and bull nose radiator shell, with special dash ledge.
Fenders—Crown fenders of 20 gauge fender steel, cold rolled and finished in high gloss enamel, thoroughly baked, free from rattling; 9 inches wide. Skirt in rear to cover rear axle.
Painting—Standard colors, deep Brewster green, or a very glossy black. Any other color $10.00 extra and three weeks' delivery.
Equipment—All necessary attachments, bolts, nuts, etc., for mounting on Model T chassis yourself.
Weight—Crated ready for shipment about 450 lbs. Net weight 270 lbs.
Price—Complete, $200, f. o. b. Owensboro, Ky.



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$1295



The Enger Twin-Unit Twelve

Pull the Little Lever, Your Twelve is a Six—Push the Little Lever, Your Six is a Twelve

35 Miles on a Gallon of Gas

Here is the trick that is turning things upside down in the automobile world—the most marvelous automobile improvement yet invented.

Simply move a little lever on the steering column and your Twelve becomes a Six—or your Six becomes a Twelve.

For quick get-away, for slow driving in crowded streets, for surplus power over bad roads and hills, use your Twelve.

For normal driving turn the little lever on the steering column and six cylinders will "cut out" while the remaining six will give you the most economical, smoothest riding car you have ever been in—a car that will take you 35 miles on a gallon of gas.

This Enger invention has upset all calculations.

Twelves are no longer merely the height of luxury—they are also the extreme limit of economy. Nothing so efficient—nothing so saving.

Never has a car stirred up such enthusiasm. Never was a car such an instantaneous success.

For no other car at anywhere near the price even approaches such attainments in either luxury or economy—none at any price combines them.

A Wonderful Dealer Opportunity

The Enger Twin-Unit Twelve has revolutionized driving. It has created a demand for Enger cars—and the dealer who handles the Enger car is in the limelight from now on.

Dealers in all parts of the country are already feeling the popular demand for this marvelous car.

Other dealers, sensing its tremendous popularity, are getting in on the ground floor.

There are many places still open for dealers who are awake to the opportunities the Enger offers as a money making proposition.

Write or wire us at once—and if you are the right man you can tie up with the 1917 Enger with its marvelous motor.

Write for Booklet "The Story of a Gallon of Gasoline."

THE ENGER MOTOR CAR COMPANY, Cincinnati, Ohio

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WILL YOURS BE THE NEXT ?



Many thousands of Ford cars are stolen annually and never recovered. Will yours be next ?

Or will this chap find it locked against him by an unpickable, unremovable switch lock?

For three dollars and twenty-five cents you can protect your car against theft. Once installed you will have the satisfaction of knowing that your car is safe *at all times;* safe from the thief who steals for profit and safe from the thief who steals for the sake of a joy ride.

GOODRICH AUTO SWITCH

with Yale Lock **FOR FORDS**

Formerly B. M. Switch Lock

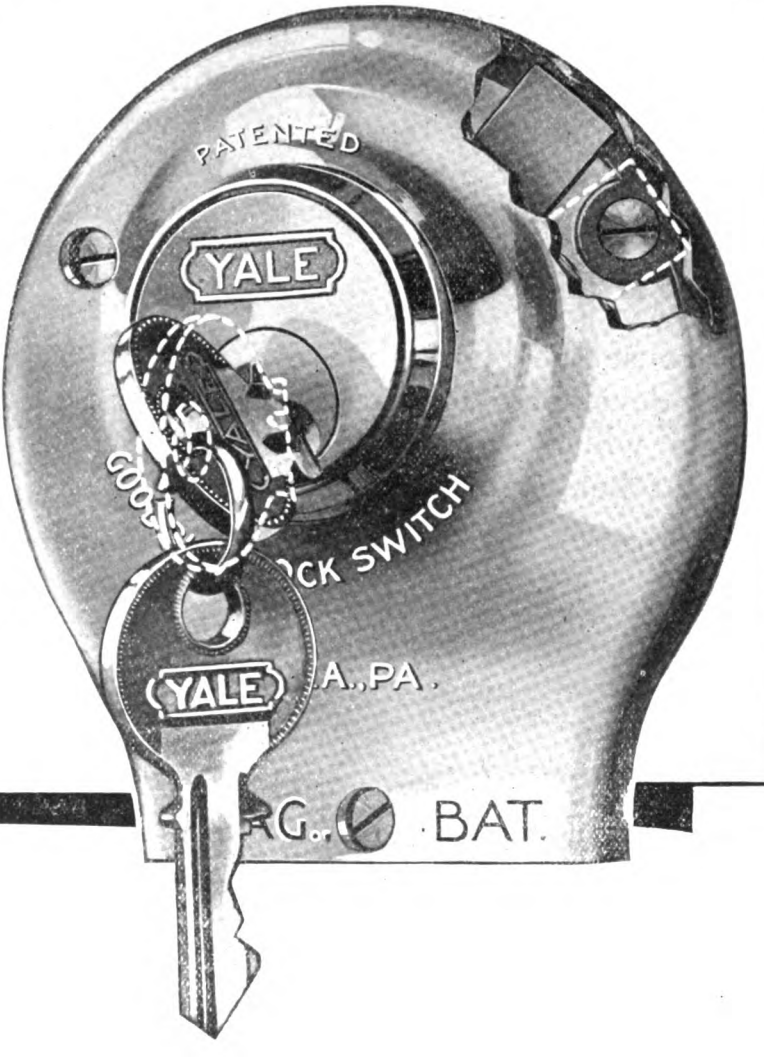
—takes the place of the regular Ford Ignition switch—its screws fit the screw holes already in the metal coil box. It takes but a moment to install it.

—has an unpickable Yale Lock which none but YOUR key can operate.

—is a Switch that when locked in "Off" position cannot be removed because the screws which hold it to the metal coil box are then concealed and protected by metal shutters thrown over them by the same turn of the key that locks the switch.

You never forget to lock your car for the key that turns off the switch is also the key that locks the lock. Duplicate keys furnished with each Switch lock.

No other means of protecting your car is quite so sure quite so convenient or handy to operate, or quite so reasonable in price. Many thousands in use everywhere.



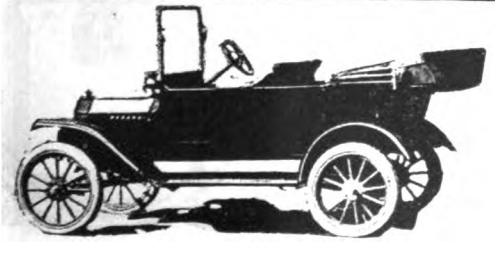
Ask Your Dealer or Write Direct

Goodrich Accessory Association

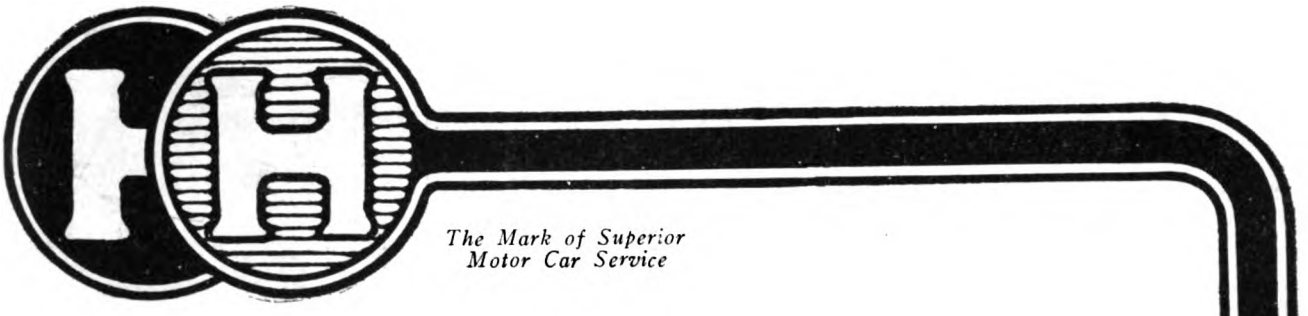
809 Widener Bldg., Philadelphia, Penna.

Price $3.25

($3.75 in Canada)



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The Mark of Superior Motor Car Service

When the Traffic Whistle Blows

Some day you may happen to see a Hupmobile held up by a traffic policeman, along with two or three multi-cylinder cars.

Watch what happens when the whistle blows.

See which car gets away first.

It will be the Hupmobile, nine times out of ten, if its driver is fully alive to the abilities of his motor.

Why is this?

Because the Hupmobile has been developed to give the results which you may have thought belong only to multi-cylinder cars.

For example, the Hupmobile goes from a stand to 25 miles an hour in 10 seconds, if you wish.

Remarkably quick pick-up, you will admit.

In a jam of cars, it slows down—on high gear—to a crawl, and it accelerates—on high gear—without jerking or bucking.

Hupmobile dealers are selling this four against the "multis" everywhere by the simple expedient of putting it over the hurdles in any demonstration stunt the buyer wants.

But remember that these are not mere demonstrating tricks.

They make up Hupmobile performance, the same the car gives in ordinary, every-day use—the behavior that is setting the performance-standard for many a good car.

Write us about your territory.

Courtesy First—Safety for others in Motoring

Hupp Motor Car Corporation, Detroit, Mich.

Five-Passenger Touring Car,	*$1185*
Roadster - - - - -	*$1185*
Seven-Passenger Touring Car,	*$1340*

Dealers and garage men everywhere—let us tell you about Hupmobile free-coupon service.

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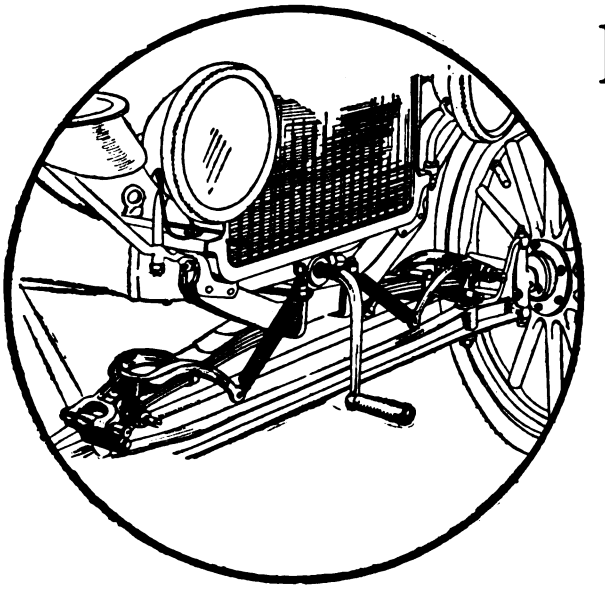
"The Skyline of All the Fords I Ever Rode in Before Last Week Was Like a Pen Sketch of a Mountain Range—



Not Much Like the Even Tenor of Their Ways Once Equipped With W & C Double Arm Shock Absorbers"—*Gilbert Southwick.*

The Original W & C Shock Absorbers

$10 Per Set of Four



Double Arm Shock Absorber For Fords

The Last Shock Absorber You Will Need To Buy

"Ever since I was a kid in knee pants, somebody's been trying to sell me shock absorbers that make Fords run like high-priced cars—and all I ever got out of any of them before last week was a different kind of back-ache for each and every experience.

"That's why one night when I found myself trying to get out of Chicago by the South—which is the same as saying over zero in roads—in a Ford, I'd have taken a train rather than do it.

"I just got braced for the first hole—the way I always had before—when we eased over it like velvet. For the next 10 minutes we had from one to three wheels in dug-outs all the time, and we never once got a bing from a spring that had done its best and failed.

"There were W & C Shock Absorbers on that Ford—cantilever spring suspension, like big cars—and I'm here to say they worked.

"The next morning I went over the same piece of road in a 7-passenger car with a lot of cylinders and a name the youngsters know before their A B C's. We made a little better time, of course—but what I started out to say was: for easy, rolling, comfort the big car had nothing on our W & C equipped Ford."—Gilbert Southwick.

Convince yourself of the easy riding qualities of W & C Shock Absorbers by equipping your Ford today. Your experience will be the same as that of Mr. Southwick.

DEALERS: We grant exclusive territory to thoroughly high-grade dealers. Write or wire today.

Manufactured by

PHILIP H. WEBBER & COMPANY

Hoopeston, Illinois

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"Burford" MOTOR

—Are Delivering the Goods for Dealers as well as merchants all over the country.

Their extraordinarily capable designing enables them to ***stand up*** under heavy service, and their splendid performance is bringing re-orders fast.

The Burford Motor Truck Co.

W. M. LEACH, Director of Sales

General Offices:

351-359 Spitzer Building **Toledo, Ohio**

Factory: Fremont, Ohio

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TRUCKS

2-ton, Internal-Gear Drive, $2250.

Buda Motor—Warner Transmission—Ross Steering Gear—Eisemann Magneto—Zenith Carburetor—Firestone Tires.

4-ton, Sheldon Worm Drive, $3600.

Waukesha Motor—Sheldon Axles—Sheldon-David Brown Worm Drive—Perfection Springs—Brown-Lipe Transmission—United States Tires.

IF YOU ARE A ***Real*** DISTRIBUTOR, write at ONCE FOR OUR PROPOSITION—IT WILL ***Interest You Exceedingly.*** WE HAVE A TIME PAYMENT PROPOSITION.



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"The High Price Of Gasoline

Doesn't seem to bother car owners, But they do howl for QUICK SERVICE"

A Wayne Curb Pump—In front of your Store. s a big welcome "sign" that says:

"Here's the place to get clean gasoline—get it QUICK—and know exactly how much you are getting with every turn of the crank."

STOP AND FILL UP!

And it is perfectly remarkable how fast this message has traveled throughout the motoring world—so much so that thousands of car owners willingly sail past every other make of pump till they can spot one with the Wayne trademark on it.

This applies to the whole Wayne line, but especially to the big impressive

WAYNE MONARCH
5-GALLON CURB PUMP,

the fastest pump in the world.

Delivers 5 gallons in 15 seconds—20 gallons a minute—and a Big Clock Dial shows the buyer exactly how much gas is going into his tank.

NO BACKWARD STROKES

Only pump that requires no backward strokes and no lost motion. Twelve *forward* strokes on low gear pump five gallons and three more *forward* strokes on high gear, return the plunger for the next five gallons.

Send for our circulars.

Wayne Oil Tank & Pump Company 9 Canal Street FORT WAYNE, IND.

Canadian Office: No. 1 Wabash Ave., Toronto, Ont.



The Wayne Monarch

Little Giant Spiral Fluted Taper Reamer Sets

The Spiral Fluted is the Only Smooth-Cutting Reamer

We have discontinued manufacturing straight-fluted reamers, because of the superiority of the spiral flute.

The left hand spiral flute gives a shearing cut, reducing the strain on the cutting edge. The reamer has a double support in the hole, which steadies it in action regardless of faults or defects in the metal.

Our Reamer Sets Are Complete with Bit Brace or Straight Shanks.

These sets contain all the sizes generally used in automobile repair work.



No. 705—5 sizes.
No. 709—9 sizes.

Spiral Fluted Taper Reamer Sets for Automobile Kits

Put up in substantial leather rolls, or wooden cases. Send today for our bulletin, "Tools for the Automobile," showing automobile tap and die sets and other indispensable tools for the garage and repair shops.

We are the largest manufacturers of screw-cutting tools and solve screw-cutting problems for automobile manufacturers.

Greenfield Tap & Die Corporation

Greenfield, Mass.

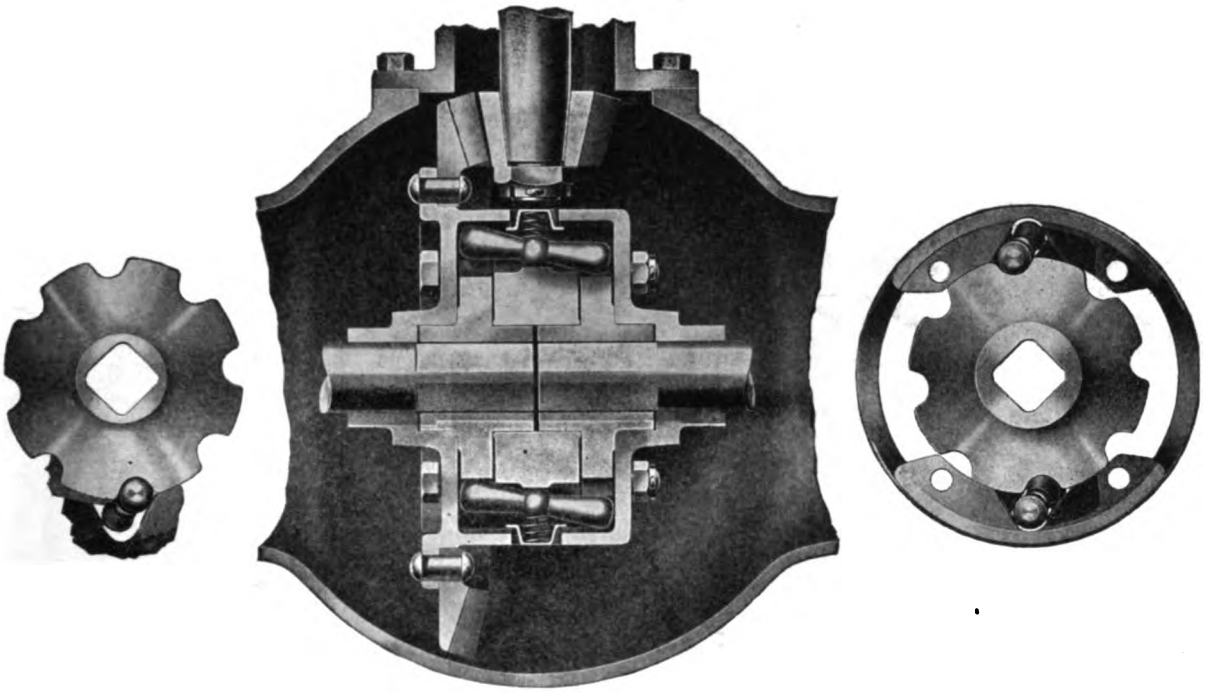
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Chicago
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Detroit
Galt, Ont.



No. 1423—6 sizes.

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THE NEW PROCESS DIFFERENTIAL

Gives Positive Traction and Requires No Change in Housing or Bearing Layout

Send for a New Process Differential and put it into your testing car. Drive it through mud, slush, snow, sand and over wet asphalt and you will find a steady straight forward pull that keeps the car moving ahead **with all wheels in line.**

You will find the compensation perfect in turning corners and on straightaway you will **not** have the wheel spinning, sidesway and skidding that always accompany an ordinary geared differential.

Our extensive plant permits us to meet the quantity requirements of any builder, and we stand ready to back this Gearless Differential with every reasonable performance guarantee.

Safety, confidence and comfort of owners in your cars demand that you start your investigations soon.

Licensed under patents of the
Gearless Differential Company of Detroit, Mich.

N.P.R.H. NEW PROCESS GEAR CORPORATION N.P.R.H.

SYRACUSE, N.Y.

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A STYLE FOR EVERY BUSINESS

International Motor Trucks, in three sizes, 1000, 1500 and 2000 lbs. capacity, are now furnished in styles to meet the needs of every business.. Two or four cylinder motors; chain drive, or shaft; solid tires or pneumatic; high wheels for country road driving or low wheels for work on city streets; any desired style or size of body—all the advantages which a great organization give are at the service of International Motor Truck purchasers.

New Models—Attractive Prices

M—1000 lbs. capacity, complete with express body..... $710
E—1500 lbs. capacity, complete with express body..... 950
H—1500 lbs. capacity, internal gear drive (chassis)..... 1225
F—2000 lbs. capacity, internal gear drive (chassis)..... 1500

Any model can be equipped with pneumatic tires for $50 more than the above prices. All prices are cash f.o.b. factory.

International Motor Trucks may be seen at any one of the 87 completely equipped service branches scattered throughout the United States. This network of gratifying service has contributed not a little to the popularity and success of the International. Write for catalogue and any special information you may desire.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
155 Harvester Building (INCORPORATED) Chicago U S A



Here's What You Need in Your Garage or Repair Shop

because it is an all-around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling where small cutters and high speeds are necessary.

Simply drop a postal for our Miller Bulletin.

The Whitney Mfg. Co. Hartford, Conn.

Chains—Keys—Hand Milling Machines.

A GOOD DRINK ICE COOLED

The Fountain is Cork Jacketed 15½ Coils of ½ in. Brass Pipe and Keith Bubbler; Capacity—Continuous Line of Users



Drink right from the fountain without cups or contamination. The water is cooled as it flows from the municipal supply pipe through the cork-jacketed ice tank to the Keith Bubbler.

One supply of ice lasts through the hottest day and cools all the water ever required.

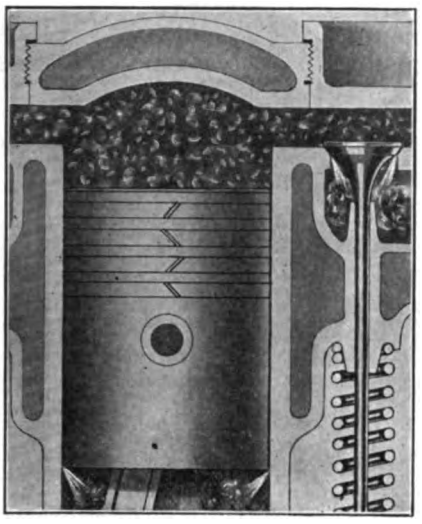
Everybody likes the bubbler because it's sanitary.

Get Our Catalog

Send for our complete catalog, showing our Wash Bowls, Metal Lockers, All Steel Stools and Chairs with Inset Wood Seats, Stock Storage Racks, Metal Shelving, Metal Vault Fixtures, Improved Soda Kettles, 40 and 60 gallons, Water Heaters and Instantaneous Mixers, Bubbling Drinking Fountains, Work-Benches and Bench Legs, Drawing Stands, etc.

Manufacturing Equipment and Engineering Co.
136 Federal Street
Boston, Mass.

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The above illustration shows where leakage occurs, resulting in reduced power and excessive gasoline consumption. Motor Graphite does away with this waste.

Motor Graphite *Stops* the *Leaks*

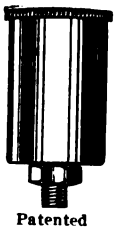
Thoroughly experienced mechanics have long been familiar with the superior lubricating properties of dry flake graphite. They know it will withstand a greater heat than any known lubricant that has yet been produced. And its soft, velvety texture builds up smooth-running surfaces wherever it is used. Motor engineers have never questioned its superiority over ordinary lubricants. But the question has been: "How can we get it into the cylinders?"

The Auto Graphite Lubricator

(Retails for $6)

solves this problem and to such a perfect state of satisfaction that motor-car owners will lose money without it. Introducing the graphite into the cylinders through this device reduces friction, gives a good seal to the piston-rings and valves and stops all leaks. This brings better compression and a resultant saving in gasoline. The Auto Graphite Lubricator is easily and quickly attached to the intake manifold and is extremely economical because it requires only 25 cents worth of graphite for every 1000 miles.

Representatives Wanted—We want live, energetic hustling, capable representatives in every community. This wonderfully economical device fills a long-felt want and is instantly recognized as a real motor economy. Your sales will be plentiful, your profits liberal and you will be backed up by hearty sales-pulling cooperation. Write for full particulars—but act quickly.



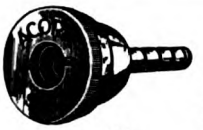
Patented

The Graphite Lubricator Company
328 Diamond Street, Pittsburgh, Pa.

STEVENS & CO. NEW YORK

PUMP CONNECTIONS

To illustrate the completeness of every one of the many lines carried by Stevens & Co., we show below a few of the leaders in our line of Pump Connections. We are headquarters on these parts, and dealers and jobbers find in the Stevens line all of the most substantial and **popular** pump connections to answer their every requirement.



Our Acorn Pump Connection

is easily pushed on over valve and makes instant air tight connection. Fits any valve.

Price, 15c.

Our Acorn Rubbers



by test, give 10 times **the** service of ordinary pump **connection** rubber. Superiority due to red rubber cores. **We** use RED RUBBER CORES, vulcanized by a special process. The most durable rubbers you can buy.

Price per doz., 25c

Our Holdfast Pump Connection



is the best connection for garagemen and car owners. Cannot blow off with highest pressure, and it can be instantly attached or removed.

Price, 25c.

Our Ideal Pump Connection

is an indestructible high quality connection. Cannot wear out, nothing to replace, just as convenient as "slip on" style.



Price, 20c.

Our Perfection Coupling



fits outside of Schrader Valves, and is largely used by pump manufacturers. Fits 3-16 in. hose. Made (No. 1) with steel head and heavy brass stem, or (No. 2) brass head and stem, with valve.

Price, 10c.

Our Evertite Automatic Air Valve

overcomes the greatest objection to prevailing types of air chucks by using, instead of cone-shaped washer, a **flat, round rubber disc** that lasts for months and can be replaced easily by cutting gasket from old inner tube.



Price, $1.00

STEVENS & CO., 375 BROADWAY NEW YORK

STEVENS & CO. accept it as a duty to have in reserve for your requirements pump hose, connections, rubbers, cup leathers, etc.—items not important in original sales but vital in repairs and replacements. We consider it good business to keep all lines complete. Quality is the Keyword of all.

Louis Schwab

MANUFACTURERS OF
Automobile Parts & Accessories

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Follow the Lead of the Men Who Know!

It is the business of the great ignition experts to determine which Magneto contributes most to the performance of the motor, which gives the most positive assurance of maximum efficiency.

The

EISEMANN
MAGNETO

has been adopted as standard equipment by 108 manufacturers (11 Pleasure Cars, 72 Trucks, 25 Miscellaneous).

Their decision has resulted from their conviction of Eisemann superiority. It is based upon facts, not mere opinions. The reasons that decided them are the reasons that should decide you—

Efficiency—Dependability—Durability—the Hot Spark at *Low* Speed, which means Easy Starting, a Quick Pick-up, Flexibility.

EISEMANN MAGNETOS are made in a range of types and sizes to meet every requirement of gas or gasoline engines.

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Sales and General Offices:
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Type G-4



Hotel Marie Antoinette

Broadway, 66th and 67th Sts.
NEW YORK CITY

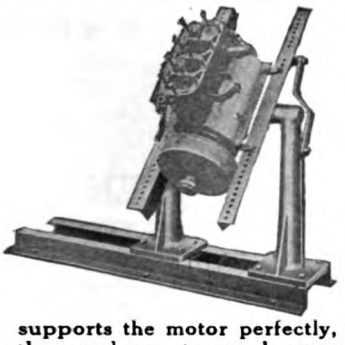
SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

Restaurant of Unusual Excellence

H. STANLEY GREEN
Managing Director

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THE MANLEY "EVERY WAY" ENGINE STAND

supports the motor perfectly, while allowing the workman to reach every portion of it with ease and accuracy.

The "Every Way" can be adjusted to every position in a circle—100 positions if desired—but the three most convenient are the Horizontal Position for working on valve mechanism and generally around the engine; the 45-degree Position (shown in cut) for cleaning carbon, grinding in valves, etc.; and the Inverted Position for taking up crankshaft, connecting rod, bearings, etc.

In each position the engine is locked rigidly by two side braces. The "Every Way" supports the engine solidly. It will never become shaky, and should last a lifetime without repairs.

For the Factory motor assembly department no other stand has been brought out that can be compared to the "Every Way" for efficiency and convenience.

The United Engine & Mfg. Co.

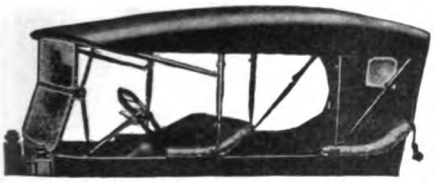
"Pioneers in Garage Equipment"

Hanover, Penn.

THE Manley FOOD AND GARAGE EQUIPMENT

Cray Slip Roof For Old Fords

MAKES THE OLD TOP NEW



$7.50

Makes the old top new at about one-third the price of the complete top. The outfit consists of a new heavy, rubber roof, quarters, back curtain and back stays, with celluloid light, stitched and ready to slip over the old top frame. Furnished with necessary tacks and welt. Easily put on by any car owner. Made for 1912, 1913, 1914, 1915 and 1916 Ford Cars. State year of car when ordering.

PRICES.

Outfit "A" for Touring Car, each, $7.50. Per Doz.....$79.50
Outfit "B" for Runabouts, each $6.00. Per Doz..... 63.75

CLEVELAND ONE-MAN MOHAIR TOP FOR FORD TOURING CAR.



Made to fit 1913, 1914, 1915 and 1916 Model T Ford Touring Cars.

In ordering state year of car.

Price, with regular curtains, $19.20.

Price, with Jiffy curtains, $21.60.

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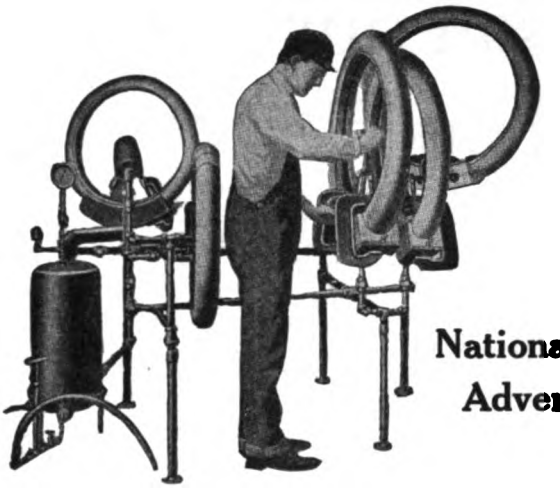
Write for a copy today, sending business card, letterhead or some other evidence that you are in the trade.

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Jobbers and Manufacturers of Auto Accessories

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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.

1042 N. Capitol Ave., Indianapolis, Ind.

Haywood Tire & Equipment Co.,
1042 N. Capitol Ave., Indianapolis, Ind.

Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

Name .....

Address .....

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Is Your Car Top Heavy?

Why buy a light weight car burdened with a heavy top?

A low weight center means safer, easier riding. Unnecessary top weight means waste—increased vibration and side sway.

You pay for every additional pound with gasolene, oil, tires and general wear.

At the best the most efficient top material can only be a waterproof layer supported by cloth—the lighter, the better—but strong enough to stand the strain when up, and flexible enough to fold without cracking.

Extra layers of cloth and combiners only add weight, diminish flexibility and increase the possibilities of cracking in folding. Mohair tops absorb pounds of water during a storm and accumulate dust when dry.

DU PONT FABRIKOID
RAYNTITE
SINGLE TEXTURE TOP MATERIAL

is ideal for the modern one-man top. It is made of a single thickness of light, strong cloth coated with a flexible, waterproof compound that sheds water like a duck's back. It can be easily washed, always looks well and because it is chemically inert will not oxidize nor disintegrate. *Guaranteed one year* against leaking but built to last the life of your car. Any top maker can replace your old dusty or leaky top with Rayntite.



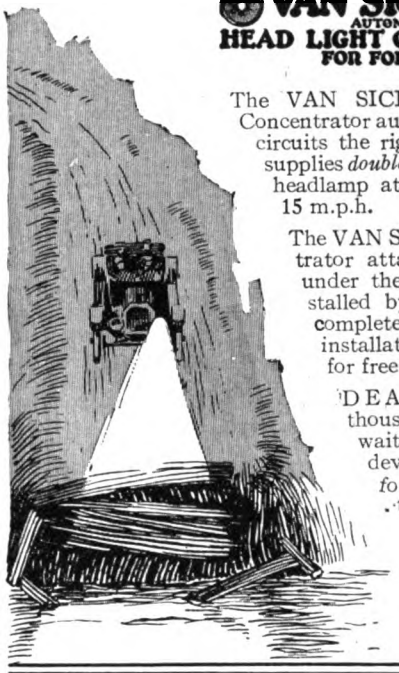
Du Pont Fabrikoid Rayntite will duplicate the remarkable success of Du Pont Fabrikoid Motor Quality—The Standardized Automobile Upholstery—used on 60% of 1916's entire output.

Write for samples and booklets and latest list of cars equipped with this modern top material.

Du Pont Fabrikoid Co.
Wilmington, Del.
Works at Newburgh, N. Y.
Canadian Office and Factory, Toronto

FORD OWNERS

The instant a Ford owner realizes he can perfect his electric lighting system for only $2 with a VAN SICKLEN Concentrator, the sale is practically made. No man will let $2 stand between him and utmost lighting efficiency and safety.



VAN SICKLEN
AUTOMATIC
HEAD LIGHT CONCENTRATOR
FOR FORD CARS

The VAN SICKLEN Headlight Concentrator automatically short-circuits the right headlamp and supplies *double current* to the left headlamp at all speeds below 15 m.p.h.

The VAN SICKLEN Concentrator attaches to the dash under the hood. Easily installed by anyone. Price, complete with directions for installation, $2.00. Send for free booklet.

DEALERS: Tens of thousands of prospects waiting for this little device. Wire or write for dealers' proposition—TODAY.

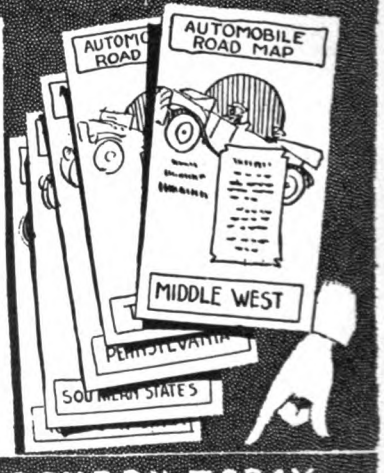


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14 Chicago Street, Elgin, Illinois

FREE ROAD MAPS

Check Maps desired and mail to

GULF REFINING COMPANY
Dept. 1879
Frick Annex
Pittsburgh, Pa.



MAIL THIS COUPON TODAY

Gulf Refining Co., 1882 Fricke Annex, Pittsburg, Pa.—Gentlemen: Please mail me FREE as per your special offer the maps as I have checked:

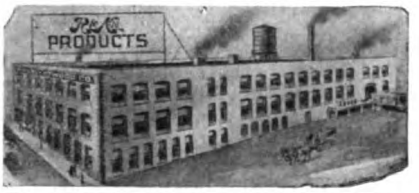
- ☐ Middle West
- ☐ Transcontinental
- ☐ New England
- ☐ New Jersey
- ☐ Pittsburg to Philadelphia
- ☐ Pittsburg-Buffalo
- ☐ Southern States
- ☐ Pennsylvania
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City..... State.....

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Every Rie Nie Product Bears The Absolute Assurance of



Perfect Satisfaction To The Agent And The User

Completeness and Quality



One of the Forty-five Numbers

JUST ONE TABLESPOONFUL is all that is necessary to permanently mend any ordinary leak in the radiator or cooling system. Works quickly, mends permanently, will not clog.

Price 75 Cents

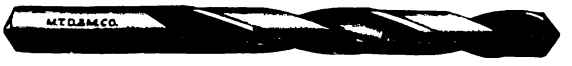


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Satisfaction
Reputation
and
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DURKEE-ATWOOD CO., Minneapolis, Minn., U.S.A.

Order through your jobber — Accept no substitute

EXPERIENCE



comes cheapest when you can avail yourself of that gained by others. Every time you purchase

"Morse" Drills

you get tools that are backed by fifty years of experience in tool-making. That means the angle of the groove and its depth is right, the clearance is correct and the drill will turn out holes for you in quantity.

EVER TRY THEM?

Morse Twist Drill & Machine Co.

NEW BEDFORD, MASS.

SAGER



Three-Quarters of a Million Cars

—will be cantilever-spring equipped this year.

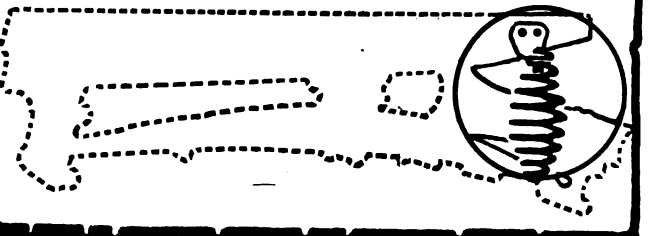
The SAGER EQUALIZER SPRING is the only shock absorber that can help a cantilever spring.

This means an army of new owners demanding the Sager.

Your duty, as a Dealer, is plain.

J. H. SAGER COMPANY

33 South Water Street, Rochester, N. Y.

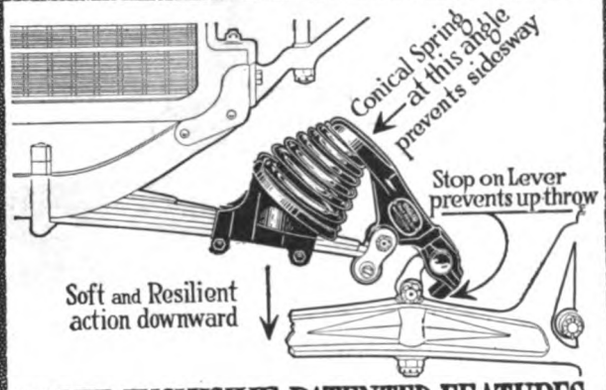


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HASSLER

Shock Absorber

— For FORD Cars —



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

HORN and FAN Combined

MOTOR DRIVEN



$5

Oakes

Gets the Roads

No gears, motor, batteries or wires to give trouble. Gives warning signal by merely pushing the button at driver's seat. Increases efficiency of fan and motor. Keeps radiator cool. Never fails to sound. Long life. Is easily interchangeable with fan on any Ford in a minute's time. Most reliable and safest horn. Write for dealer's proposition.

Also Oakes Krankleck 50c. and $1.00

The OAKES COMPANY
Dept. A Indianapolis

Beartone Sounds Thru Radiator for FORD



HOUK QUICK-CHANGE WIRE WHEELS

HOUK MANUFACTURING COMPANY Buffalo, N.Y.

Quality, Service, Price

—are the distinguishing features of our methods, as well as our output.

Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.

Years of steady, unremitting effort have concentrated in

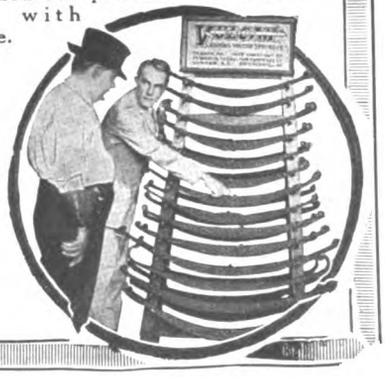
VULCAN QUALITY

SPRINGS a Quality of material and workmanship seldom equalled.

Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.

Our determination to divide fairly with dealer and consumer alike has fixed our prices at the lowest level commensurate with good business practice.

Write us today for liberal proposition in territory still open.



Jenkins Vulcan Spring Co.

1402 Chestnut St., St. Louis, Mo

708 Commerce St., Fort Worth, Texas

29 Caldwell St., Sumter, S. C.

BROWN—LIPE GEAR—CO—TRANSMISSIONS

SYRACUSE · N·Y·

DIFFERENTIALS

BROWN—LIPE CHAPIN—CO.

*Hartford SHOCK ABSORBER

Makes every Road a Boulevard



EDWARD V. HARTFORD, Inc.

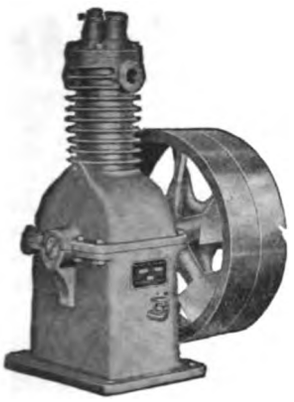
Heretofore Known as Hartford Suspension Co.

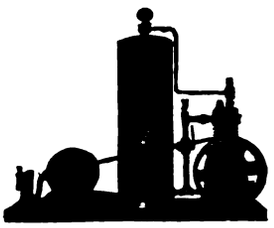
142 Morgan St., Jersey City, N.J.

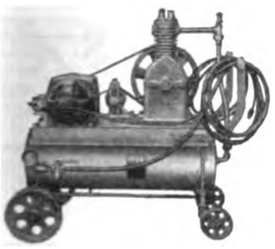
Branches: New York, Boston, Chicago

Distributors in Principal Cities, Dealers everywhere

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Where is the Best Garage in Town?

This is the first question that every motorist asks when visiting a new town. Can it be said of your garage? Service is the thing that the motorist is looking for. You want the business. Don't cut prices. Don't spend money on expensive service plans, which increase your cost of operation out of proportion to the amount of business brought in. Furnish your customers AIR FREE FROM OIL. They know that it means increased tire mileage, less repairs, less tire expense and saves them many dollars up-keep every year. By putting in a Curtis Air Compressor you offer your customers a big inducement to come to your place of business.

—HANG OUT THIS SIGN—

CURTIS AIR--FREE FROM OIL

The Curtis Compressor has controlled splash oiling system. It cannot flood the cylinder with more oil than it needs or can use. We have manufactured air compressors for over 25 years. We have had the experience. We are specialists in this line. We can furnish you with 5 different sizes or 125 combinations of styles and arrangements of outfits.

Your jobber very likely handles the Curtis Compressor. Ask him, but insist on a Curtis. If he does not handle the Curtis, send in the coupon below.

You have to have an air compressor anyway. An investment in the Curtis puts you in a position to give better service without additional cost, and helps make yours the best garage in town.

Curtis Pneu. Mchy. Co.

1546 Keinlen Avenue **ST. LOUIS**

531B Hudson Terminal **NEW YORK**

ASK YOUR JOBBER

If for any Reason He Cannot Quote on *Curtis* Compressors,

SEND THIS COUPON

CURTIS PNEU. MCHY. CO.
1546 Keinlen Ave., St. Louis.

Please send me your complete catalog on compressors, telling how to select the right garage compressor.

MY NAME.....

MY JOBBER.....

MY ADDRESS .....
.....

Russel

Internal Gear Drive Axles

Let us send you the history of the Internal Gear Drive Axle and tell you how the RUSSEL has been a big factor in its success.





ZENITH CARBURETOR

KNOWN the world over as the zenith of simplicity and efficiency.

A precision instrument giving permanently, exact carburetion for your car.

Zenith Carburetor Co.
Detroit, Mich.

PITTSFIELD TIMERS



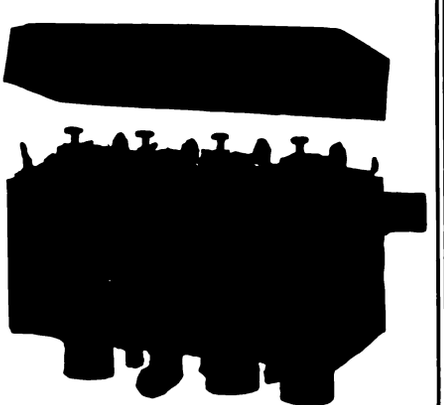
Do Not Lie!

PITTSFIELD TRADE MARK

Their Established Reputation for Accuracy was not gained by chance; it is due to carefully selected materials, skilled workmanship, and perfection of design. *Double ball bearings* prevent wobbling; *grooved roller*, with sharp edges, cuts grease and gets positive contact; *tight contact lever* prevents unnecessary wear; *dust proof* cover protects. Strong, durable and reliable, they save your engine's reputation, often smirched by inaccurate timers.

PITTSFIELD Spark Coils

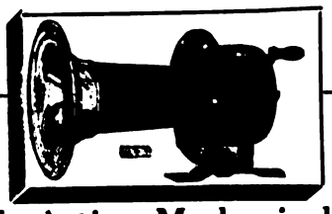
by continued tests and long service under severe working conditions, have demonstrated their *absolute reliability*. Produce a hot, flaming spark, with minimum current consumption, and so increase *the life of your battery*. Switches *never short-circuit*. Greatest frequency vibrators, with positive make and break at all times.



PITTSFIELD SPARK COIL CO.
Pittsfield, Massachusetts

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SEISS SEISS



$4.00 $4.00

Double Acting Mechanical Horn

Operated by touch of hand either to right or left—for short sharp blast—or for long continuous sound same as a motor driven Horn. This is the only horn on the market having these features.

Guaranteed for 10 Years

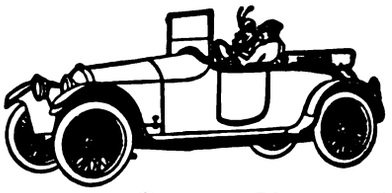
Positive in Action—no Ratchets—no Spring pressure to go against—simplicity—nothing to get out of order.

Write for Literature

The Seiss Mfg. Co., 455 Dorr St., Toledo, O.

SCRIPPS-BOOTH

Luxurious light cars which in their first season have found the way into America's and Europe's most refined society. Scripps-Booth stands out as the most attractive motor car in the roadster class. A car of beauty, possessing comfort heretofore unknown in a motor car. Roadster $825 — Coupe $1450. Dealers wanted.



Scripps-Booth Company
Detroit, Mich.



"Fasco" Racing Bodies for Fords are what your customers want and will appreciate. Guaranteed workmanship and material, easily mounted, ride without noise. A good proposition waiting for you. Agent wanted in every town. Write for dealers' prices.

FRIED & STONIER CO.
Peoria Dept. S Illinois

Saves Gasoline
Increases Power
Gives Greater Speed



This valve is the best selling accessory of the season. Every dealer should get in touch with our proposition for selling the well-advertised

BRUGAN $4
Economy Valve

It automatically admits air to the intake manifold cutting down fuel consumption 15 to 35 per cent. It improves combustion, gives greater power, quicker response, and less cylinder carbon.
Write for our proposition. 84-3

The Brugan Company, Bangor, Maine

Combination Tires

The "Hold-On" Tread

are as superior in quality to ordinary tires, as the Combination liberal sales policy is superior to the "cut and dried" ordinary selling policy under which the ordinary tires are sold.

Get the exclusive territory proposition.

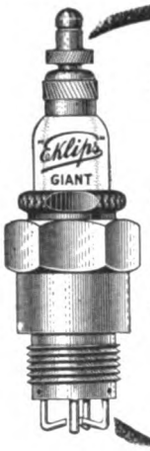
The Combination Rubber Mfg. Co.

Manufacturers of High-grade Rubber Products for 50 Years

Trade Mark

BLOOMFIELD, NEW JERSEY

Write or Wire for Particulars Regarding Our Proposition



"Eklips" SPARK PLUGS

Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

Write for full description, prices and discounts.

THE FULTON CO.
721-23 National Ave. Milwaukee, Wis.



Miles Cheaper

Users Report Records of

8,000
10,000
12,000
15,000
Miles

Settle the MILEAGE PROBLEM—Use

Quaker City Rubber Co.
Philadelphia



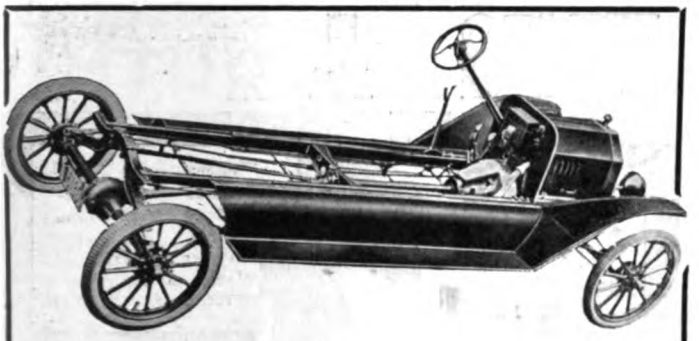
Mosler VESUVIUS Plug

PRICE $1.00 AT ALL DEALERS

Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
New schedule of trade prices.

A.R. Mosler & Co. New York, U.S.A.

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"Forbes" System

Patent Pending

A LONGER CHASSIS
A STRONGER CHASSIS
A BETTER CHASSIS

results from applying the "Forbes" system to Ford cars, lengthening the chassis for commercial purposes without reducing the simplicity and efficiency of the original construction.

The "Forbes" system is an addition to, not an alteration of the chassis. Each side of the Frame is trussed throughout its entire length, brackets for ends of truss rods clamp to frame, making unnecessary any additional holes in frame.

We use only the highest grade material obtainable and positively guarantee results.

We have a very interesting proposition for distributors. Send for it today.

WALTER J. FORBES 243 COLUMBUS AVE. BOSTON, MASS.



$16 Is Enough
to Pay for Streamline
Equipment for Your Ford Car

There's nothing wrong with the body that comes on your Ford car.

No need to throw it away and buy a new one, at half the price of the entire car. $16 is a moderate investment you can afford to make for the—

For All Ford Cars

Detroit Streamline Hood and Scroll Type

Radiator Shell

—that brings your car up to date in appearance. To spend more is unnecessary, and out of proportion to the value of your car.

DETROIT Equipment is **for all Ford cars**—not just cowl dash models. Built of substantial sheet steel, with concealed, waterproof hinges. Finished in black enamel that lasts.

Ask your dealer, or write us for free illustrated literature telling how to keep your Ford car in style, with DETROIT Streamline Equipment.

SPECIAL DEALERS' PROPOSITION

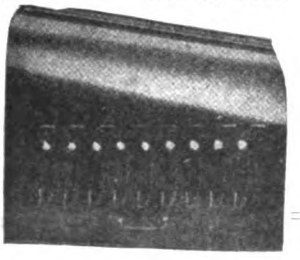
The Harry Svensgaard Sales Corporation
124 Jefferson Ave., W. Detroit, Mich.

FACTORY IONIA, MICH.

Warehouse. Windsor, Ont., for Canadain deliveries.

We will protect users and dealers against infringement suit.









HERE IS SOMETHING NEW!
They've Been Looking For It

A handy, compact motor car lavatory. It measures 11" in length and 3½" in diameter. It contains a sanitary, antiseptic washing fluid, and a roll of absorbent paper towels. *No water is needed.*

Practical—Convenient—Necessary

HAND-I-WASH COMBINATION

is the niftiest accessory you can offer your patrons. A little of the fluid poured on the hands will remove oil, dirt and grease, then there's a towel to finish with and the man who's repaired a tire or fixed his power plant is as clean as though he had a wash room at his disposal. It

DOES A CLEAN JOB

in a few minutes and saves steering wheel and clothes from getting muck covered. Enables the tourist to arrive at his destination as clean as when he left his house.

Hand-I-Wash is a fast seller. Unlike cleaning pastes, it supplies its own water. Everybody wants it.

List Price Complete, $1.
Refillers containing fluid and towel roll, 50c.

Liberal discount to the trade.
Send for our offer.

TAY-MILLER MFG. CO., Inc.
Manufacturing Chemist
1712 Cherry St., Philadelphia, Pa.





Tay-Miller Mfg. Co., Inc.
1712 Cherry St., Philadelphia, Pa.

Gentlemen:

I am interested in your proposition to the trade on Hand-I-Wash. Kindly send particulars.

NAME .....

Address .....

.....

When writing advertisers please mention Motor World

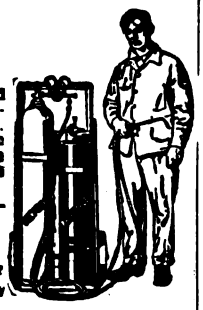
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Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high-grade welding apparatus for $60.00 (Canada, $75.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.



Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.

THE PREST-O-LITE CO., Inc.
The World's Largest Makers of Dissolved Acetylene
237 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario

JUMBO SPARK PLUGS

Jumbo "MOLITE" $1.25
Guaranteed For The Life of The Car



Other types for Fords and other cars, $0.75 and $1.00. Ask your dealer or write direct to the manufacturers. 69-37

GIBSON-HOLLISTER MFG. CO.
3380 WASHINGTON ST., JAMAICA PLAIN, MASS.

THERE IS NO OTHER PISTON RING LIKE OURS

Because we made it for our own use, after trying others with disappointing results.
Prove its efficiency—you can do it at our risk.
Send for Catalog and Price List.
Splendid Opportunity for Dealers.
Manufactured by
Hope Machine Co., Philadelphia, Pa.

THE EDWIN T. CRAVEN CO.
Sole Distributors
2310-12 North Second Street Philadelphia, Pa.



OWNER-PROVED VALUE

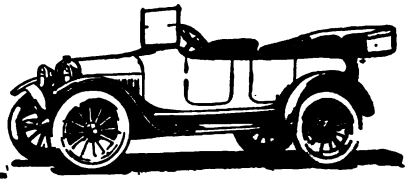
MUNCIE Inter-State INDIANA

Every Inter-State has proved its value definitely and conclusively in the hands of owners.

If you want to know about *proved value* and *actual assets* for either the man who buys or sells cars, write to-day.

Powerful, high speed, long stroke valve-in-head motor. Beautiful streamline body, seating five passengers comfortably. Two unit Remy electric starting, Lighting and Ignition. Over-size tires, both front and rear. Aluminum running boards. Heavily braced crown fenders. The most accessible medium-priced car on the market.

Touring Car..... $850
Roadster $850



INTER-STATE MOTOR CO.
MUNCIE IND.

NEW DEPARTURE BALL BEARINGS

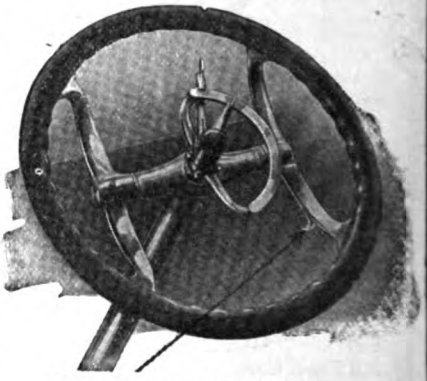


WARM HAND WHEEL

The new Condensite heated steering wheel. Write for details and open territory.

***Model H*—Tilting Warm Hand Wheel $20**

***Model G* — Non-tilting Warm Hand Wheel $15**



Lever controlling Tilting feature

Pouvailsmith Corporation
Poughkeepsie, New York

O-So-Ezy THE PERFECT Cedar Oil Polish

Standard equipment of each new car shipped by Abbott-Detroit, Briscoe, Buick, Chalmers, Chevrolet, Detroit Electric, Detroiter, Dixie, Empire, Grant, H. A. Lozier, Haynes, Hupmobile, Inter-State, Jeffery, King, Maxwell, Oakland, Oldsmobile, Overland, Paige-Detroit, Reo, Saxon, Scripps-Booth, Stutz, Willys-Knight and Winton.



A Million New Users a Year: Are you getting your share of this Profitable Business?

Ask for our introductory offer with free "*Silent Salesman.*"

O-SO-EZY PRODUCTS COMPANY
264-268 Jefferson Ave. Detroit

First Prize and Gold Medal — Highest Award — Panama Pacific Exposition, San Francisco.

Swinehart

The established reputation of SWINEHART TIRES is responsible for their demand which will not be affected by the pleas or promises made for other tires.

Write for our agency proposition
SWINEHART TIRE & RUBBER CO.
AKRON, OHIO



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"Clero Horns"
is the other name for
"Dealer Profit"

Every live dealer in this country realizes that the only successful business is a profitable business.

We want to aid in making your business more profitable—and *we can do it.*

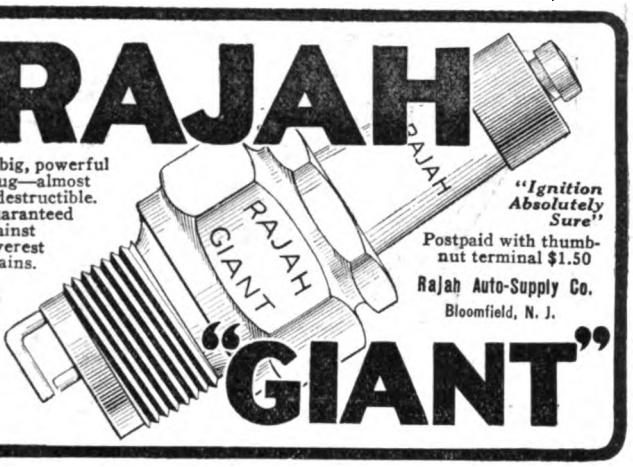
Clero Horns are manufactured by a big organization with unexcelled facilities for putting highest quality into large production, and thereby *insuring* low list prices, liberal discounts—and consequent good profits. We want every dealer who handles accessories to write us at once. We will send our irresistible profit making proposition by return mail.

Don't put it off until a later time, but write for our "AA" dealer proposition *at once.*

Most Liberal and Livable Discounts to the Trade

THE FITZGERALD MANUFACTURING CO.
Department C **Torrington, Conn.**

RAJAH



A big, powerful Plug—almost indestructible. Guaranteed against severest strains.

"Ignition Absolutely Sure"

Postpaid with thumb-nut terminal $1.50

Rajah Auto-Supply Co.
Bloomfield, N. J.

"GIANT"



WARNER AUTO UPHOLSTERY COVERS

FIT LIKE A GLOVE
DUST-PROOF WEAR-PROOF

For Samples, Prices and Catalog, Address

THE WARNER AUTO TOP CO.
1640-1644 Central Avenue
Cincinnati, O.

The Ideal Hose Clamp

The only clamp that closes perfectly round over a hose. It cannot buckle or cut hose. Will always form back to the original shape by tightening screw.



Can be slipped over a pipe no matter in what position pipe may be.



THE OLD WAY
Note escape of water

Manufactured by the
Ideal Clamp Mfg. Co.

THE NEW WAY
No chance for leakage

Distributed by J. H. FAW, Inc.
41 WARREN ST., NEW YORK Branch—ATLANTA, GA.

Ford
THE UNIVERSAL CAR

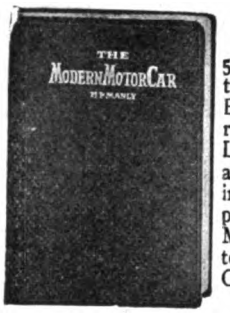
New Prices Aug. 1, 1916

CHASSIS	$325.00
RUNABOUT	345.00
TOURING CAR	360.00
COUPELET	505.00
TOWN CAR	595.00
SEDAN	645.00

f. o. b. Detroit

Ford Motor Company
Detroit, Michigan

Every Garageman and Mechanic Needs This Book



5 big volumes in one. 512 pages. 217 illustrations, drawings, diagrams and charts. Everything about Parts of the Car; Materials and Supplies; Electricity; Electric Lighting, Engine Starting and Control, and Ignition Parts. Exhaustive 24-page index, listing 1,165 headings under every possible classification. Bound in Black Morocco with Flexible Covers, Gold Lettering and Polished Edges. Price, $2.50. Order yours now.

LAIRD & LEE, Inc.
1734 Michigan Ave. CHICAGO, ILL.

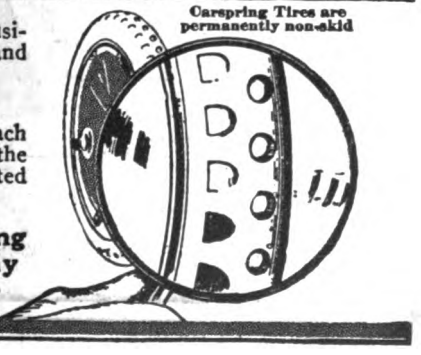
CARSPRING TIRES
BEST UNDER A CAR BEST ON EARTH

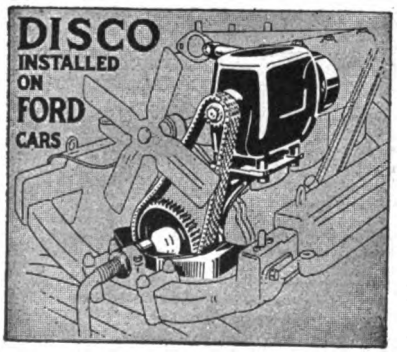
Will establish you in business on a permanent and profitable basis.

Our Policy:

One good dealer in each territory, backed by the best goods and unlimited co-operation.

New Jersey Car Spring & Rubber Company
Jersey City, New Jersey





ELECTRIC
STARTING
AND
LIGHTING
SYSTEM
FOR FORD CARS

The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system, simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

$75 Complete

Dealers Write for Agency
DISCO ELECTRIC STARTER CORPORATION
Detroit, U. S. A.

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ALMACO

SPECIAL ALLOY ALMACO BEST BY TEST

Aluminum Alloy Pistons and Connecting Rods

"Makes a Four Run Like a Six"



Any size for any make of car

ALMACO Pistons weigh only one-third as much as the cast iron or steel pistons now on cars you repair and practically eliminate carbonization. The highest grade and most efficient pistons and connecting rods on the market. Stand up under hardest tests. Complete stock on hand for all leading makes of cars. Others built to order on short notice.

A lasting test is a fair trial. Ask your jobber. *Write for descriptive literature, liberal discounts and prices. Manufactured by*

Aluminum Manufacturing Co., Des Moines, Iowa

MARTIN TIRE COVERS



Will fit any tire on any bracket on any car

An easily attached, water, dust, and mud-proof cover for tires with or without demountable rim. Made of selected high grade leather cloth. In all sizes and four styles. Send for literature.

The Martin Bucket holds a gallon, stows under seat cushions or can be rolled and carried in your pocket.

Sent prepaid for 50 cents.

Send for liberal proposition for Jobbers and Dealers.



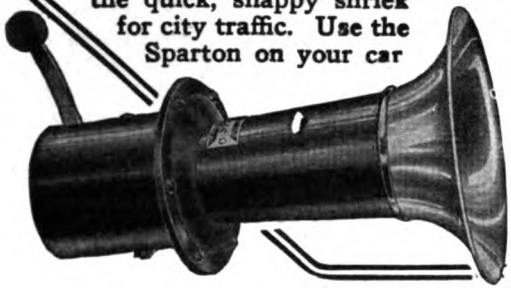
The Martin Manufacturing Co.

Lancaster, Ohio.

SPARTON

Safety Signals

Have the far-reaching call for country roads—the quick, snappy shriek for city traffic. Use the Sparton on your car



Model "F"

$4.00

Finish in satin black and nickel or all black.

The Sparks-Withington Co.

Jackson Michigan

Gould STORAGE BATTERY

The Strong Right Arm *of a* Starting-Lighting System

GOULD STORAGE BATTERY CO.

General Offices, 30 E. 42nd St., New York

Write for our Agency Proposition

CYLINDER REGRINDING and PISTONS FOR ALL MAKE MOTORS

Butler's Semi Cast Iron Light Weight High Efficiency Pistons

Give Light Weight the Great Motor Improvement with Close Clearance

Special Price on Ford Pistons

Standard Cast Iron Pistons of Improved Design and Engineering

Butler's Special Alloy Pistons are a Proven Quality

Strictly high class work and material

BUTLER MFG. CO., Est. 1897

1120-24 E. GEORGIA ST. INDIANAPOLIS, IND.

Red Head

Reg. U. S. Pat. Off



3 POINTS 1 DOLLAR

BIG BOY FOR QUICK



Gets down into the cylinder. Stands up under hard service.

HYATT Roller Bearings

Empire Tires RED

WEAR LONGEST

Longest Mileage — Longest Profit

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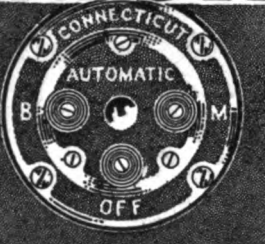
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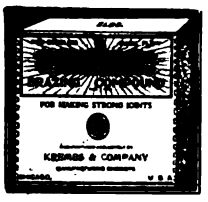
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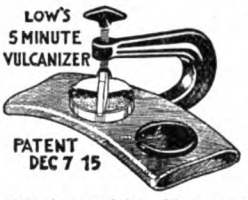
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at Discount for Packard, Regal and Chalmers 30 & 36. Our Parts Absolutely New and Guaranteed.
CARRIED IN STOCK
Piston Pins Carried in Stock to Fit Most Any Make of Car
Sales Agents for Transmission and Differential Gears and parts for all make cars. Tell us your Requirements
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GEARS
For Transmissions and Differentials
Write our Sales Department about your requirements
SERVICE GEAR & MACHINE CO.
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For Self Starters. Gears of every description cut or made to Specifications.
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Service Department has been entirely reorganized. Owners will get real service from now on. All repair parts shipments made the same day orders are received.
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IMPERIAL
It is a distinct satisfaction to every Imperial Owner to know that he has a service organization back of his car that is really interested in seeing that he gets the utmost in service and satisfaction from it.
It is pleasing to know that in ordering any repair part from this company you will not only be sure of shipment in a few hours' time, but also that only the very best of workmanship and material have gone into the making of the part.
Order direct from the factory. We carry no stock of repair parts elsewhere.
IMPERIAL AUTOMOBILE PARTS CO.
DETROIT, MICHIGAN

KRIT OWNERS
We furnish quick service on all engine, clutch, transmission, differential, front and rear axle, steering gear, wheels, steering knuckles and cones, fenders, frames, and body parts, from original Krit Stock. For all models from 1909-1915 inclusive.
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Special Offer No. 4

A TROUBLE PROOF CLUTCH

We are offering a specially designed clutch which we positively know will forever eliminate all clutch troubles. It has extra strength discs and a clutch spring that will positively hold the clutch under all conditions.

The regular list price for this clutch is $24.00.

However, as we desire every Krit owner to be able to take advantage of this big improvement at once, we are making a special price for a short time only of **$16.20**

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Krit Motor Car Company
DETROIT, MICHIGAN

Lowest "Parts" Prices in the Country
Packard 30, '08 to '12 Pierce 6-48, '10, '11 and '12 Speedwell, '10, '11 and '12. Peerless, '09 to '12 Cadillac, '09 to '13 Pope-Hartford, '10, '11
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Two rear hubs roller bearings—regular price	42.00
Total	$57.00

Our price to this combination is **$38.50**

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Service Department entirely reorganized. Prompt and accurate shipment now given on all repair parts for Mason, Maytag, and Mason-Maytag automobiles.

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Detroit, Michigan (Formerly of Waterloo, Iowa

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Wheels, springs, mudguards, mufflers, $1 each. Four and six cylinder magnetos, $8.50 each; radiators, $10 up; universal joints, $2; 5-passenger upholstered bodies, $10. Write us.

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OLD GOLD
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Send us your old magneto points or sweeps, and we will pay highest prices.
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Parts for all models of Pope-Hartford pleasure cars, Trucks and Public Service cars — made from the original drawings and patterns, with the original tools, fixtures, etc.—complete stock always on hand. Prompt and satisfactory service.

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Most Durable and Efficient. Make New Radiator, allow fold old one. PRICES RIGHT.
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Get a Square Tube Radiator. 25% greater water capacity. Made for any car. New, guaranteed cores placed in old radiators. We also manufacture hoods, fenders, tanks and pans, and do guaranteed repair work. Prompt and satisfactory service.

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Parts, Side and Lock Rings, Bolts and Wedges. Dealers write for prices.
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Rather a broad insertion, isn't it? Let us prove the statement. We are located in Detroit, the center of the automobile industry, and during our long life have built up a service department which is the largest and most efficient in the world. The owner of any make of Orphan car need not want for any part of any car, for we have bought over one hundred defunct companies. We carry practically everything to put your car in perfect running condition, from the smallest screw to the complete car. Below is a partial list of "Orphan" Cars for which we supply service:

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Anhut	Keeton
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Wire or write—Our motto is "Prompt Service—Quick Delivery."

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SAVE 50% to 75%

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We carry Magnetos, Carburetors, Presto Tanks and other accessories.

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of all makes repaired and parts furnished. Trade solicited from dealers and garages. Prompt service.
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parts are carried by us in great quantity and to garage men we offer an unsurpassed service. When you have SPEEDWELL cars to repair write or wire

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We have taken over all of the parts and service business on the cars listed above.

We pledge ourselves to the owners of these cars that so long as their cars remain on the road, we will guarantee them the very best of service; the most prompt deliveries, the finest of materials and workmanship, and at the lowest possible prices.

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STANDARD MOTOR PARTS CO.

NEWCASTLE, IND.

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Transmission Gears for over 100 makes of cars

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AAA SCORED CYLINDERS

Repaired by Patented electric process. Filled with a silver and nickel alloy. (Eliminates Grinding.) No warping or enlarging of cylinder bore. Same piston and rings used. Reshipped 24 hours after received.

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By experts on Heald Grinder. All pistons, rings and wrist pins ground mechanically perfect. All patterns and sizes in stock. Write for quotations.
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Special light alloy Pistons

Our special facilities enable us to do highest grade work

Over 225 Piston Patterns

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We make new pistons, rings and pins. Regrind crankshafts. Fully equipped Machine Shop with Hydraulic Press. Expert workmen. All work guaranteed. **H. S. Anderson Auto Repair**
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CYLINDERS
Rebored AND Reground

Including NEW PISTONS and rings
$4.00 to $13.00 per cylinder

We are Manufacturers of Hercules Welding and carbon cleaning Apparatus

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CYLINDERS REBORED

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We rebore Cylinders and equip with our ECLIPSE Rings and extra high quality Pistons, assuring a correct fit and giving extra efficiency to your motor. Give us a trial. Prices interesting.

HOPE MACHINE CO.,
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Expert Cylinder Grinding
Fords $20.00, Overland, Buick Models 10 and 25, Chevrolets, Studebakers 3½-in. bore only; $35.00 including new over-size pistons and rings fitted complete. Discount to dealers.
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FORD CYLINDERS REGROUND
FOUR NEW LIGHT PISTONS **$12.00** .030 in. OVERSIZE ONLY
Write for full particulars.
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and furnish our heat treated piston rings and pistons. First class equipment, 15 years' experience. Write for our prices.
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Exclusive selling rights contracts.
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Write or wire for available territory. Avoid substitutes and imitations, sell the genuine.

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Big Money, Selling MACKS AUTOMATIC SAFETY SPARK SET, for FORD AUTOMOBILES, Easily Attached, NO BACK FIRE—NO BROKEN ARMS. Retail Price,$4.00.

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Ford "T" Rear Axle Trouble

Gardner Patent Loop Truss puts an end to rear axle trouble. Put in place in 3 minutes. Bolts will not work loose. Differential will not open up. No grease lost. Shaft tube cannot break. Stops that upward twist when starting and the downward twist when stopping. Same road clearance. Cannot be struck by obstructions on the road. Weight 6 lbs.
1913-14-15-16 Cars, $1.50 1911 Cars, $2.00
Include Parcel Postage when Ordering.
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COMBINATION
Water—Soap—Towel
INDISPENSABLE TO THE
AUTOMOBILIST
AT YOUR DEALER'S OR DIRECT $1.00 Prepaid See our Adv. on Page 103
TAY-MILLER MFG. CO., Inc.
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HANDY POCKET KITTY-KIT Prevents Tire Troubles. Use the wonderful "Kitty-Kit" tire repair kit and your troubles will be solved. Repairs punctured tires in 1 minute. This is a kit of real merit and a help to all automobile owners. Price $3 by mail. Agents wanted. **Andrew B. Smith,** S. W. Cor. Park Ave. & Cambria St., Phila., Pa.

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RUB-R-TITE
Easily applied. Small car size, 60c.; large car size $1.00.
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1000 Presto Tanks

STYLE B

FILLED $7.00 Each
EMPTY $6.00 Each

Fifty cents discount on each tank in lots of 10 or more.

Every tank guaranteed in A No. 1 condition.

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Also other Specialties for Jobbers, Dealers, write for prices. Goods Guaranteed.
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SCHEBLER CARBURETOR

Model R 1½ inches

for $8.00

This model is listed regularly to sell at $22.50, but will be disposed of by us for a limited time at this tremendous reduction. Early attention is advised as the allotment is limited. We have thousands of other bargains on the same order. Send for our PRICE WRECKER (free) listing 5,000 accessory and supply values.

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World's Largest Dealers.
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Tires

A BIG SAVING IN
TIRES—TUBES
Fresh Selected Stock—Standard Makes Guaranteed

	New Tires	New Tubes		New Tires	New Tubes
28x3	$ 6.00	$1.25	34x4	$13.25	$3.35
30x3	6.50	2.00	35x4	13.50	3.45
30x3½	8.00	2.25	36x4	14.00	3.50
31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
31x4	11.75	2.90	35x5	17.50	5.00
32x4	12.50	3.20	36x5	18.50	5.00
33x4	12.75	3.25	37x5	20.00	5.20

For Non-Skid add 10% to All prices.
Special Bargains in Slightly Used Tires.

	Used Tires	Used Tubes		Used Tires	Used Tubes
30x3	$3.50	$1.35	35x4	$7.50	$1.75
30x3½	4.25	1.45	36x4	7.50	1.75
31x3½	4.50	1.50	34x4½	8.00	1.75
32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
32x4	7.00	1.60	35x5	8.50	2.00
33x4	7.25	1.70	36x5	9.50	2.00
34x4	7.75	1.70	37x5	9.75	2.20

All goods shipped C. O. D. subject to examination, on receipt of 10 per cent of order.
TIRE REPAIR & SUPPLY CO.,
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A GREAT TIRE AND TUBE SALE
100 Makes—15,000 Tubes and Shoes. New and A1 Stock
AT RIDICULOUSLY LOW PRICES
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BEAD BLOWOUTS

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DEALERS SHARE OUR PROFITS

BIG BARGAINS IN
REGULAR STANDARD GUARANTEED
3500 MILES TIRES & TUBES
5% Discount to Dealers

Size	Plain	Non-Skid	Tubes
28x3	$ 6.35	$ 7.00	$1.75
30x3	6.95	7.45	1.85
30x3½	8.95	9.50	2.05
32x3½	10.30	10.85	2.20
34x3½	11.50	12.15	2.25
32x4	14.10	14.85	2.75
33x4	14.65	15.45	2.85
34x4	14.95	15.75	2.90
35x4	15.55	16.50	3.00
36x4	15.80	16.60	3.10
35x4½	20.80	21.85	3.75
36x4½	21.10	22.15	3.85
37x4½	21.85	22.95	3.95
37x5	24.90	26.25	4.50

Tires shipped C. O. D., subject to examination, on receipt of $1.00 Deposit on each tire. If goods are unsatisfactory deposit is refunded.

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I Establish Cut Rate Tire Agencies

Various Brands at Following Prices:

30x3 Non-Skid $5.28
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If you care to devote your time to a money-making proposition, address

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GUARANTEED HEAVY RED OR GRAY TUBES

Size	Price	Size	Price
30 x 3	$1.50	36 x 4	$2.80
30 x 3½	1.65	35 x 4½	2.40
33 x 3½	1.75	36 x 4½	2.50
34 x 3½	1.80	37 x 4½	2.60
32 x 4	2.50	36 x 5	2.90
34 x 4	2.60	37 x 5	4.00

The above prices are net to dealers. These tubes are fresh stock. Not blemished. Terms: Cash, including postage.

Tough Tread Tire Co., 25 William St., Newark, N. J.

UNIVERSAL TIRES

CARRY STANDARD GUARANTEE OF 3500 MILES

	Plain	Non-Skid		Plain	Non-Skid
30x3	$6.15	$6.75	35x4	$13.85	$14.85
30x3½	7.95	8.65	36x4	14.10	15.30
32x3½	9.20	9.65	34x4½	17.19	18.75
32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
34x4	13.80	14.25	37x4½	19.45	20.75
			37x5	22.20	23.10

ON ACCOUNT OF LOW PRICES ALL GOODS SHIPPED C. O. D. EXPRESS OR FREIGHT BILL OF LADING TO DRAFT SUBJECT TO EXAMINATION. WE ALLOW 5% DISCOUNT WHEN CHECK OF 10% ACCOMPANIES ORDER.

UNIVERSAL RUBBER COMPANY
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BIG TIRE PROFITS!
on factory blemished tires and tubes. Write for dealers' list now.
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ALUMINOID, $2.00 Pound

A special alloy for repairing broken ALUMINUM PARTS. Applied with Gas or Gasoline Blow Torch.
No Pre-Heating, No Warping, No Cracking
STRONGER THAN ORIGINAL CASTING
SAMPLE BAR—½ POUND—$1.00
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ALL OXY-ACETYLENE WELDING GUARANTEED
Crankshafts, crankcases, connecting rods, pistons, scored cylinders made equal to new with our new silver iron process, use the same piston and rings.
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Guarantee to repair parts pronounced impossible or spoiled by others. Broken Crankcases, Axles, Pistons, Flywheels, scored or cracked cylinders. Stripped Gears, rebuilt equal to new. Lost pieces supplied. Crankshafts welded, trued to original diameter of bearings.

FINISHED WELDING

Our Oxy-Acetylene welded jobs seldom show repairs. Parts machined to original shape and painted.
HOBBIE WELDING PLANT, HAMPTON, IOWA

SO-LUMINUM REPAIR SHOPS
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All aluminum and aero metal parts mended by new So-Luminum welding process. Takes no part out of alignment or life out of metal. One-half cost and time of acetylene welding. Address So-Luminum Manufacturing Co., 1790 Broadway, New York. Telephone 8420 Columbus. Trial bar 50c.

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All Our Work Guaranteed.
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The Automobile Catechism Price Cut in Half $1.25



Don't Discard Worn Bearings
We Regrind Them as Good as New
At About One-Fifth List Price of New Bearings
AHLBERG BEARING CO.
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BRANCHES: Los Angeles, 325 W. Pico St.; New York, 1790 Broadway; Boston, 98 Massachusetts Ave.; Cleveland, 1841 Euclid Ave.; Detroit, 790 Woodward Ave.; St. Louis, 2831 Locust St.; Minneapolis, 926 Marquette Ave.

Stop the Spring Breakage
It's poor policy to risk repeating the annoyance of a broken or weak spring—and the delay—by saving only a very little in buying or selling a *cheaper* spring instead of a "NEW ERA *BETTER* SPRING."



Don't replace a broken spring with one no better. Wise dealers sell only the best. New Era "BETTER" Springs are the oldest and largest used line for replacement—at same price as from car factories. Made for all cars. GUARANTEED one year against breakage or sagging, graphited between leaves for two years' lubrication. Write for complete lists, discounts—or state requirements and class of business.
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879 Woodward Ave., Detroit, Michigan

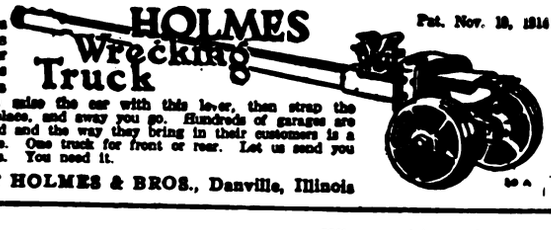
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The Best-Selling
TRAILER
Fastest moving line. Prospects in every kind of business. Built to suit the requirements of every customer. Standard motor car construction. Service guaranteed. Price and discounts are right. Write or wire for details today.
The Michigan Auto Trailer Co. 220-224 Twenty-First St., Detroit

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Guaranteed in Writing 5000 Miles
Branches in Leading Cities
Factories: Trenton, N. J.
AJAX RUBBER CO., Inc., 1796-98 Broadway, New York

TUBE BENDING
and BENDING MACHINES for every requirement
FOR FURTHER PARTICULARS WRITE
MAKERS OF WORLD'S BEST CRUDE OIL BURNERS
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BAYONNE, NEW JERSEY

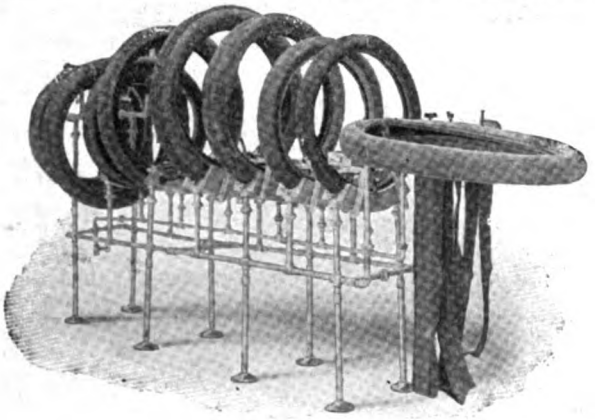
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will be sent upon request to all dealers in Automobiles, Automobile Supplies or Repair Shops or Garages.
Full stock at all times insures service—quality—price. Write at once as prices are advancing.
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Pat. Nov. 16, 1914
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ROBERT HOLMES & BROS., Danville, Illinois



BETHLEHEM FIVE POINT SPARK PLUGS
Guaranteed for the Life of the Car
STOCKED BY ALL JOBBERS

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You as a Thrifty Man,

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with the best vulcanizing machine made.

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Free delivery within 500 miles.

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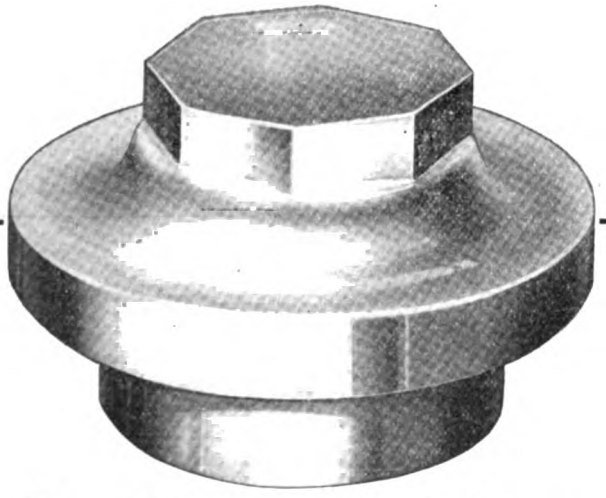
of the trade.

Glad to respond to all inquiries — write to us NOW lest you forget and this splendid opportunity slip from your grasp.

Battle Creek Vulcanizing Equipment Co.

114 West Main Street

Battle Creek, Mich.



Cast Brass Hub Caps

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FORD CARS

Nickelplated or Polished Brass

Write for Prices

THE PFAU MFG. CO.

235 MENTOR STREET

CINCINNATI, OHIO

Advertisers' Index

A

Ahlberg Bearing Co. 115
Ajax Rubber Company. 115
Allen & Curtiss Co. 107
Aluminum Mfg. Co. 106
American Ball Bearing Co. 108
Ames Co., F. A. 81 & 85
Atwater Kent Mfg. Works. 108 & King Insert

B

Battle Creek Vulcanizing Eq. Co. 116
Benford Manufacturing Co. 46
Bosch Magneto Co. 108
Bowser & Co., S. F. 72
Brown-Lipe-Chapin Co. 100
Brugan Co. 102
Buford Motor Truck Co. 90 & 91
Butler Mfg. Co. 106

C

Carter Carburetor Company. See King Insert
Cassidy, E. A. 107
Champion Ignition Co. 2
Champion Spark Plug Co. See King Insert
Chicago Auto Supply House. 115
Combination Rubber Mfg. Co. 102
Connecticut Tel. & Elec. Co. 107
Craven Co., E. T. 104
Cray Bros. 97
Crew-Levick Co. 84
Curtis Pneumatic Mchy. Co. 101

D

Denby Motor Truck Co. 80
Disco Electric Starter Corp. 105
Du Pont Fabrikoid Co. 98
Durkee-Atwood Co. 99

E

Eisemann Magneto Co. 96
Empire Rubber & Tire Co. 106
Enger Motor Car Co. 86
Engineering and Tube Bending Co. 115
Evapo Mfg. Co. 108

F

Faw, J. H. 107
Fedders Mfg. Co. A
Firestone Tire & Rubber Co. 52
Fitzgerald Mfg. Co. 105
Forbes W. J. 103
Ford Motor Co. 105
Foster Accessories Co. 71
Fried & Stonier Co. 102
Fulton Co. 102

G

General Electric Co. 75
Gibson-Hollister Mfg. Co. 104
Goodrich Accessories Corp. 87
Gould Storage Battery Co. 108
Graphite Lubricator Co. 95
Grossman Mfg. Co., Emil. 106
Gray & Davis, Inc. Front Cover
Greenfield Tap & Die Corp. 92
Gulf Refining Co. 98
Gurney Ball Bearing Co. See King Insert

H

Hampton-Campbell Co. 107
Hartford, E. V. 100
Hassler, Inc., Robt. H. 100
Haywood Tire & Equip. Co. 97
Holmes & Bros., Robt. 115
Hotel Marie Antoinette. 96
Houk Mfg. Co. 100
Hupp Motor Car Co. 88
Hyatt Roller Bearing Co. 106 & King Insert

I

Ideal Hose Clamps. 105
International Harvester Co. of America. 94
Inter-State Motor Co. 104

J

Jenkins Vulcan Spring Co. 100
Johns-Manville Co. Back Cover

K

King Motor Car Co. 53 to 64
Krembs & Co. 108

Digitized by Google

Advertisers' Index

L

Laird & Lee 105
Liberty Motor Car Co 51
Link-Belt Company ..... See King Insert
Long Mfg. Co 83

M

Mack Mfg. Co 96
Martin Mfg. Co 106
Maxwell Motor Co 82
McQuay-Norris Mfg. Co ..... 3rd Cover
Mfg. Equipment & Eng. Co 94
Michelin Tire Co 45
Michigan Auto Trailer Co 115
Mitchell Motor Co., Inc 78
Morse Twist Drill & Mach. Co 99
Mosler & Co., A. R 102

N

National Rubber Co 107
New Departure Mfg. Co 104
New Era Spring & Specialty Co 115
New Process Gear Corp 93
N. J. Car Spring & Rubber Co 105
Norma Co. of America 3

O

Oakes Co 100
O-So-Ezy Products Co 104

P

Penberthy Injector Co ..... See King Insert
Pfau Mfg. Co 116
Pittsfield Spark Coil Co 101
Pouvailsmith Corp. 104
Prest-O-Lite Co 104

Q

Quaker City Rubber Co 102

R

Rajah Auto Supply Co 105
Rayford Co 76
Roamer Motor Co 73
Royal Equipment Co ..... 48 & 49
Russell Motor Axle Co 101

S

Sager Co., J. H 99
Scripps-Booth Co 102
Seiss Mfg. Co 102
Shaler Co., C. A 74
Sheldon Axle & Spring Co ..... Back Cover
Silvex Co 115
Sowers Manufacturing Co ..... See King Insert
Sparks-Withington Co 106
Spitdorf Electrical Co ..... 69 & 70
Standard Thermometer Co 107
Stevens & Co 95
Stewart-Warner Speedometer Co ..... 2nd Cover
Stromberg Motor Devices Co 77
Studebaker Corp 1
Svenegaard Sales Corp., H 103
Swinehart Tire & Rubber Co 104

T

Tay-Miller Mfg. Co 103
The 5 Minute Vulcanizer & Auto Sup. Co 108
Tiona Oil Co 50

U

United Eng. & Mfg. Co 97
U. S. Ball Bearing Mfg. Co 79

V

Vacuum Oil Co ..... See King Insert
Van Cleef Bros 118
Van Sickien Co 98
Velie Motor Vehicle Co 47

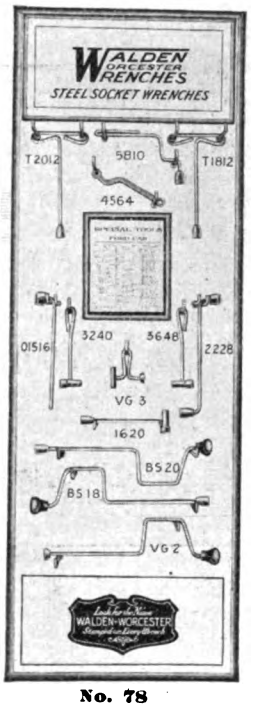
W

Walden Mfg. Co 117
Ward Leonard Electric Co ..... See King Insert
Warner Auto Top Co 105
Wayne Oil Tank & Pump Co 92
Webber & Co., P. H 89
Whitney Mfg. Co 94
Willard Storage Battery Co ..... See King Insert
Willys-Overland Co 4
Wonder-Mist Co 107

Z

Zenith Carbureter Co 110

FORD CAR WRENCHES

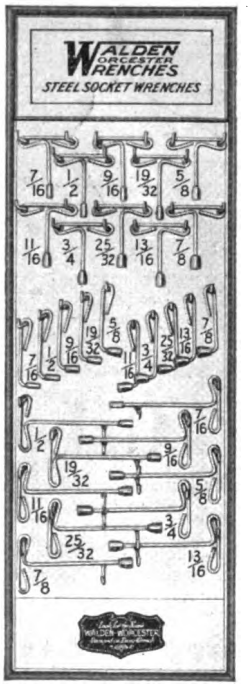


No. 78

Attractive displays make sales. Every motorist needs some of these tools. Every dealer should have these display boards and stock. Ask your jobber for information or write Walden, Worcester, Mass., for particulars.

Display Boards Increase Retail Sales

No. 180



Offset and Tee Handle Wrenches

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Waiting ON Customers
and
Waiting FOR Customers

is often no more than the difference between handling the fast selling Dutch Brand Line that repeats and handling an inferior line which doesn't.

You take no chances when you order standard Dutch Brand Products. Ask your jobber.

DUTCH BRAND

Auto Patching Cement—A big seller. For extra heavy patching. Quick, dry. Most dependable for tube patching. Patches stick and stay stuck.

Vulcanizing Cement—Meets with a ready demand for shop use and use with small hand vulcanizing outfits. Cures quickly and effectively.

Rubber-Seal—Permanently repairs large cuts and gashes in outer casings. Rim-Coat insures quick and easy tire changes.

"2-in-1" Tread Filler. A Liquid Rubber—Quickly fills small cuts and bruises in outer casings. Keeps out fabric-rotting oil and water. Requires no cement. Dries hard and resilient.

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Friction Tape—A tape which will not powder. Unexcelled for insulating purposes, temporary tire repairs, etc.

Radiator-Seal Compound—Quickly repairs damaged or leaky radiators. A necessity in every toolbox. A touring necessity. A DUTCH BRAND leader that is meeting with tremendous demand.

Gasket Shellac—A positive liquid shellac sticker—always ready for use. Cements and makes leak-proof spark plug gaskets and all other gaskets.

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Black-the-Brass—For beautifying lamps, radiators and trimmings. Produces a hard, smooth, dead black finish over brass or where nickel has worn off.

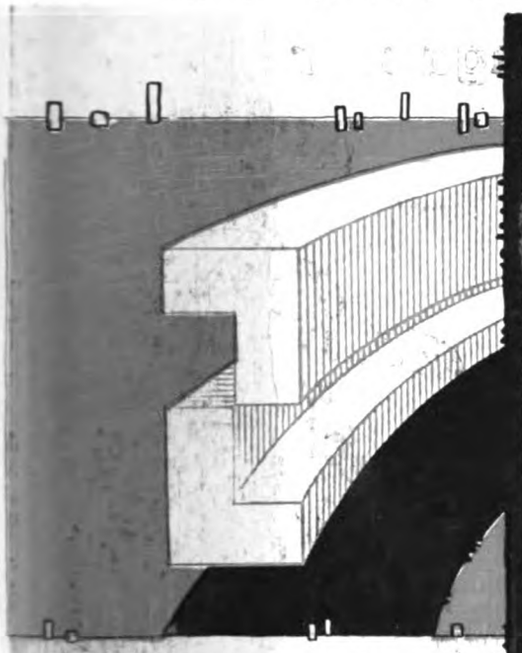
Other DUTCH BRAND Products are:
Tire-Brite, Rim Coat, Carbo-Cide, Valve Grinding Compound, Auto Top & Cushion Coating, Varni-Brite.

DEALERS—Send for illustrated catalog and order a stock from your jobber.

VAN CLEEF BROS., 7711 Woodlawn Avenue, CHICAGO
"The Rubber Cement and Auto Chemical Specialties Authorities"

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You Can't Afford Cheap Piston Rings



The exclusive LEAK-PROOF *angle-to-angle interlocking construction.*

TO put cheap piston rings in a motor is the poorest form of economy. What little is saved in price is lost many times over in wasted fuel and oil and scored cylinders.

The piston rings that invariably prove cheapest in the end are the Original and Genuine McQuay-Norris LEAK-PROOF Piston Rings.

In LEAK-PROOF you get the most perfect type of piston ring made. A special metal perfected for LEAK-PROOF Rings exclusively—strong, tough, enduringly elastic. A patented design, mechanically correct in every essential—giving the ring firm and equal bearing with light tension. Careful, accurate manufacture that works to hairbreadth measurements—insuring close fit.

For the LEAK-PROOF price you get good, strong compression, power a-plenty, little or no carbon trouble and lengthened gasoline and oil mileage.

BE CAREFUL. When you order LEAK-PROOF Rings, be sure you get them. Look for the name LEAK-PROOF stamped on every ring. Insist on seeing it. Examine the ring; make sure it is made of two sections equal in size, fitting around one another angle-to-angle. That's the exclusive LEAK-PROOF design—vitally necessary to true LEAK-PROOF service.

Send for FREE booklet:—"To Have and to Hold Power"—the standard handbook on gas engine compression. It tells what LEAK-PROOF efficiency means. Write Department K.

Manufactured by

McQuay-Norris Mfg. Co., St. Louis, U. S. A.

Canadian Factory: W. H. Banfield & Sons, 372 Pape Ave., Toronto

"Ask the User"



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New York, Pittsburg, Cincinnati, St. Paul, Chicago, San Francisco, Seattle, Atlanta, Dallas, Philadelphia, Los Angeles, Kansas City, Denver

McQUAY-NORRIS

LEAK-PROOF

PISTON RINGS

—the original and genuine

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For Discriminating Buyers of Protection—
The "J-M" Fire Extinguisher

Every safety feature in your car is provided to guard against emergencies. That's why each must be the best and most modern of its kind.

There's the same reason for discrimination in buying a fire extinguisher as in selecting lights, horns, tire-chains, or brake linings—the need for the utmost in safety. This is a demand fully met by the "J-M"—the most efficient fire extinguisher of the one-quart type, "the last word in Safety First."

A few quick strokes create sufficient air pressure to discharge contents at the opening of the nozzle—an invaluable feature in tight corners. Where space permits, however, it may be discharged by pumping, like other types. This two-way method of operation is an *exclusive* "J-M" feature.

Effective for all incipient fires, whether from gasoline, grease, oil, or electrical arcs; liquid is harmless to skin, fabric or machinery. Strongly built, handsomely finished in brass or nickel and retails at $8.00, bracket included.

Entitles car owners to 15% reduction in automobile insurance.

Tested, approved, and labelled by the Underwriters' Laboratories, Inc., and listed as an approved fire appliance by the National Board of Fire Underwriters.

"J-M" Liquid for recharging is sold in sealed cans bearing the J-M trade mark. The only liquid guaranteed for use in the "J-M" Fire Extinguisher, non-corrosive and non-deteriorating. Order from your dealer.



TO THE TRADE

"J-M" Fire Extinguishers are sold under generous discounts, rigidly maintained and uniform regardless of size of order. For the right jobbers and dealers we have an interesting proposition—a square, profitable, and profit-protecting trade policy which you should know about. Ask the nearest J-M Branch.

H. W. JOHNS-MANVILLE CO.

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THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED.

Toronto Winnipeg
Montreal Vancouver



J-M Non-Burn Brake Lining

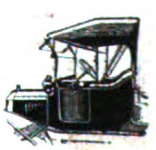


J-M (Meg-ger) Soot-proof Spark Plugs. 75 Cents





J-M Speedometer for Ford Cars. $10



J-M Windshield Attachment for Ford Cars. $3.00

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 6

New York, August 9, 1916

Ten cents a copy
Two dollars a year

Champion

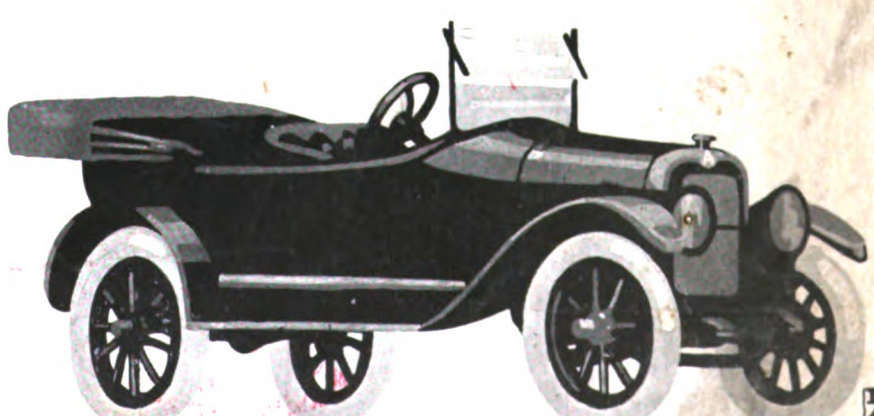
Conical
⅞-18 Price $1.00



Dependable
Spark Plugs

Allen
MODEL 37

Ultra fashionable in design and holding an enviable reputation mechanically, the "Allen Model 37" is taking the light car field by storm. Allen standards permit only the best in materials and equipment - so it is more than a coincidence that Champions are regularly specified as equipment on all Allen cars.



CHAMPION SPARK PLUG CO, 1411 UPTON AVE, TOLEDO, OHIO.

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Stewart

Motor Driven Warning Signal

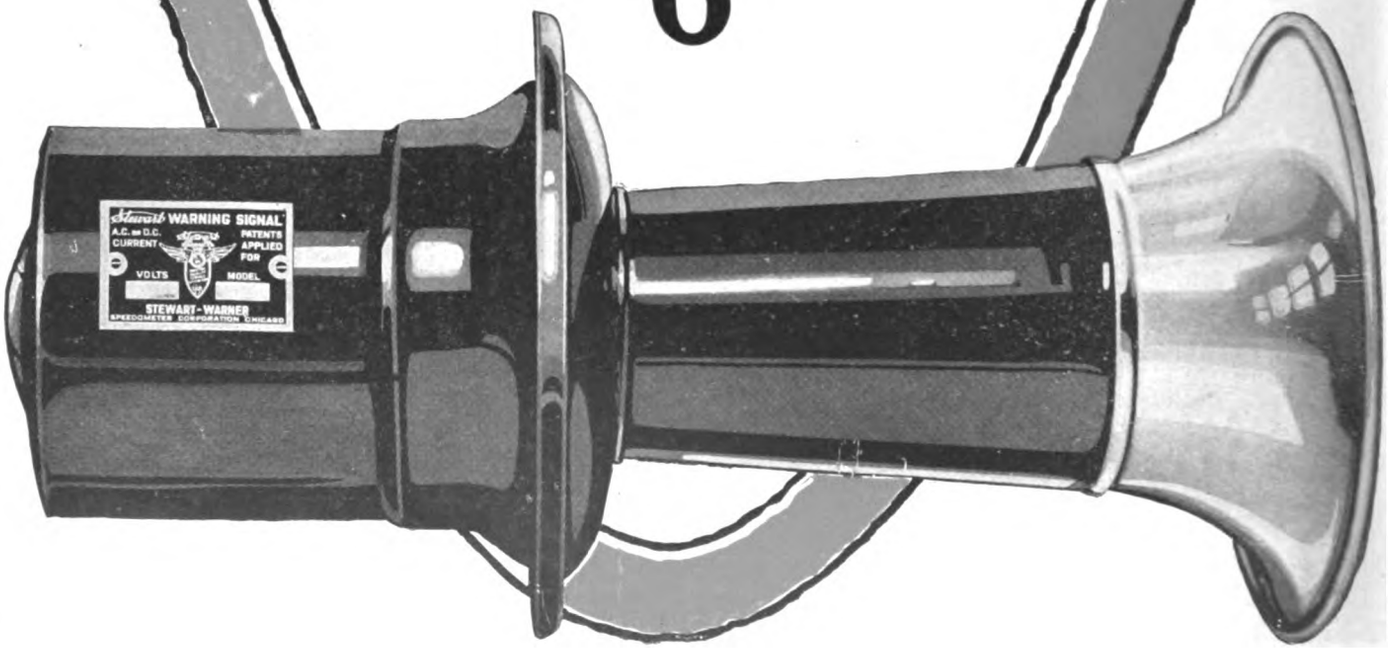
Which Is Safest?

A Stewart Warning Signal is an asset on any car—
The lack of it a liability.
Which class do you think best—which safest?

"No car is better than its accessories"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

$6



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Automobile Springs Are Designed to Meet the Requirements of a Maximum Load



Thus it is that a seven-passenger car rides best with seven passengers and a five-passenger best with five. When the load is less than capacity, the car, lacking the weight necessary to hold it down and steady it, "kicks up," even though the road be smooth.

Yet how seldom either of these two kinds of car carries a full load!

Again, many a roadster, of but two-passenger capacity, has seven or five-passenger chassis and springs and is bound to "kick up" and bounce because its load is always too light to hold it down and steady it.

In these and other instances the

*Hartford SHOCK ABSORBER

affords the requisite control over spring action to prevent the "kick up," to keep the wheels from bouncing, to so materially improve the riding qualities of a car that those who ride in it are impressed by the fact that the HARTFORD is the one shock absorber that **really**



Makes Every Road a Boulevard

Whether you ride light or heavy and wherever you ride, comfort will attend you if your car is Hartford-equipped.

Try a set thoroughly. Satisfaction or money back.

EDWARD V. HARTFORD, Inc.

Heretofore Known as Hartford Suspension Co.
142 Morgan St., Jersey City, N. J.

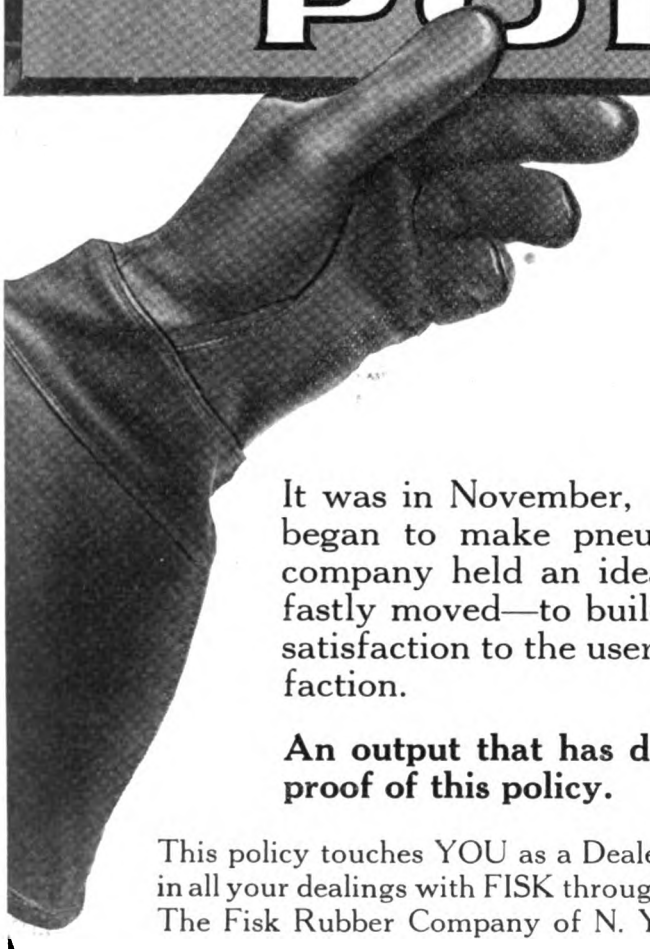
Makers of the Hartford Shock Absorber, Hartford Cushion Spring, E. V. Hartford Electric Brake, Hartford Auto Jack, Hartford Bump Absorber, Red Rack Jack.

Branches: New York, 1846 Broadway and 212-214 W. 88th St.; Boston, 319-325 Columbus Ave.; Chicago, 2637 Michigan Ave.

Distributors in principal cities. Dealers everywhere.

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FISK POLICY



THE BUSINESS which eagerly wants to give a man a square deal always wins, because its very growth rests on the thing every man demands ***—a fair show.***

It was in November, 1898, that The Fisk Rubber Company began to make pneumatic tires. From the very first the company held an ideal towards which it has always steadfastly moved—to build a product that would give the utmost satisfaction to the user and to see that the user got that satisfaction.

An output that has doubled every year for five years is the proof of this policy.

This policy touches YOU as a Dealer in all your dealings with FISK through The Fisk Rubber Company of N. Y.

The wonderful Fisk Branch System, now comprising more than 125 Branches, is the outgrowth of this policy. It places near you a fully equipped unit of The Fisk Rubber Company itself, so you can get, with the shortest possible delay, anything The Fisk Rubber Company makes that your customer wants.

It helps you to do business quickly and profitably.

The Fisk Rubber Company wants every man who buys anything from it to be sure he has had a square deal.

If interested, Write to Dept. 23 for the Fisk Dealer Plan

THE FISK RUBBER COMPANY

of N. Y.

Chicopee Falls **Mass.**

Fisk Branches in All Principal Cities



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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

Tractor Accessories.....6-8
The implement dealer is passing up good business in tractor accessories, while the car dealer and garageman are getting it because they are equipped.

The St. Louis Tractor Demonstration.....8-9
Manufacturers are rapidly signing up dealers in farm tractors.

The Fremont Demonstration..... 43
This page also contains other news pertaining to the tractor demonstrations, including the début of the long-awaited Ford tractor.

When I Hire a Salesman.....12-14
The principles laid down by Hugh Chalmers for the hiring of men and explained by him before the World's Salesmanship Congress.

South America and the U. S. A. Car.....15-17
The southern republics are taking up with American cars but there is a great need for American salesmanship.

Make the Prospect's Mind Help You.....10-11
A study of the mind of the prospect before beginning any sales work will furnish a foundation for a sale and make progress easier.

New 1917 Cars—
Roamer 36
Stutz 20-21
Velie 35
Willys-Knight 33-34

Bidwell "Gets in Bad"..... 42
The promoter of numerous "motor leagues" is denied the use of the mails by U. S. government.

Association News 40
Pullman Dealers' Convention..... 41
News Pages.....37-46
Gasoline Prices..... 36
Massachusetts Trade Defeats Bad Laws..... 38
Factory News 45
Query Department.....18-19
Accessories and Supplies.....22-23
Repairshop Short-Cuts.....24-25
Broken Tractor Promises..... 26
Legal Department..... 27
Building Construction.....28-29

Advertisers' Index on pages 106-107



Within the Law

The roads are full of perils waiting to call the unsuspecting automobilist to court, which is a most inconvenient occurrence, because it breaks in so much on one's plans.

The man who speeds with premeditation knows the chance he is taking and is willing to run it gamely, but the man who speeds and doesn't know it not only loses that thrill which comes with the knowledge of breaking the law, but is also fined as much as if he did.

Keep within the law by equipping your car with a

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

We say Corbin-Brown advisedly, because if you carry a speedometer equipment it is well to carry the best. In this matter accuracy is the first consideration, not approximate accuracy, but absolute unerring accuracy. And because of its special construction and numerous exclusive features the Corbin-Brown is qualified to give you this sort of a record as no other speedometer on the market is. In all seasons, under any condition, what the Corbin-Brown says can be believed. And remember, it is a durable, practical instrument, built for the roads.

Investigate today. Catalog on request.

The Corbin Screw Corporation

THE AMERICAN HARDWARE CORPORATION, Successors
NEW BRITAIN, CONN.

BRANCHES: New York Chicago Philadelphia

Makers of Corbin Duplex Coaster Brakes for Bicycles

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A Fivefold Increase in Overland Business for Dayton, Ohio

The Overland dealer in Dayton, Ohio, sold 250 Overlands in 1912.

Each succeeding order showed an increase.

And during the year ending June 30th, 1916, Dayton shipments totaled almost 1400 cars.

More than a fivefold increase in business in four short years—and more than a fivefold increase in profits.

Overland popularity will build business for *any live dealer*

"Made in U. S. A."

The Willys-Overland Co.

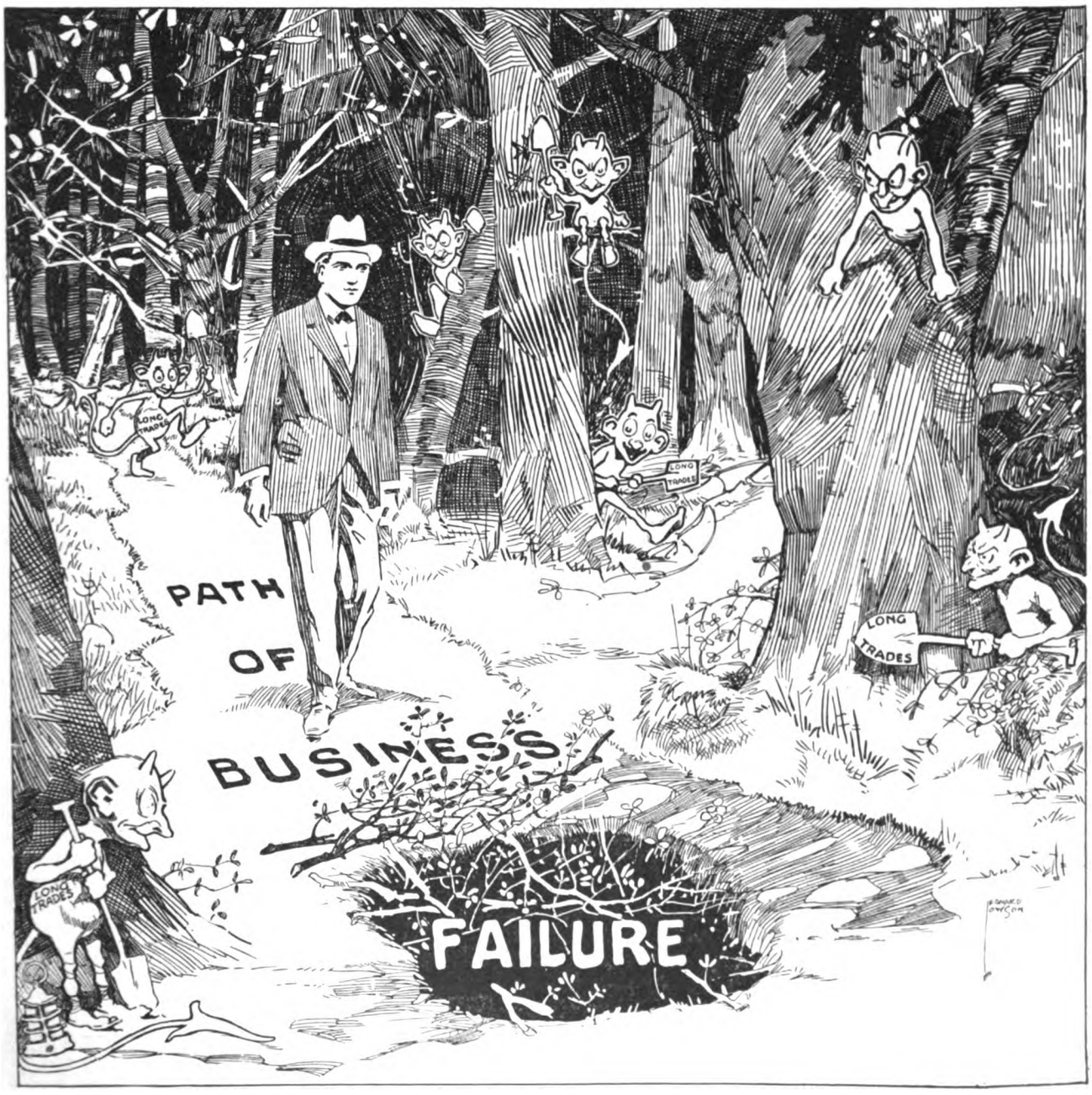
Toledo Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII New York, U. S. A., Wednesday, August 9, 1916 No. 6

Those Little Devils!



Old fairy tales tell of little devils that pull at one's clothes, dig holes in the path and cover them with brush, and perform all sorts of mean tricks. The motor business is just full of little devils and the meanest are "long trades."

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THE STORY OF

DOLLARS LOST

by the Implement Dealer—Who Sleeps—While the Car Dealer and Garageman is Awake to the Big Opportunity That Lies in

TRACTOR ACCESSORIES

HOW IT IS DONE

Time: To-day.

Characters: Implement dealer. Tractor owner.

Enter tractor owner through wide-open doors. Side-stepping plows, spring-tooth harrows, disks and hay rakes, he approaches small desk at rear of store.

Implement man seated behind desk, large cigar in his mouth and feet on desk.

Implement dealer—removing feet and cigar: "Good morning; anything I can do for you?"

Tractor owner: "Yes, I want a couple of spark plugs and some terminals."

Implement dealer: "We don't stock those things, friend. Sorry. Might try the gar-age couple doors down street, though. They generally have them gimcracks."

Exit Tractor owner.

Curtain.

By Stanley P. McMinn
(Motor World Staff Representative with the Tractor Circuit)

THEN the Implement Dealer rocks himself back on the hind legs of his chair and says to himself: "Humph, wonder if I'm going to get any of that trade?"

Now, doesn't that sound altogether too ridiculous for words? It's hard to believe, isn't it?

But it is true—every word of it is Gospel truth. You, gentle reader—as the story books say—you go into any implement dealer's in Texas or Kansas or Missouri, and, I dare say, in any other State where tractors are sold, and you will hear exactly the same thing. You will hear the loud snores of the implement dealer as he sleeps peacefully on and on in spite of the ear-splitting din that is being made by the farm tractor wherever earth is turned.

Implement Dealer Asleep

As far as the implement dealer is concerned, he is absolutely dead to the world when it comes to stocking farm tractor accessories, let alone *selling* them.

Now let us follow Mr. Tractor Owner into the garage "couple of doors down street."

THIS is the third of a series of stories on the National Farm Tractor Demonstrations written by one of Motor World's staff men, who is on the field. Others will appear in following issues, analyzing conditions, describing the demonstrations and pointing out the probable future.

Has the garageman any spark plugs? He has. Has he ⅞ long? He has. Does he sell the Tractor Owner three? He does. And does he also sell Mr. Tractor Owner terminals for his high-tension cables? He does.

And does he get hard, cold cash for them? He does.

Let us analyze this situation: Why does the Tractor Owner find it necessary to go to the garageman for his accessories? Why has the garageman got those accessories to sell him?

Why Is He Asleep?

The answer to the first question is simple and already has been given, to wit: the garageman is awake—the implement dealer is asleep. But hold on, that brings up another question: "Why is the implement dealer asleep?"

No One to Wake Him

He is asleep because no one has ever thought to wake him up. It has taken the implement trade years and years to wake up to the fact that the business they are doing can be done on a cash basis. The automobile taught the implement dealer that. Here was farmer Jones driving into town in his old spring wagon and giving the automobile dealer real money—not promises—for a motor car. And the next minute here was farmer Jones driving his new car around to the implement dealer and buying a new plow or a binder or a harrow and giving him, *not* real money, *but* promises.

The implement dealer simply sat up for a minute, looked over the shiny new car, and said, "Hell, there ain't no such animal. I've been dealing with farmer Jones for nigh onto 30 year and he never paid cash yet for anything, and I don't believe he paid cash for the car."

But one or two of those implement dealers were not satisfied to disbelieve themselves. They investigated. They

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The demonstration last week at St. Louis was under conditions similar to those existing in Dallas and Hutchinson. The iron horses proved their worth to interested farmers and dealers

found out that farmer Jones really had paid cash for the car—that he couldn't get the car any other way. And you'd better believe that the awakening was a rude one. Why even the automobile dealers are selling plows for cash now—but, as Kipling says, that is another story.

But to get back to accessories:

Some few—very few—jobbers of motor car accessories have seen the light and are urging that their dealers make a play for the tractor accessory business. But their number is woefully small—and yet it is tremendous as compared with the number of farm implement jobbers who have even seen the possibilities of this trade.

Implement Jobbers Snore, Too

During the past 3 weeks I have talked with implement jobbers in Dallas, in Oklahoma City, in Wichita, one of the biggest jobbing centers for farm tools; in Kansas City, and in St. Louis.

Not a single one is ready to supply the demand for tractor accessories. Some of them admit that they have "thought about it," but none has gone any further than thinking.

And the most startling feature of the whole matter is that these same implement jobbers are frank to admit that unless the implement dealer does wake up and prepare to give the tractor owner what he wants in the way of accessories, he (the implement dealer) is going to lose the tractor business.

Lack of Standardization

The implement jobber, so far as I have been able to ascertain, has only one excuse to offer for failing to stock tractor accessories and pass them along to his dealers.

"Lack of standardization," he says, almost in a whisper. "We're looking around, feeling around, and just as soon as we find out what is wanted we are going in on it. But now? No, it's too soon yet."

"Spark plugs are standard," I said, "and so are grease cups and tools and——"

"Well, I guess we'll wait a while yet," he answers, and starts to dictate a letter.

In the Meantime—

In the meantime what is going on in the tractor accessory field? Who is going to get this plum? Assuredly the implement dealer won't get it if he waits for the implement jobber to prod him into wakefulness. The garageman will get a certain amount of it; and the manufacturer of the tractor will get the lion's share.

The reason for this is that the man who purchases a tractor has been trained to go to the manufacturer of the tractor, or to one of the manufacturer's branch houses, for everything he wants from a spare wheel to a spark plug. It may mean a whole lot to farmer Jones to have a spark plug to-day—right now—but his mind does not work along these channels. His training makes him write the tractor manufacturer for the plug and in the course of a few days or a week, maybe, the plug comes along. That is, one plug will come along, because farmer Jones only ordered one plug.

If farmer Jones had happened to be in town and had happened to go to his garage for gasoline and had happened to remember that he needed a spark plug for his tractor, the garageman might have sold him one—provided farmer Jones had up and asked right out for it, like that.

Trade for the Asking

Would the garageman have asked farmer Jones: "How's the new tractor working to-day? Need some spark plugs?" He might. He might, because he has a germ of merchandising in him. But the implement dealer would not, because *he* has been trained to wait until a farmer asks for something before he attempts to sell it. *The urge of cash on delivery is not behind the implement dealer.* If he sells the plugs he knows they will jolly well go on the farmer's account, and maybe they will be paid for this fall, and maybe they won't be paid for until next fall. So he is kind of shy in asking the farmer to buy anything.

And then, again, the garageman may not have asked farmer Jones if he needed any plugs. I say, he may not have asked him. And I greatly fear that many garagemen are not asking this all-important question. I have called on dozens of

Here Are

some accessories the tractor owner needs and all of which the car dealer and garagemen can sell him:

Asbestos packing	*Ignition switches*
Babbitt metal	*Ignition terminals*
Battery connectors	*Ignition wire*
Battery testers	*Lamps*
Bearings	*Magnetos*
Bearing bronze	*Nuts and bolts*
Brake lining	*Oil cans*
Carbureters	*Oil cups*
Copper tubing	*Oil and grease*
Cotter pins	*Pet cocks*
Cotton waste	*Piston rings*
Differentials	*Plug gaskets*
Dry batteries	*Plug porcelains*
Fan belting	*Plug wrenches*
Felt washers	*Shim metal*
Folding buckets	*Spark coils*
Funnels	*Spark plugs*
Gaskets	*Taps and dies*
Gears	*Tools*
Goggles	*Tube coupling*
Graphite	*Valves*
Grease cups	*Water hose*
Hose connectors	*Whitney keys*

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garagemen in the Southwest and with but very few exceptions they admit that they do not *try* to sell tractor accessories to the farmer. What they do is wait until the farmer comes in and asks for what he wants. It is no credit to the garageman that he is able to give the farmer what he wants.

In nine cases out of the proverbial ten, the garageman has right on his shelves exactly what the tractor owner wants.

Has the Stuff, But—

And still he is not making a great enough attempt to connect with the tractor owner. Does he ask the tractor owner if he needs plugs or wire or fan belting or grease cups or oil or tools or carbureter or magneto when he comes in? No!

Does he send out a neat circular letter occasionally to tractor owning farmers in his vicinity, drawing attention to his stock of accessories and tools? No!

Does he advertise that he is prepared to fill the needs of tractor men? No!

What does he do to get this tractor business? Nothing!

All he does is to have the goods on his shelves. And it is only because he doesn't do any of these things that the farmer is continuing to go right back to the tractor manufacturer or the manufacturer's branch for the things that he ought to get from the garageman or the accessory store. He knows he can't get accessories from the implement dealer, for hasn't the implement dealer told him this time and again?

Where Do the Jobbers Stand?

Now, then, where do the accessory jobbers stand in this muddle? "Ah!" you say; "here is the man who ought to be on his toes, pushing this business; here is a man with vision, with imagination; here is a man who sees thousands of tractors going into the territory controlled by his dealers and who is urging his travelers to pass along the good word, to prod the garageman and the supply store into a realization of this golden opportunity."

But is he all of these things? Sometimes, and then, again, sometimes not. As a matter of cold fact, few accessory jobbers really have this gift of imagination. Few of them have visualized this opportunity.

"Just a minute," you say. "Is this a golden opportunity? How many millions of dollars' worth of accessories will these tractor owners use, anyway, and are we not making a lot of noise over what is really a piker's business?"

It is true that the tractor owners of the United States will not buy many million dollars' worth of accessories this year, nor, perhaps, next year. But that, after all, is beside the issue, for we are not manufacturing new things for the tractor; we are not stocking up with a new line of accessories. *What we are trying to do is to increase our sales of the standard, staple articles that are already on our shelves.* That's the point.

Six Magnetos in a Week

Here's a case in point: One accessory jobber in Kansas City told me last week that in 1 week he had shipped out six standard Bosch magnetos for replacement on tractors. Here's another: A piston ring manufacturer informs me that since the first of the year he has increased his sales of tractor size rings 500 per cent, and all of this business was for replacements. Another told me that within a few weeks he had sold several standard carbureters for replacement on tractors. These are all actual occurrences. Another big jobber in Kansas City tells me that in 1 day three of his garagemen customers came to him to get accessories for use on tractors. The jobber took these off his shelves and the dealer took the profit.

And yet this jobber—one of the most successful in Kansas City—has not attempted yet to make a drive for this business.

I said to him: "If all your travelers were instructed to point out to your garageman and supply house customers the possibilities of selling accessories for tractors and to urge them to make a play for this business, would it help sales any?"

"Undoubtedly it would," he answered.

This One Is Awake

Another jobber, close by, states that his travelers have been instructed almost exactly along these lines. And another will this fall have a special section in his catalog devoted exclusively to accessories for the tractor. And these will be accessories that are for any car on the market as well. Get that!

And why not? From the radiator clear back to the transmission gearing, the average tractor is like the average motor car. The cylinders may be lying on their sides, but they still use one spark plug in each. And there is more ignition wiring on the average tractor than there ever was on a motor car. In some few cases it may be necessary to have special sizes of accessories, such, for example, as grease cups, but these cases are few and far between.

Mostly Replacement Business

As I have already pointed out in a previous article, there is not a great deal of replacement in the tractor field because of breakage. Tractors are big and heavy and are built to stand the gaff, and they do not often go bad because of breakage. But they do wear out, and some of them wear out at a rate that is astonishing when you think of a pleasure car and not at all astonishing when you think of the work they must do and the conditions under which they must do that work.

Just as one case in point, piston rings might be mentioned. These are vital to the operation of the tractor. Yet more than one tractor maker has told me that where no air cleaner is used and the dust is bad, as it frequently is, a set of rings will be worn down knife-edge thin in 6 weeks.

Will the tractor owner go to the tractor maker for a new set of rings, or will he go to his garageman or his supply house for them?

He prefers to go to the garageman, because he can get them more quickly. And he will go to the garageman or the supply house if he knows he can get them there.

It is up to the garageman and the supply house to let him know it.

Tractor Makers Still Getting Dealers

Demonstrations That Preceded St. Louis Have Been Seed That Develops into Distributing Contracts

By Stanley P. McMinn

ST. LOUIS, Aug. 4—With fifty-four tractors plowing Missouri soil, the third of the series of eight National Tractor Demonstrations was formally opened here on Tuesday morning in much the same manner as those at Dallas and Hutchinson. Tractor manufacturers and dealers, however, are not as optimistic regarding results to be obtained as they were at the two previous demonstrations. In this respect, however, it is pertinent to point out that these great tractor shows are far different from motor car shows. Contracts seldom are signed on the spot, and for this reason it must necessarily be some time before the real good that has been done can be checked up.

For example, the Moline Plow Co. has but recently closed up some fifteen dealers as a result of the Hutchinson demonstration last week. And every one of these was for from three to twenty-five machines. Again, the C. O. D. Tractor Co. has just closed with the Western Farm Tractor & Supply Co. for the entire State of Kansas. The Wallis Tractor Co. has signed up with Piffer Bros., Denver, to handle the State of Colorado as a distributer. This company took an initial order of 100 machines and will pay cash for them.

Cash Is the Feature

This cash proposition, by the way, is rapidly becoming the feature of the

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demonstrations. The newer companies in the tractor field, those that center all their activities upon the production of tractors and make no other farm implements, are invariably making contracts which call for cash on delivery. And even the old-line implement manufacturers are now coming around to this way of doing business. Some have been conducting business in this way during only the past year and others are taking the step now for the first time. They reason rightly that if the farmer is willing and anxious to pay cash for his automobile, and if the newer member of the tractor family can extract cash from the distributer and the ultimate owner, there is no reason why they, too, should not do so.

Another significant feature is that the tendency for the tractor manufacturer to favor the motor car dealer and the garageman as a dealer is growing more marked as the demonstrations progress. Furthermore, few companies are making contracts unless the dealer actually purchases a machine. Only a short time ago all this was different. Tractor makers were glad to give a slice of territory to almost anyone who was willing to sign a contract and agree to talk tractor to a farmer who might saunter in and inquire. Now, however, the tractor manufacturer expects the dealer to buy a tractor, to display it in his place of business and *to go out after the tractor business.*

This, in brief, seems the real reason why the tractor maker prefers the automobile man to the implement man when the automobile man shows any spitzerinktum at all. The motor car dealer always has a demonstrator. And he always is going out after the business. His method is in vivid contrast to that of the implement dealer, who, though he may have a stock of implements on his floor, *remains in the store and waits for the farmer to come and buy.*

Ousting the Implement Dealer

The implement dealer still is the principal factor in the distribution of farm tractors, but if these national demonstrations furnish a light that does not fail, the motor car dealer and the garageman will soon oust him from his position.

But what about the State of Missouri in particular? The foregoing statements apply with perhaps greatest force right here. Missouri is not what may be termed a great agricultural State—that is, judging by Minnesota and Iowa and the Dakotas, and even Texas and Kansas. Here we have no great areas to be broken, such as there are in Texas, for example. Nor do we have the extreme climatic conditions that make the Texas farmer's life a burden and kill off his horseflesh.

Missouri is essentially a State of moderately small farms. All told, according to the latest available figures, there are some 277,244 separate farms in the State. The average size per farm has been computed to be about 125 acres, and the average value per farm is in the neighborhood of $7,400.

Small Tractor Is Needed

It is peculiarly a condition in Missouri that a great many of these farms are just slightly too large for one man to work, yet they are not sufficiently profitable to warrant the employment of help. It is expected that the small tractor will be of inestimable value because of these conditions and because it will then permit one man to work his farm, to get better crops from it and larger profits. Whether he will get larger crops is problematical. Statistics do not show that a man who purchases a tractor gets larger crops from his land, though they do show that when a man purchases a tractor he generally increases his land holdings. But figures almost invariably show that the tractor improves the quality of the yield and so increases the farmer's profit.

Another important bearing which the tractor will have in Missouri, because of what you may term the uneconomic size of farms in general, is that it will permit the work on these farms to be done at just the proper time. Where a man has a farm that is slightly too large for him to handle himself, or is, perhaps, just about as large as he can handle, weather conditions often will make it necessary for him to delay putting in his crops at the proper time. Some of the crop will be too early for the normal market and some of it will be too late. The result often is a dead loss of several hundred dollars. The tractor will save this, because all the work can be done at the proper time.

For the most part, Missouri is rolling, and in some places quite hilly, and for this reason and for the reasons cited above it is particularly suitable for the use of the small and moderate-sized tractors—machines pulling two, three and four bottoms. On the larger farms in the northern part of the State there is a ready market for the larger sizes of machines, though the market is necessarily limited.

Corn Is the Big Crop

Corn is the big crop in Missouri, with blue grass second and stock raising third. This year it is estimated the State will market about 200,000,000 bushels of corn. This week there has been heavy rain through the corn belt and it has come at the proper time. In a great many cases corn has been put in late and rain at this time will insure a nearly normal crop.

The demonstration here has not been as well attended as have previous demonstrations, but there are several reasons for this. The first is that most farmers are busy at this time getting their corn in. This was put in late and now is being

(*Continued on Page* 43)

Tractor Manufacturers Plowing at St. Louis

Advance-Rumely Mach. Co., La Porte, Ind.—12-24, gasoline, drawing 3 Rumely moldboards; 15-30, kerosene, drawing 4 Rumely moldboards.

Albaugh-Dover Co., Chicago—15-25, gasoline, drawing 3 Oliver moldboards.

Allis-Chalmers Co., Milwaukee—10-18, gasoline, drawing 2 moldboards.

Aultman-Taylor Co., Mansfield, Ohio—18-36, kerosene, drawing 6 moldboards.

Avery Co., Peoria—5-10, gasoline, drawing 2 12-in. Grand Detour moldboards; 8-16, kerosene, drawing 2 Grand Detour moldboards; 12-25, kerosene, drawing 3 John Deere moldboards; 18-36, kerosene, drawing 4 Grand Detour moldboards; 25-50, kerosene, drawing 5 Avery moldboards.

Avery & Sons, B. F., Louisville—10-20, gasoline, drawing 2 Avery moldboards.

Bull Tractor Co., Minneapolis—10-25, gasoline, drawing 2 Vulcan moldboards.

C. O. D. Tractor Co., Minneapolis—13-25, kerosene, drawing 3 Oliver moldboards.

Dayton-Dick Co., Quincy, Ill.—25-40, gasoline, drawing 5 John Deere moldboards; 12-28, gasoline, drawing 3 John Deere moldboards.

Denning Tractor Co., Cedar Rapids—10-18, kerosene, drawing 2 John Deere moldboards.

Electric Wheel Co., Quincy, Ill.—12-25, kerosene, drawing 3 P. & O. moldboards.

Emerson-Brantingham Co., Rockford—20-35, Model D, kerosene, drawing 5 moldboards; 12-20, Model L, kerosene, drawing 3 moldboards.

Ford Tractor Sales Co., Minneapolis—8-16, gasoline, drawing 2 Grand Detour moldboards.

Happy Farmer Co., Minneapolis—8-16, gasoline, drawing 2 La Crosse moldboards.

Hoke Tractor Co., South Bend—11-22, gasoline, drawing 2 Hoke moldboards.

Holt Mfg. Co., Peoria—45, gasoline, drawing 6 La Crosse moldboards; 90, gasoline, drawing 12 John Deere moldboards.

International Harvester Co., Chicago—8-16, Mogul, kerosene, drawing 2 Oliver moldboards; 10-20, Titan, kerosene, drawing 3 Grand Detour moldboards; 12-25, Mogul, kerosene, drawing 4 John Deere moldboards; 15-30, kerosene, drawing 4 P. & O. moldboards; 12-25, Mogul, kerosene, drawing 3 Weber wagons; 8-16, Mogul, kerosene, drawing Low Corn King manure spreader; 10-20, Titan, kerosene, drawing disk harrow with tandem attachments and peg section; 8-16, Mogul, kerosene, drawing 1 Hoosier and 1 Kentucky drill.

J. I. Case T. M. Co., Racine—9-18, gasoline, drawing 2 Grand Detour moldboards; 10-20, kerosene, drawing 3 Grand Detour moldboards; 12, kerosene, drawing 4 Old Abe moldboards.

Joliet Oil Tractor Co., Joliet—15-30, kerosene, drawing 3 Vulcan moldboards.

Kinnard-Haines Co., Minneapolis—15-25, gasoline, drawing 4 P. & O. moldboards.

McIntyre Mfg. Co., Columbus—10-18, gasoline, drawing 2 John Deere moldboards.

Minneapolis Steel & Machinery Co., Minneapolis—15-30, kerosene, drawing a subsoiler; 40-65, kerosene, drawing 10 John Deere moldboards; 25-45, kerosene, drawing 6 John Deere moldboards; 15-30, kerosene, drawing 4 La Crosse moldboards.

Moline Plow Co., Moline—6-12, gasoline, drawing 2 moldboards.

Parrett Tractor Co., Chicago—12-25, gasoline, drawing 3 Vulcan moldboards.

Peoria Tractor Co., Peoria—10-20, kerosene, drawing 3 P. & O. moldboards.

Rock Island Plow Co., Rock Island—10-20, gasoline, drawing 3 Rock Island moldboards.

Russell & Co., Massillon—12-24, kerosene, drawing 3 P. & O. moldboards.

Waite Tractor Co., Elgin—8-16, gasoline, drawing 2 Oliver moldboards.

Wallis Tractor Co., Racine—26-44, kerosene, drawing 4 Case moldboards.

Waterloo Gasoline Engine Co., Waterloo—12-24, kerosene, drawing 3 P. & O. moldboards.

Wolverine Tractor Co., Detroit—17-35, gasoline, drawing 3 Oliver moldboards.

ACCESSORY EXHIBITORS

Efficiency Oil Corp., St. Louis; Cochrane Pipe Wrench Co., Chicago; Domestic Engineering Co., Dayton; F. E. Bausch, St. Louis; Pierce Oil Corp., St. Louis; Vacuum Oil Co., Chicago; Hyatt Roller Bearing Co., Chicago; Sumter Electrical Co., Chicago; McQuay-Norris Mfg. Co., St. Louis; National Refining Co., Cleveland; Buda Co., Harvey, Ill.; Byrne-Kingston Co., Kokomo; Kingston Electric Co., Kokomo.

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Let the Prospect's Mind Work for You



By Ray W. Sherman

"LOOK at these two ads, Reilly," said Tommy Trumbull, the junior salesman, as he held up two pages from the Dealers' National Weekly (Illustration No. 1).

"Look good, don't they?" was the Sennett dealer's comment.

"Yes, they do look good," agreed Tommy, "but there seems to be a lot more spizz in this Overland ad than there is in the Signal ad."

"H'm," mused Reilly. "There is a difference, isn't there?"

"Yes; what is it? There seems to be an underlying principle of some kind. What is it?"

An Underlying Principle

Reilly scanned the two ads—and assembled his thoughts. "Just this," he said, "and it applies to selling, advertising, everyday life, and all our human activities. The Overland ad steps right into the reader's mind with its story and the minute he sees it it appeals to him. The Signal ad doesn't. It may tell just as much, but it is more difficult to get it.

"You see," Reilly continued, "it's like this: You and I have thoughts—all the time. On any subject pertaining to ourselves we have thought a great deal, and whenever we think upon that subject our thoughts are in much the same group, along much the same line.

Illustration No. 1

"Take these two ads, the Overland and the Signal. They are an appeal to the man who is a prospective buyer of a truck. Each advertiser wants to influence the prospect.

"Now—on the subject of delivery wagons, such as the Overland, the prospect has been thinking such thoughts as these: He has been thinking over his delivery problem, and right now hot weather becomes a part of that problem. Whenever he thinks over his delivery problem, he realizes that because the weather is so hot, he is having trouble with his horses and he is delivering a smaller amount of goods with a greater amount of effort.

"Along comes this Overland ad, and the minute he looks at it he is struck by the fact that the ad says the very thing he has been thinking. In other words, the ad is a part of the thoughts he is having regarding his delivery problem. He has thought for weeks perhaps about this delivery problem and has wondered if it could not be solved in some way, and this Overland ad picks his thoughts up at that point and carries him through to the conclusion, which is that the Overland can solve his problem for him.

Cash In On His Thoughts

"All the thoughts the prospect ever has had are taken advantage of by the man who wrote the Overland ad. He takes all the deliberations and study of the prospect through all the weeks and months that have gone before, brings them right down to a peak like the bottom of a funnel, and says 'Overland.'

"Handling the Overland story in this manner makes it exceedingly easy for the prospect to understand; making it difficult for him to understand is illustrated by the Signal ad. The set-up in the Signal and the Overland ads are somewhat similar. Each contains a picture at the top and the headline with the leading thought, after which comes the story of what the vehicle can do.

"But look at the difference in the way the ads begin: The Signal ad begins by saying, 'On the job,' and continues by saying that nothing stronger can be said about any truck. This ad is aimed at contractors and builders who have a need for a heavy vehicle, but the 'On the job' does not fit in with the thoughts of these men on the subject.

"They have thought a great deal on their transportation problems and probably they have been thinking how hot weather affects the horses, how they can't carry such big loads, how they have to dump the wagons by hand, and a whole lot of other things of a similar nature. If the contractor buys a truck he most assuredly wants it to be on the job, but that does not fit in with his thoughts as does the Overland ad.

Fits Prospect's Mind

"One ad gets right over on the prospect's side of the fence and uses almost the very words that the prospect has been thinking, whereas, the prospect must take the words in the Signal ad and by a quite laborious process of reasoning apply them to his business. All of this laborious mental process is eliminated in the Overland type of ad."

Having begun on the subject of ads, Reilly began to turn the leaves of several papers and produced two more, each one advertising brake lining.



Illustration No. 1

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Illustration No. 3

Illustration No. 2

"Take these two brake-lining ads," he continued. "The one by the Raybestos company begins talking to dealers in conspicuous type in words that appeal to them. Every dealer in hilly country has had thoughts regarding the difficulty of performance on hills, and this brake-lining ad talks to him in terms that are impossible not to understand. The dealer has been thinking in terms of hills and the ad begins to talk in terms of hills.

"The Garco ad begins by talking about the quality of its product and its safety, but in order for the dealer to get this story he must begin with thoughts of quality and safety and by his own mental processes bring the ad around and apply it to hilly country and performances on hills. It does not fit in with thoughts that he has had on this subject. Furthermore, the ad is somewhat congested with type and there is nothing that stands out except a policeman, who seems to be shouting, 'Solidly Woven!'

Illustration No. 3

"And here are three more. The G. M. C. truck ad says, 'Make Your Haulage Heatproof!' but that line must be translated by the man who reads it. It is true that he doesn't have to go to a great deal of trouble to translate, but it comes far from having the simplicity that is contained in the beginning of the Overland ad. The story in the G. M. C. ad is much better than the headline, because it talks in plain, every-day English and expresses thoughts that the business man has had.

"This Duplex ad begins by saying, 'The truck of earning efficiency,' but this does not mean much until it is translated, and in order to translate it the man who reads it must perform a mental task, and the ad which requires its reader to perform a mental task is not the most easily grasped. 'Earning Efficiency' is a catchy term, but it is not one that is quickly grasped by the reader. He must stop to think before he can hitch it up to himself and to his business, and it is these himself-and-his-business reasons that lead him into buying the truck.

Picture Tells the Story

"The Studebaker ad is excellent, because it also takes advantage of existing and preceding thoughts on the part of the reader. It is aimed at the dealer. The dealer may have been handling a heavy truck, or perhaps a light truck, of which there was only one model. He may have wondered if there were not a line in which there was variety, and the picture in the Studebaker ad brings up these thoughts again and at the same time gives him the answer. He gets it all at one look. He also sees the numbers, and without there being any other words interposed jumps right down to the names and prices of the cars.

"Whenever you write a sales letter, Tommy, or write an ad or begin a sales story to a prospect, you should always first get over on his side of the question and endeavor to discover what his thoughts have been on the subject. If the man has, by his reasoning, brought himself to the point where he is practically ready to buy a car, and if our car meets his requirements, there is need for very little sales work. All that remains to be done is place the finishing stone on the pyramid of mental processes that he himself has built. You take advantage of the work that the prospect himself has done."

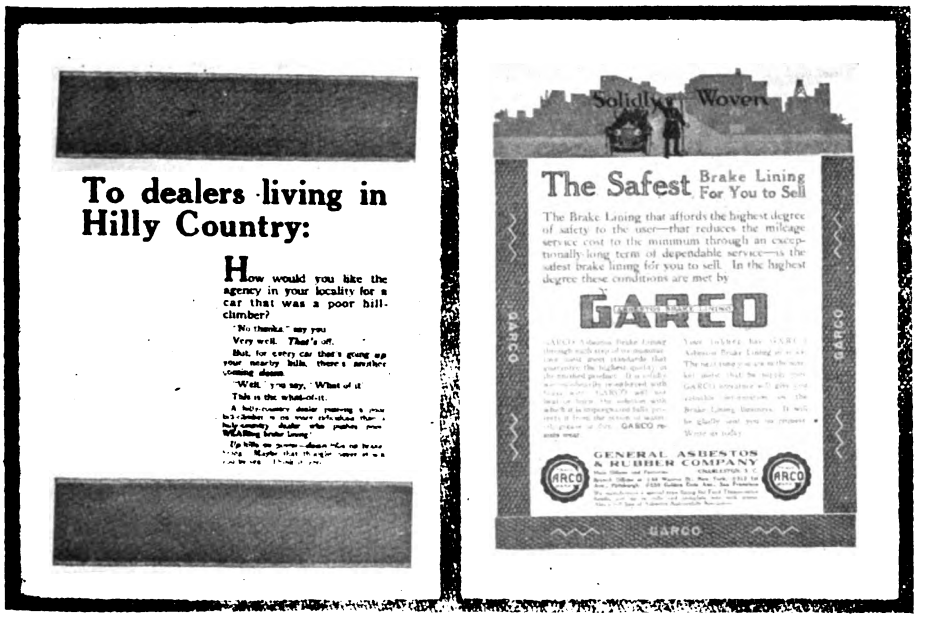


Illustration No. 2

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When I Hire a Salesman

By Hugh Chalmers

I CONSIDER THESE POINTS

1. *The question that I put down as No. 1 on this list is—Can he give a surety company bond? You can dodge this question all you like and make excuse for certain men who cannot give this kind of a bond, but in 99 cases out of 100 there is something wrong with a man who can't give a surety company bond.*

2. *The next thing, has he a reason or an excuse for leaving his last employer? Can he give his last employer as well as his previous employers as references?*

3. *Did he work as a boy, or was he brought up in complete idleness until he was of age?*

Did he learn to overcome obstacles in his youth, or did he begin to tackle the problems of the world as a full grown man?

4. *The next thing, of course, is a perfectly obvious one and may seem like a foolish one, but are his habits good? I don't mean by this is he 100 per cent good, but is he a decent sort of fellow?*

Does he over-indulge in things which he should not?

Would he impress you favorably if he were trying to sell you something instead of applying for a job.

5. *Has he saved any money? If not, why not?*

6. *Can he get to the point quickly, or is he one of those fellows who takes a circuitous route?*

7. *Can he answer objections quickly? Try him out by asking him to tell you three reasons why he thinks he can sell your goods, and in this way test him on his ability to think quickly and to give logical answers to questions when put to him quickly.*

8. *Is he quick-tempered? A little hard to determine this, but as a rule quick-tempered men do not make the best salesmen, because every man weakens himself in the eyes of another when he loses his temper.*

9. *Is his voice pleasing or rasping? A silly question, you may think, but one of great importance to the man who is seeking an opportunity to sell your goods.*

10. *Has he respect for the opinions of others?*

11. *Do his voice and manner impress you as carrying conviction when he makes a point?*

12. *Has he got enthusiasm in his nature? Does he state a thing enthusiastically and is he positive in his statements?*

13. *Can he listen as well as talk? In other words, has he terminal facilities? Does he know when to stop talking? If you don't know what "terminal facilities" mean, ask a railroad man. Men, as well as railroads, require terminal facilities.*

14. *Is he easily discouraged when told he can't have the job or that you don't think he can sell the goods?*

15. *Is he willing to undergo a course of training before he begins to sell goods, or does he think he knows enough about salesmanship to sell anything?*

This story is an address delivered by Hugh Chalmers, president of the Chalmers Motor Co., Detroit, before the World's Salesmanship Congress in Detroit recently. It was one of the most valuable contributions to that aggregation of DEFINITE information upon which the Congress hopes to build the Science of Salesmanship. The address follows:

MOST of us who have things to sell have managed somehow or other to sell these things, but few of us have ever reduced the selling part of our business to the scientific basis that we have the manufacturing or merchandising ends of our business.

We have gone too long on the theory that salesmen were born and not made; that there was no known method of determining whether a man could sell goods or not. We have regarded the whole proposition too much as a game of chance and have selected men at random, principally because they looked to us to be pretty decent sort of fellows and were not marked in any personal way that would affect them in approaching other people.

However, all sensible executives nowadays realize that the matter of selecting salesmen is not wholly a matter of taking a chance. We know that there are more or less definite set rules that can be followed in the employment of salesmen. We realize that we can measure men to some extent as we measure materials; of course not to the mathematical accuracy that we can measure materials, but we do know that we can size up men with reasonable exactness before we employ them.

I have no quarrel with any of the men who have made the teaching of salesmanship a business. I believe that many of them have done a vast amount of good. My only complaint against some of them has been that they have held the subject of salesmanship up in the clouds too much; that they have led people to believe that salesmanship was a thing apart from other things in life and was a thing that had mystery and difficulty about it, and that a man had to have a certain natural aptitude for this kind of teaching before he could be taught to sell goods.

The main reason, I believe, why selling is considered an extremely difficult proposition, is because we are dealing with the intangible. The one great essential needed in selling goods, of course, is brain power in the salesman, and yet the brain in a human being is something that we rarely ever see, and if we do, we see it when it is too late for it to be of use any longer to the person who had it.

It is a fault of the human family that we always fear the thing which we do not see or do not understand. We have

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become accustomed to dealing in the concrete so much that we seem to lose our sense of proportion in measuring our opinion of things that we do not see.

I have been connected with the manufacturing of goods nearly all of my business lifetime, and it took me some time to realize the difference between manufacturing and selling. It finally dawned upon me that the real difference was that in manufacturing you are dealing with tangible things, which you can control almost completely, while in selling you are dealing largely with intangible things, which are very hard to control.

If, for example, you wanted to make water glasses: If you had a model—and of course you can get a model—you could make a million glasses just like one model. Yes, you could make ten million or one hundred million of them, depending wholly upon the size of the factory you wanted to build, the amount of money you wanted to put into equipment, the amount of material you wanted to buy and the number of men you wanted to employ.

The making of these water glasses is a fixed proposition, controlled wholly by yourself, but the number that you make depends entirely upon the number you can sell, and this number is not controlled by yourself, because when we cross the line between manufacturing and selling we pass from the thing which we do control—the number which we can make—to the thing we do not control—the number we can sell. This is what I mean by saying that we deal with concrete things in manufacturing against intangible things in selling.

I believe, however, that we have reached the point now where some of us at least believe that we can exercise a reasonable control in the selection of the men necessary to market our goods, just as we can in the men employed in the making of our goods.

As I said before, I think the first essential thing to do is to take this subject out of the clouds. Let's get it down to earth, where we can debate about it and make a decision about it just as we can about any concrete or tangible thing.

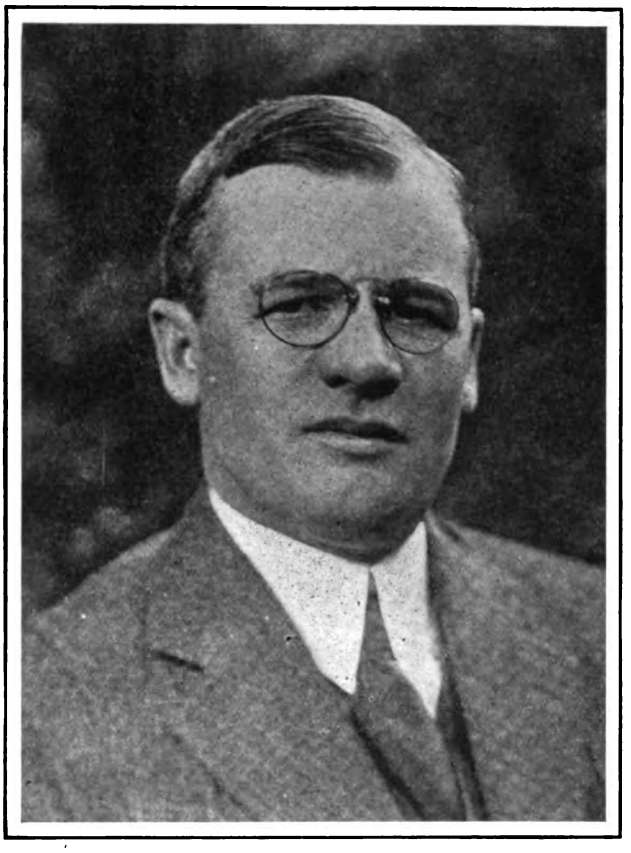
After all, the one great question in the selling of goods is the employment of salesmen. As a matter of fact, you can say in one sentence the one controlling thing about all business, namely—the selection of the right men.

I believe we can formulate some definite plan or a set of rules which can be used successfully by all concerned in the employment of salesmen.

One of the very first things to set down as a rule is that no man should be employed on the first interview. I believe that it is necessary to see a man at least two or three times before you can size him up properly. It is only human for a man applying for a position to put his best foot forward just as it is human for a fellow to put his best foot forward in courting the young lady he wants to be his wife. He naturally wants to make a good impression and he is not entirely natural under these circumstances. If you see a man two or three times—or even five or six times—you are able to size him up in a way that you could not do in one interview.

Then, again, I believe it is a good idea to have more than one man see a man before he is employed. I know some concerns use the method of having a man see two or three of their men, and then these men get together and compare their impressions.

While this is a slower process of employing men and takes more time, yet it has been my experience that time taken at the beginning in the employment of a man is time well spent, because changes are always costly to any concern.



HUGH CHALMERS

Began his career 29 years ago, at the age of 14, as office boy for the National Cash Register Co. and in 13 years became vice-president and general manager. He held this position until he entered the motor car industry in 1907; now president of the Chalmers Motor Co., a $7,000,000 corporation

Another rule I think is that no man should be employed who cannot be as easily fired as he was hired. This refers particularly to the employment of your relatives, your wife's relatives or the sons of friends. It is easy to hire these people, but sometimes almighty hard to fire them!

Personally, I have never taken a great deal of stock in the man who on the first interview pulled out a number of letters of recommendation, because it has been my experience that men who have the greatest number of letters of recommendation usually need the greatest number.

In this matter of giving letters of recommendation, I believe that most business men are more or less moral cowards. When we dismiss a man from our service we don't tell him the truth, because we dislike to hurt his feelings. We adopt the course of least resistance, and we let him down as easy as we can by telling him that business is falling off or we are cutting down expenses, or some other excuse, when we know full well in our own hearts that we are letting the man go because he is incompetent. Then we cap the climax by offering to give him a letter to the whole world, because these letters usually begin with "To Whom It May Concern"—and we give this man a clean certificate for character and ability for the balance of his days. *If we were only more truthful when we discharge a man and would not write untrue statements in letters of recommendation, there would be greater efficiency in the business world to-day.*

I do not believe that as a rule it pays to employ unsuccessful men; men who have not succeeded in their previous occupations. There are, of course, some few exceptions to this rule, but why bother with exceptions? Someone may say that you may be doing a man a great injustice by not giving him another chance even if he has been unsuccessful. I don't think so, because every concern is not willing to adopt such a rule as this, so that the fellow you do not employ because he has been unsuccessful has plenty of chances left to get a job with the men who make no such rule.

I would like to see this Congress in some definite way, either through a committee for the purpose or to be done in this Convention, work out some plan which will be the composite judgment of the Convention on some rules to follow

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in the employment of salesmen. I will give briefly some of the things I have tried to find out in talking with men before employing them as salesmen:

The day has gone by when a man can wholly rely upon his general ability as a salesman to sell anything. I don't care who the salesman is, a course of training in the thing which he has to sell will put him 1 year ahead in his ability to sell the goods.

I am a great believer in the systematic and careful training of men. I have no patience with the man who says you can't talk to any two men alike, because this is simply his way of saying his methods are better than any other.

While it is true that in selling goods you don't talk to any two or three men in exactly the same way, yet you must have as a foundation for your salesmanship the same general fund of knowledge for one man as you would have for another.

I believe that any article to be sold can be shown and demonstrated to everybody in about the same way. For the same reason that if I should ask one of you men how much 11 × 9 amounted to, you would not go over the entire multiplication table to tell me, but you certainly would have to know the multiplication table before you could tell me. That is my theory of the training of men. They don't go over all they know in answering any specific question, but they have to have a great general fund of knowledge about the thing they sell to intelligently answer any question that may be asked of them.

It is not my purpose in this talk to go into the matter of training schools to any extent, because I know that there are others on the program who are going to do this, but I cannot help saying these few words on this subject because I consider it second only to the selection of salesmen.

It has been my experience, and probably yours, too, that the railroads, hotels, restaurants, taxicab drivers and others charge just as much for incompetent or untrained salesmen as they do for those who are efficient and well trained. If you put a man on the road or put a man behind the counter, it costs you just about as much whether he knows or does not know his business.

This being the case, I cannot understand why so many people are willing to put up with incompetency and with mediocrity when the establishment of a training school and the proper teaching of all their salespeople would bring about an immediate improvement in ther business.

And, gentlemen, the very first thing I would teach in any school would be the necessity for courtesy. The great prevailing fault among American salesmen and saleswomen is the fault of discourtesy. Deny it if you wish, but a thorough test will convince you of its existence. Allow me to lay stress upon this for a moment, because it is so important in all branches of business and in the walks of life. Courtesy costs nothing and yet it pays bigger dividends to the man or woman who possesses it than any other requisite they have.

I sincerely hope that every one of us attending this meeting will get some real practical benefit from it, and that we will be able to go away from here with many new ideas and many more sensible ideas on this subject of "SALESMANSHIP" than we ever possessed before, but whatever benefits we receive will depend upon our doing these things and not merely talking about them. In other words, it is not what we hear at this Convention that will count—it is what we will take home with us, remember, and use!

Knapp Wins Chandler Prize

ST. LOUIS, Aug. 7—Louis Knapp of the Lewis Automobile Co. has won a prize of $100 for selling the most Chandler cars during July. The prize was offered by J. P. Perry Lewis, president of the company, who wanted to see if July business, often dull in St. Louis, could not be kept up to the standard of spring months. Six salesmen participated in the contest. Knapp sold six cars.

Thirty-two Pike's Peak Entries

DENVER, Aug. 5—At 5 o'clock this afternoon, seven hours before the official closing time for entering cars in the first annual Pike's Peak hill-climb next Friday and Saturday, Aug. 11 and 12, there were thirty-two cars entered to compete for the $1,200 Penrose trophy and the $4,800 in cash prizes offered by the Pike's Peak Auto Highway Company, owner of this famous cloudland race course. The entries represent twenty makes of cars, all specials, and the list of drivers includes names known throughout the motoring world.

Ford Made 533,921 in 1916

DETROIT, Aug. 7—The Ford Motor Co. made 533,921 Fords during its 1916 fiscal year, which ended July 31. The daily average production was 1816 cars for 294 actual working days, or nearly 800 more cars per day than during the 1915 season.

St. Louis Hupp and Velie Dealers See New Cars

ST. LOUIS, Aug. 7—One hundred Hupmobile dealers met in St. Louis Wednesday for an all-day study of the Hupmobiles at the warerooms of the Weber Implement & Automobile Co., Hupmobile distributers in this district. Experts went over the machines for the dealers, noting changes and answering the scores of questions that the dealers brought up.

At a dinner in the evening at Cafferata's outdoor dining room, Lee Anderson, commercial manager of the Hupp Motor Car Co., told the dealers that the four-cylinder car was ideal and that the Hupp company would continue building them.

He also told of the Hupmobile that will soon start from Washington to visit every State capital and every city in the country of more than 50,000 people.

George Weber, head of the local distributing company, presided at the dinner, and Camden Case, attorney, and R. E. Lee, secretary, of the Automobile Manufacturers' and Dealers' Association of St. Louis, were the other speakers. All visitors got a glimpse of the tractor show during their stay in St. Louis.

The annual dinner and get-together meeting of the Velie dealers was held Wednesday at the warerooms of the Velie Automobile Co., 3021-23 Locust Street. President H. L. Schnure presided and was assisted by J. B. Howard, Missouri sales representative; S. R. Jones, Illinois sales representative, and W. L. Hausman, office manager. The plans for the next year were gone over fully with the dealers and a luncheon at the City Club followed. After that a visit was made to the tractor show.

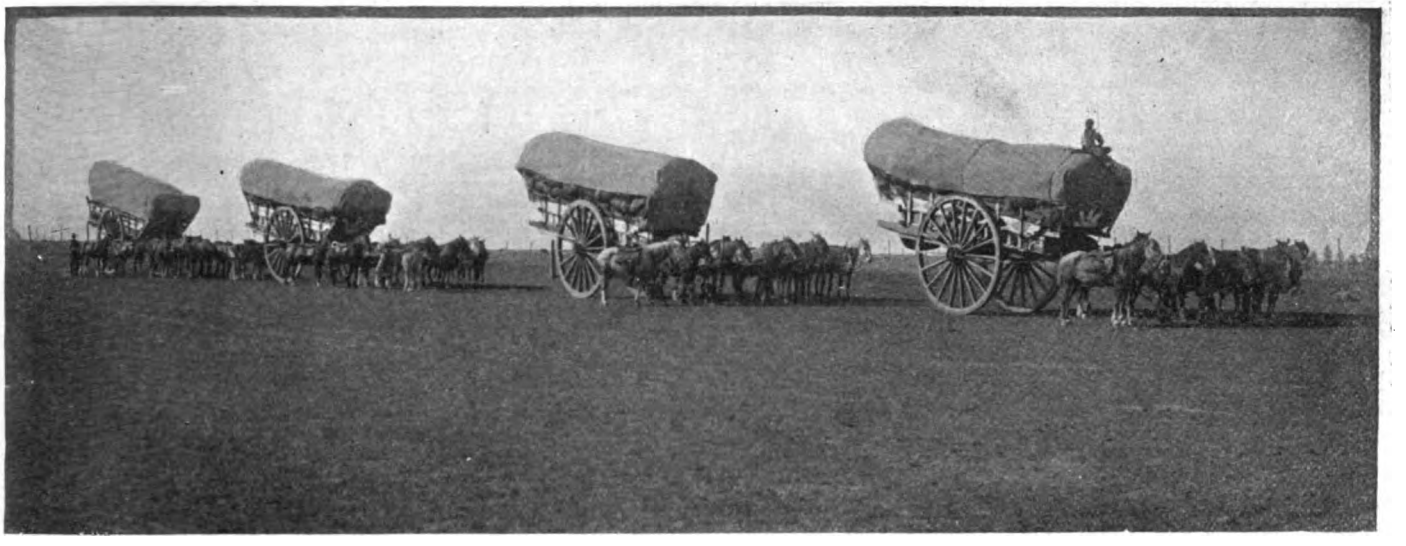
Stromberg Refinancing Completed

CHICAGO, Aug. 8—Plans for the financial expansion of the Stromberg company were completed last week in New York. As reported 2 weeks ago, the Stromberg Motor Devices Co., Chicago, with a capital of $50,000, has been taken over by the Stromberg Carbureter Co. of America, recently incorporated in New York at $5,000,000. The directors of the new company are: Charles A. Brown, Charles W. Stiger and William L. O'Neill of Chicago, H. E. Gunnison, C. L. Saylor and Allan A. Ryan of New York, and Harry E. Stutz of Indianapolis. Stiger, president of the old company, becomes president of the new one. The officers remain as before, except that Ryan replaces Carleson as treasurer. There will be no change in the policies of the company. The factory capacity is being doubled.

King Dealer in High-Gear Test

DETROIT, Aug. 5—A King eight has just finished a high-gear trip from Providence, R. I., to Detroit and back, the total distance covered being 1800 miles. This performance was made by A. F. Justin, the Providence dealer, and a party of five. The shifting lever was removed and the gears sealed in high, the car being a stock job.

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Huge farm carts such as these have necessitated highways wide enough for three motor roads. From 20 to 30 horses are used to draw these vehicles.

Argentine Has Taken the U. S. A. Car and It Needs U. S. A. Salesmanship

By David Beecroft

THIS story is the second of a series on South America by David Beecroft, managing editor of Motor World, who spent ten weeks on the southern continent, investigating the possibilities there for American cars. The U. S. A. car has broken through the barriers of the Argentine and the great need now is for the men and methods of the U. S. A. Other stories will follow. All the photographs shown were taken by Mr. Beecroft.

BUENOS AIRES, ARGENTINA, June 30—Last week we told of the financial crisis in Argentina in 1911 and how the sale of expensive European cars stopped short at that time and has not as yet got started again.

This brings us to the new factor that has entered in the Argentine business, namely, the sale of the lower priced American cars.

Eighteen months ago the South American representatives of the different American motor car factories, who came here to get agencies, could not get the Argentine dealers interested in our cars. The dealer had no use for the American car, because several of our makers had shipped many hundreds of obsolete models to this market with the hope of selling them for new machines.

The U. S. A.'s Black Eye

Three or four companies have a reputation for having done this, and it gave a black eye to nearly all of the American business. The cars failed to make good and they did not have the body style to compare with the luxurious European jobs. As a result there was nothing doing among the American cars excepting for the efforts of certain companies that had been in the market here for 5 or 6 years and some as long as 14 years.

Then Came the Change

But a year ago a change came about. Ford had invaded the Argentine in real earnest just after the war started 2 years ago. It took a year for the movement to get under way, and just about a year ago now the Ford business suddenly jumped to over three times what it had previously been. Sales in Argentina, Chile and Uruguay suddenly jumped from around 100 cars a month to over 300. The figure ran perilously close to 400 a month, and this average has been holding up and increasing steadily ever since.

This Ford business has not all been in Buenos Aires, but in other parts of the Argentine Republic, which in area is about the same as all of the United States east of the Mississippi River.

Selling Many Fords

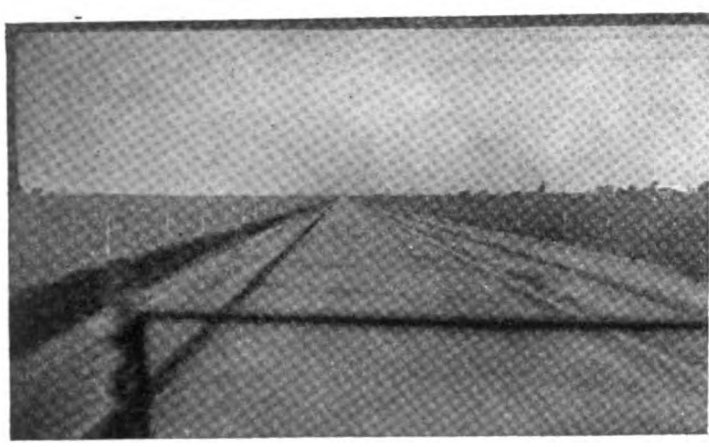
There are many cities in the country where Ford is selling in big quantities, and the car has taken hold in this country just as it has in the United States. Ford was barely under way before a few others of our makers began to show interest. Overland has been established here for years, but has not done that business which the status of the home company warrants. Studebaker last fall started building up a very complete selling organization, and is now selling cars here and in several other cities along the same selling lines as used in the United States. It is true that several other countries are doing the same.

The Old-timer Is Thinking

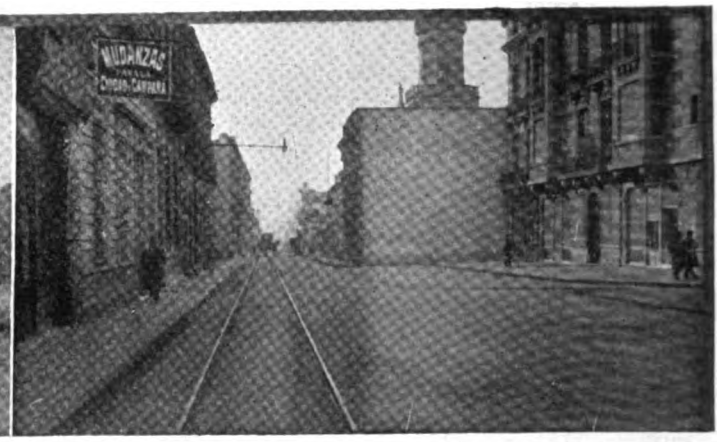
The American tire makers have all gotten well under way; Goodrich has been here for several years, Goodyear got into full swing a few months ago, and Fisk is now in the market. United States has just opened its branch here, Firestone has established itself, and some of the other makers have followed in the wake of our car sales during the last few months.

This new enterprise has set the old motor car dealer here to thinking. He thought motor car sales were dead. The

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Between Buenos Aires and La Plata is a long stretch of hard stone road, as straight as an arrow, ideal for motoring.



Buenos Aires is widening her streets. Buildings erected after a certain date must stand back a certain distance from the street.

financial crisis had told him that, and he thought the war had sealed the proposition. But unexpectedly he has found the cheaper American cars selling in increasing quantities and he has seen dealers in such cities as Rosario, Cordoba, Bahia Blanca and many other places making good money. This has turned his attention suddenly to our cars, *and to-day there is a real scramble in this city for American agencies. There never was such a scramble before. It is a mighty unexpected turn in motor affairs here.*

During the present month and May there have been many representatives of American cars here establishing agencies. Dodge Bros. placed an agency here a few weeks ago. It had established its agent in Montevideo, Uruguay, a few weeks earlier, and the dealer there has already sold twenty-five cars.

Cadillac Here for 14 Years

The Maxwell representative has been opening agencies within the last few weeks. The Jeffery representative recently closed agencies in Brazil and Uruguay and now has his business moving in those countries and in Chile and Argentina, having been nearly 2 years on the job. Chevrolet got its first cars here only a few weeks ago, and now has a big showroom and hopes to carry on a big business.

Cadillac has been here for 14 years; and although it has had a conservative business for many years, sales have jumped very much in the last year and now the Cadillac is selling in the best society circles here. Hupmobile, Chalmers, Hudson, Scripps-Booth, Buick, Oakland and many other American names are familiar here.

It was the selling of our cheap cars to the farmers that caused this recent boom in American car stock. The dealers here never took the farmer trade seriously. There were few roads in the country in 1911 and there are not many more to-dav. The expensive European cars were sold for city use and not for muddy farm roads. True, a few of these fine cars got into "the camp," as they call the country districts here, but their numbers were few.

The American Salesman

Over a year ago the sale of American cars in the country, or camp, had taken real hold. The rich farmer owning over 100,000 acres of land—and there are plenty of them here—never believed before that any car would stand up in the camp, and when the cheap American product was demonstrated to him he nearly lost his mental balance. First he was so skeptical he would not get into the car. *Finally he was persuaded to take a seat, and then the hustling salesman started on a 6-hr. demonstration and did not give the prospect any chance of getting out of the car until he had driven him over all of the worst roads in the district and until he had proven that the cheap American car had the goods in it and actually could go.* As months passed by the farmer was convinced that these cars would also endure. He did not believe it at the start; but time convinced him, and he finally BECAME A BOOSTER FOR OUR CARS.

And so we are in that booster stage now. Argentina has been given its object lesson and it *now remains to fill the country with cars as has been done west of the Mississippi River.*

An Epoch in Argentina

Thus the present time is really an epoch in motor car business in Argentina. The country stands on the threshold of an entirely new business and it is quite natural that those dealers who have been carrying salesrooms filled with dead stock for four of five years are naturally vitally interested in this new movement which gives promise of putting them back on their feet again so far as the motor car business is concerned.

It has surprised them to see the farmer buy cars in quantities and it has surprised them further to see them buy in war times. But the war has really made this possible because the price of wheat and corn and cattle, sheep, pigs and horses rose with the war, and the farmers found plenty of money coming their way. This extra money has with many gone into the motor car.

Rivals Bounteous Iowa

The possibility of selling cars here to farmers is about the same as in the United States. The number here is not so great. Argentina is a great farming and grazing country. The land is level, more so than our own Mississippi valley. The soil is as rich as, if not richer than, the soil of Illinois or Iowa, and the farming possibilities are very great. There is one difference here as compared with the United States. Here the farms are very large, one land-owner perhaps having 300,000 acres of land. He cannot farm it all, and so rents it out in parcels to a couple of hundred or so small farmers. These small farmers generally work it for 3 or 4 years, raising wheat and corn and then getting it into alfalfa. This done, the land is turned over for grazing and the small farmer moves to some other place, where this same work program is repeated.

These small farmers are not wealthy; they cannot be compared with our farmers who own 160 acres of land and have a nice home, nice market garden, an orchard, a few flowers and comfortable outbuildings for stock and machinery. Here the small farmer lives in a mud hut and has another small mud hut or so for storehouse and other uses. He has no garden, he has no orchard, he has no lawns, the mud hut standing perhaps in the middle of a wheat field, with only a little square marked off by a wire fence. There is nothing attractive in the place. These mud huts dot that part of the country that has been settled.

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Such people are not generally considered wealthy enough to buy motor cars, although there are some who are doing so. The motor car sale to-day is generally with the wealthy owner who reckons his land in square leagues rather than in acres. These big farmers are well able to buy motor cars. *They are very wealthy.* They have homes larger than any seen in the farming districts in the United States. Many of them have homes for the winter in Buenos Aires, and these are among the finest residences in the city.

Farmers Live in Town

Imagine, if you can, that some farmer out in Illinois lives in the finest house along Lake Shore Drive, Chicago, or on our finest residential avenues in Minneapolis, Kansas City, St. Louis, Denver or Los Angeles. That is the situation here.

In the winters before the war many of them spent 3 or 4 months each year in Europe. Paris was their Mecca. They had their cars for the city, but never thought they could use them on the farms.

These farmers—they call them Estancieros (Es-tan-see-air-os) — are good money spenders. They have the finest stock on their farms that can be purchased. They have ambitions as stock-raisers. They have ambitions as horse-breeders, and naturally will be a good market for the sale of motor cars. It is with these people that the great sale of American motor cars has to be made in this country. It is with these that our cars are now selling.

Employ U. S. A. Sales Methods

In selling cars the same business methods that are employed in Omaha have to be used here. It is a case of adopting American selling methods, *and the dealer who first gets established and carries on his business along such lines will surely make much money here.* There is a huge territory; and while the population is only 8,000,000, it is sure to grow very rapidly after the war is over. During the war immigration has practically ceased; in fact, emigration has started, many Argentines leaving for Europe to take part in the war.

Buenos Aires alone is a city of 1,800,000. This is larger than Philadelphia and not much smaller than Chicago. It is a wealthy, modern city. Many of the streets are narrow, as in all Spanish cities, but for ten years a street-widening program has been under way and to-day scores of streets are as wide as Michigan Avenue, Chicago. The streets to-day are little bar to the use of motor cars.

Bad Roads a Handicap

Sales in the country may be slow for some time because of the lack of roads. In Argentina the road problem is perhaps a little farther back than it was in many of our own States in the Mississippi valley 5 or 6 years ago. There are literally no roads. The motorist in Buenos Aires hardly ever thinks of driving anywhere outside the confines of his city. The touring spirit has not yet touched him. There are only three roads, in the modern sense of the word, that he can use.

There is a seaport called La Plata, 65 miles from here. Many of the steamers leave from this port. The Armour and the Swift packing houses are located there. A few years ago the Touring Club of Argentina built a dirt motor road. It is built right in the middle of the old road. Imagine such a thing in Iowa or Wisconsin; but it is possible here because many of the wagon roads are as wide as a field.

Carts with Twenty to Thirty Horses

Here the farm carts are sometimes drawn by twenty to thirty horses, and half of these are hitched side by side. It takes some road width for such a team, and if two of them should meet you need a good deal more. The touring club got permission to build such a road and put a fence on each side of it, so that now there are really three roads abreast, the middle one for motor cars and the two outside roads for horse wagons, that on one side for traffic in one direction and that on the other side for traffic in the other direction. This road is as good as a road across Iowa. The soil is black loam, but by keeping the surface smooth much of the water runs off.

There is another road between Buenos Aires and La Plata, and that is a new stone road that was started many years ago and is just completed. It is one of the finest roads in South America. I do not think there is anything in the United States to campare with it. The road runs nearly as straight as an arrow over the pampas, which is as level as the floor. In soft places the right of way is graded like a railroad, and when you get a side glimpse of the highway from a quarter of a mile away you think it is some four-track railroad. The surface is of square stone blocks with flat tops, making a surface as smooth as a brick road. On each side is a stone curb, just as on an asphalt city street. There are literally scores of fine cement and steel bridges, and at every farmer's gate is an elaborate cylindrical culvert neatly faced with brick and looking as prim as a new hat.

This road will prove fine for motor trucks, and already some trucks are making daily schedules over it. There is one other road leading out of the city for 35 miles to a summer resort on the river, where there are much boating and other sports. But that ends the Argentine road scheme around Buenos Aires.

In the Hardware Store



Customer: Have you Rainbow packing?

Clerk: We have not, but we have Sunshine soap.

Can't Motor Very Far

You cannot motor from Buenos Aires to Rosario, 190 miles inland, the second largest city in the country, with a population of 150,000. To get a concept of it, think of Chicago car owners not being able to motor to South Bend, to Milwaukee, or even to Rockford, Ill. The other roads are generally trails, the same as we had in the Western States years ago. You know what they are like. They have never been graded; they are without ditches. In wet weather there are many places that should have culverts; in fact, they are very primitive roads.

Argentina has to be introduced to a very strenuous road-building program before the sale of cars will jump to the figure it should. This will not be a difficult task, because already the daily papers have taken up road-building talk and the road-education movement has started.

Sell these farmers some cars and they will soon see that roads are built. They will do the same as we did west of the Mississippi. There the motor car built the road. If we had waited for roads before selling cars we would still be waiting. The enterprising dealer in Argentina must be ready to put his shoulder to the wheel and do something to push the good-roads movement along. On it will depend the future development of his business.

Roads CAN Be Built

But the roads can be built. The soil is the same as in Illinois or Iowa, and what the King drag and the road scraper have done for our roads can be done for the Argentine roads. A representative of certain large American road-building machinery firms has been in this city for nearly a year conducting a propaganda for better roads. He is writing articles for the papers and is circulating all the farmers with good-roads literature. His efforts are already bearing fruit and road-building machinery is beginning to move, even though slowly.

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Do It This Way—

···QUERIES ANSWERED···

IS A CASH BUSINESS DESIRABLE?

Editor Motor World:

Recently I went to Cleveland and spent 2 days with Mr. Wills in the Euclid Square Garage. I was so favorably impressed with the cash method of conducting their business that on my return to Washington I recommended the adoption of the same business policy.

The introduction of a cash business in a garage in this city is radical, and we feel that it may be crucial in its effects on our business. A great majority of garages conducted in this city are not profitable, and apparently one of the chief elements causing this fact is the extension of indiscriminate credit and the accompanying overhead charges due thereto.

I would appreciate your advising me, from your extensive knowledge of garage conditions throughout the country and your familiarity with the method of conducting the many places you have visited, whether any other places than the Euclid Square Garage have adopted such a system; whether they have found it possible to successfully conduct their businesses on such a basis, and whether you are familiar with any enterprises that have found it necessary to change from such a basis to the customary credit basis to succeed.

Our executive committee is heartily in favor of adopting the cash basis at the outset. As, however, it embodies the adoption of a revolutionary idea and the education of the car owners in this community to the advantages afforded, I would like to secure as much information on this subject as possible.—D. E. H., Washington, D. C.

Only One Garage

The Euclid Square Garage, the largest in Cleveland if not in the country, is the only one we know of conducting a strictly cash business. There are some others, however, that insist upon cash for their repair work and, since it is just possible that you would like to write to these concerns, we will give you their names. We understand that C. P. Rockwell, 640 Commonwealth Avenue, distributer of the Jeffery, does a strictly cash business, and we are almost certain also that the Henshaw Motor Co., 915 Boylston Street, Boston, does likewise.

We realize, of course, that the reasons that some dealers find it advisable to conduct their repair businesses on a cash basis might not hold when it came to running a garage according to the same plan, and their experience in this one department might not aid you to decide whether it would be advisable for you to extend the plan to your whole business.

There is no need in recounting the advantages of the cash system; but we would like to give you the opinion of probably the foremost garageman in New York City, who takes the opposite stand. He is William Haradon, president of the state dealers' organization and one of the most progressive and active men in the business. He is one of the very few garagemen in New York who are not paying commissions to chauffeurs. In view of all this, his opinion is of particular interest. It should be remembered, however, that he deals only with the very best people in the city and that his trade is very much above the average. Probably for this reason he has less trouble collecting his accounts than the average garageman would have.

He thinks that the average owner would object to going to the trouble of paying for each purchase as it was made, but the question is whether it is really any more trouble to hand out the cash than it is to stop to sign the sales slip.

One of the main feature of the cash system is that it eliminates all chances for error and misunderstanding, as each contract is completed and ended for all time as soon as the cash is paid, which is not the case by many weeks in the credit system. He states, however, since he requires the chauffeur or the owner to sign for every purchase there is no chance for error or dispute, as these slips may always be brought into evidence. He is right on this point, assuming, of course, that the slips are made out carefully and none is lost.

He also favors the credit system because it gives him a complete record of each customer. At the end of the month he knows which customers are the most profitable and those upon which he is losing money. Of course, there is no reason why such a record could not be kept with the cash system; but the point he makes is that since this record is necessary, the extra expense of running the credit system is not an objection after all.

The obvious advantage in knowing just what the customer purchases each month is that it enables you to use more intensive sales methods on those who are not purchasing as much as you think they should, or rather those who are purchasing things on the outside.

Local Condition a Factor

But there is an added advantage which applies particularly to cities like New York, but which might not be of importance elsewhere. It is a fact that New York garagemen do not, as a rule, make a profit on their receipts from storage, high as these rates are, but their profit is obtained entirely from the sale of gasoline and oil and some accessories. For this reason they are forced to charge a higher price for gasoline and oil than the filling stations. If the garage happens to be crowded with cars it is common practice for the manager to go over his books and pick out those owners who are operating small cars which do not consume much gasoline or who are buying their gasoline elsewhere, and request them to leave so that he may have an opportunity to replace them with more profit-

A Business Without a Bill Head

WHAT DO YOU THINK OF RUNNING A BUSINESS ON A CASH BASIS? IMAGINE A BUSINESS WITHOUT BAD DEBTS TO MEET, WITH NO ACCOUNTS RECEIVABLE, WITH CHANCES FOR CLERICAL ERRORS AND CONSEQUENT DISPUTES ELIMINATED, WITH A MINIMUM AMOUNT OF BOOKKEEPING—A BUSINESS WITHOUT A BILL HEAD. THE BIGGEST GARAGE IN CLEVELAND, IF NOT IN THE COUNTRY, IS OPERATED ON THIS BASIS, AND OWNERS STORING THEIR CARS THERE ARE ENTHUSIASTIC ABOUT IT. NEEDLESS TO ADD THAT THE MANAGEMENT OF THIS GARAGE THINKS LIKEWISE. READ THE LETTER AND REPLY ON THIS PAGE AND GIVE US YOUR VIEWS PRO AND CON.

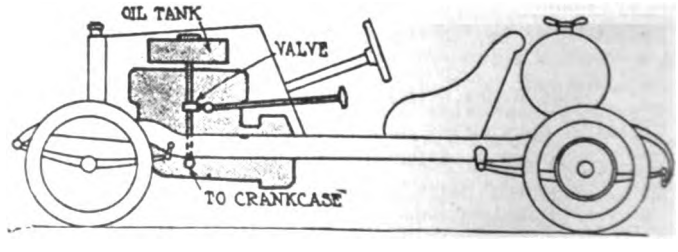


Fig. 1—Extra oil is fed to the motor from a tank mounted above. Flow is by gravity

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able customers. This is one reason why some sort of a record of the customers' purchases is essential, at least in the best garages in the city. But, of course, this might be checked up even with a cash system. It is doubtful, however, whether this situation will be found in Baltimore or in many other cities.

Haradon also says that owners prefer to pay their bills by the month, and that it is simpler for them to keep track of the cost of their cars than it would be if they paid out a dollar now and then. Of course, if this is a matter that owners really appreciate it would be simple enough to save the sales slips month by month and forward these to the owners. It could readily be done with the cash system and little extra work would be required.

MODEL 19 BUICK RACER

Editor Motor World:

As I am a reader of Motor World, I would like to get information in regards to making a speeder.

I have a Model 19 Buick which I plan to race with and would like to know where I can get a racing camshaft and also the settings for the best results.

Would it be necessary to get new gears for the rear axle? My gearing is now 3 1/5 to 1.—Fred Bonneau, Manteno, Mich.

The car should first be thoroughly overhauled. All parts should be well lubricated, and free. A coasting test will usually indicate if any part of the driving mechanism is binding. The springs should be taken apart and lubricated with graphite and grease. If possible, shock absorbers should be fitted to all springs, as they tend to make the car steadier at high speeds. To lessen the rebound the springs should be bound with tire tape or heavy cord.

Wind resistance is a big factor in speed work. Hence you must remove such parts as the mud guards, running boards, and splash plates. Much may be gained by placing the tank on the rear, lowering the seat, and dropping the steering gear. If you desire, a stream-line cowl and body might be made up of sheet metal. Pictures of any of the popular racing cars would give you ideas for this change.

Patent piston rings, and aluminum alloy pistons give the engine greater speed. If you decide not to use the alloy pistons, you should at least make the weights of the pistons equal, by filing metal from the inside. The connecting rod weights should be made the same in a similar manner. This balancing does not give the motor more speed, but it permits it to run at a high speed with less vibration and wear.

The oil consumption increases greatly with the speed, and it is difficult to keep an adequate supply in the crankcase. A method sometimes used is to fasten an auxiliary oil tank by brackets over the motor, Fig. 1, and to have an outlet pipe running from it to the breather tube of the engine. A stop-cock, operated from the driver's seat regulates the flow of oil to the base, and the supply must be kept much above normal.

We have been unable to find any one who can supply you with a racing camshaft. The timing for speed is largely a matter of trial, and one method is to set the timing gears ahead a tooth at a time, until a road trial shows the best possible setting.

A better method is the following but it requires time to get the setting right: The cams on your engine are fastened to the camshaft by setscrews, set into shaft. Remove the cams from this shaft, and have a new shaft made, like the old one, but not countersunk for setscrews. Place the cams on the new shaft, and temporarily set them so that the exhaust opens 50 deg. before bottom dead center, and the intake closes 50 deg. after bottom dead center. If this adjustment is satisfactory, the points under the screws may be countersunk with a drill, and the setting made permanent. Otherwise, the cams must be shifted until a satisfactory setting is obtained.

A change in the rear axle gears is not advisable unless you find the increased power of the engine, and the reduced resistance of the car merit the change. If with the present gears, the car does not run fast enough, and yet seems to have reserve power, a change in the ratio would be advisable.

BUICK B-25 DELCO SYSTEM

Editor Motor World:

We would like you to give us a complete wiring diagram of the Delco system used on the 1914 B-25 four-cylinder Buick. Either send us the diagram direct or publish it in your next issue of Motor World. We have been taking your magazine for the past 2 years, and find it very valuable and interesting.—E. P. Evans, Evans Bros., Pascagoula, Miss.

Fig. 2 shows this diagram.

We would advise you to send to the maker of the Delco system, the Dayton Engineering Laboratories Co., Dayton, Ohio, asking for a Delco instruction book on this car. The Delco company issues complete books on all its systems, and every repairman should have a complete set. This book may be obtained for the asking.

HARD TO OBLITERATE SCRATCHES

Editor Motor World:

I have had considerable trouble with covering scratches on a new car unless I have the entire car painted, and I understand there is a preparation to cover scratches even though they are through to the metal.—W. C. Teats, City Garage & Supply House.

There is no compound that will cover scratches which are right down to the metal. Body polish will aid in obliterating marks on the finish, particularly if these imperfections are in the varnish alone, as the polish forms a new gloss over the surface; but you can readily understand that no polish can obliterate deep cracks or scratches. Obviously the only remedy is to fill these cracks up with material similar to that which was removed from them; and merely to put in any kind of a polish or compound, particularly if it is not of exactly the same color, will do little good. In other words, filling the crack with anything except the correct pigment or paint will not make a very successful repair, inasmuch as the filling compound will readily be detected because of its difference in color; unless, as already pointed out, the scratch is merely in the varnish, which is ordinarily colorless.

TREATMENT FOR ALUMINUM

It is a little recognized fact that aluminum-cast housings are constantly throwing off small metallic flakes into the oil or grease. These particles are carried into the working parts, increasing the wear and decreasing the life of the lubricant. This may be prevented for all time if the interior of the case be cleaned with gasoline and given a heavy coat of shellac.

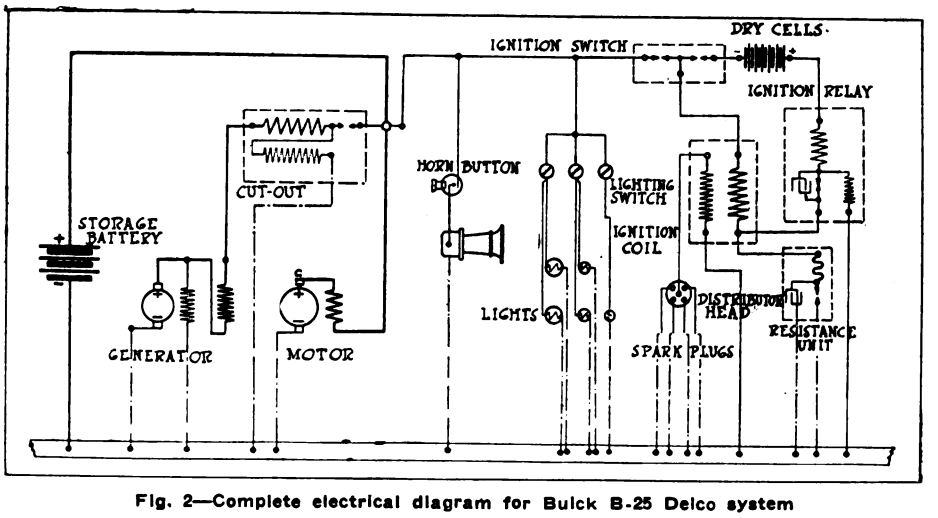
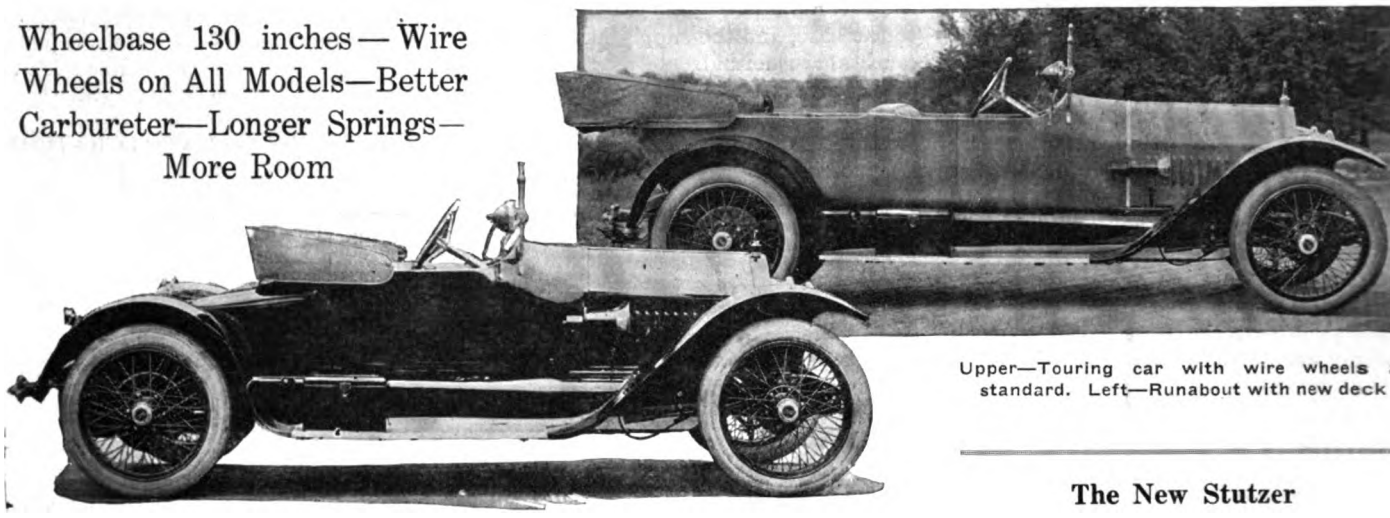


Fig. 2—Complete electrical diagram for Buick B-25 Delco system

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New Stutz Roadster Has Rear Deck

Wheelbase 130 inches—Wire Wheels on All Models—Better Carbureter—Longer Springs—More Room



Upper—Touring car with wire wheels as standard. Left—Runabout with new deck

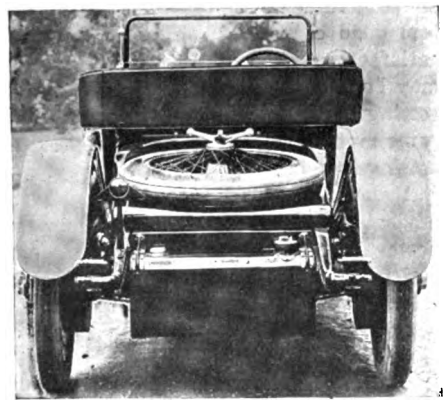
IMPROVED carbureter to take care of the present low grade of fuel, longer rear springs and a new frame construction to improve riding qualities, increased roominess in the bodies and an entirely new roadster are the differences in the new Stutz cars which stand out most prominently over the former models.

A standard wheelbase of 130 in. has been adopted for all models which will consist of Bulldog specials, coming in both four- and six-passenger bodies and the new roadster. The price of $2,550 for the Bulldog is the same as on the previous model, while the new roadster price, which is $2,275, is an increase over the previous model, justified by longer wheelbase and a great number of refinements.

The only change in the power plant is in the location of the carbureter and manifold and the new facilities for heating the gases. The new manifold has a water jacket of unusual capacity, which is connected over the top of the motor by a short pipe directly to the water-exit pipe which leads to the radiator. Not satisfied with this method of heating alone, the Stutz designers have installed a flexible hot-air tube from a stove on the exhaust manifold which leads between the two cylinder blocks to the air intake in the carbureter. This construction not only permits the entrance of heated air into the mixing chambers of the Stromberg, but also eliminates the chance of condensation of the gases by their passing through a hot manifold before entering the motor.

The frame has been increased in size. The side bar is now 5 in. deep, with a 3½-in. width in the center gusset plates which are integral with the side bar. The rear of the frame is now extended to form a spring hanger by the use of U-shaped forgings instead of the goosenecks previously used.

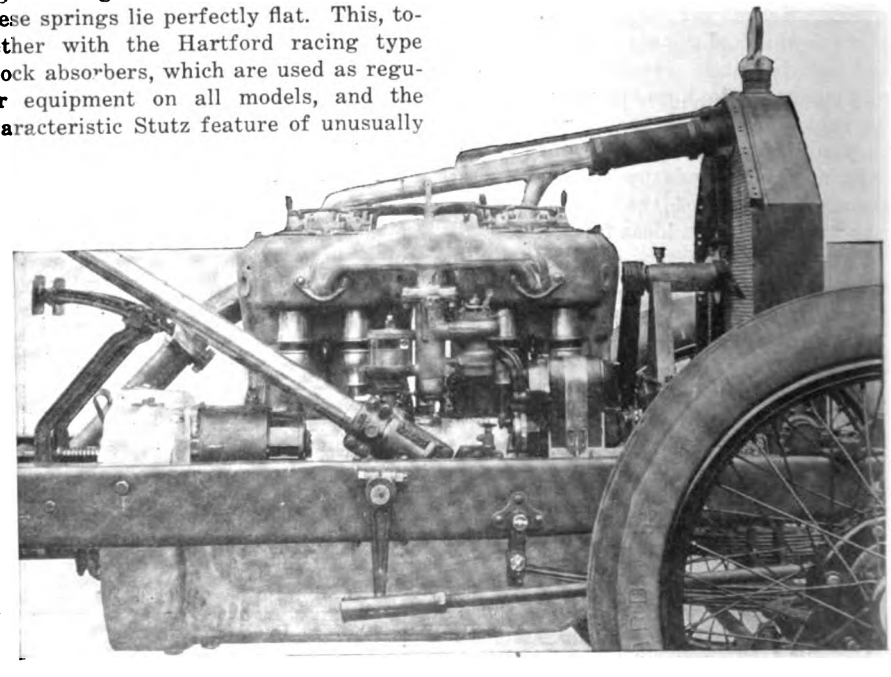
An alteration in the chassis design which not only makes a much easier riding car but permits a straight-line drive through the double universal joints is the increase in length of the rear springs from 50 to 56 in. and so changing the design that when the car is loaded these springs lie perfectly flat. This, together with the Hartford racing type shock absorbers, which are used as regular equipment on all models, and the characteristic Stutz feature of unusually low center of gravity in the body and seating of passengers, makes the new car



The rear of the new roadster is quite different from the former model, which had a big tank and trunk in place of the rear deck

The New Stutzer

Price—	Stutz
Touring .....6-pass.—	$2,550
" .....4-pass.—	$2,550
Roadster	$2,275
Color..Battleship gray and mercedes red	
Make of motor	Stutz
Number of cylinders	Four
Shape	T-head
How Cast	Pairs
Bore	4¾
Stroke	5½
S. A. E horsepower	36.10
Magneto	Bosch
Carbureter	Stromberg
Engine starter	Remy
Lighting system	Remy
Clutch .....Cone, with spring inserts	
Gearset	Knee-speed
Wheelbase	13 in.
Front tires	
35 x 4½—Goodrich or Goodyear cord	
Rear tires	
35 x 4½—Goodrich or Goodyear cord	
Wheels	Houck wire only
Steering ....Gemmer-worm and wheel	
Control .....Right drive—Right shift	
Make of axles	Timken—front
Type rear axle	Gearset and axle combined
Options	Tires and color



The only change in the power plant is the higher mounting of the carbureter

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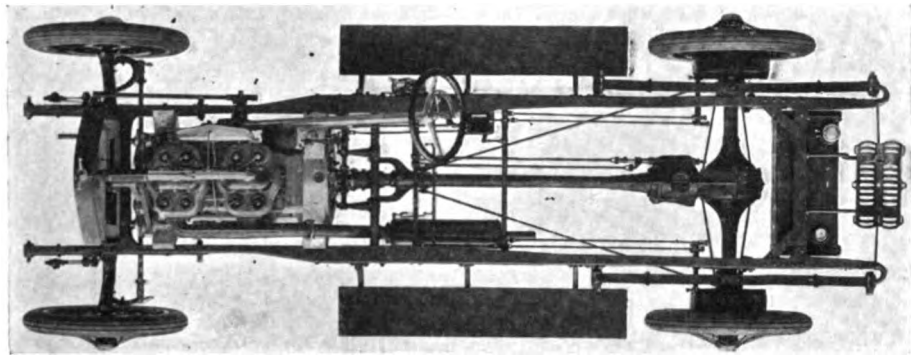
by far the most comfortable riding proposition which this factory has yet produced.

In speaking of the new Stutz bodies, of course the brand-new roadster is the most interesting because of its newness. The body is placed on the standard 130-in. wheelbase, whereas all previous Stutz roadsters were on a 120-in. wheelbase. In the place of the combination oil and gas tank and traveling trunk evident on the old roadster, the new car has a modified turtle-back rear with a depression, circular in form, for carrying an extra wire wheel and tire. The wire-wheel carrier provides a very substantial support; in fact, the wheel is fitted onto lugs much as it is when it is in place on the axle.

There is a carrying space in the rear of this body, directly in front of the spare wheel space and behind the seat, which is large enough to hold two or three suitcases. Entrance to the compartment is gained through a large door on the top, which is locked by a key on both sides.

The body length of the touring car has been increased 4 in. and the width 1 in. The increase is all taken up in the rear compartment, so that ample leg room is provided both for the passengers in the auxiliary seats and in the rear seats. The bodies of the four-passenger and the six-passenger are identical, except that in the latter folding auxiliary seats are substituted for the cowl cabinet and thermos bottles, which in the four-passenger are carried as regular equipment.

The motor is a four-cylinder, pair-cast, T-head design, 4¾ x 5½ in., with three bearing crankshaft and camshafts. The



A stronger frame is a feature of the new chassis. The gearbox is a unit with the rear axle

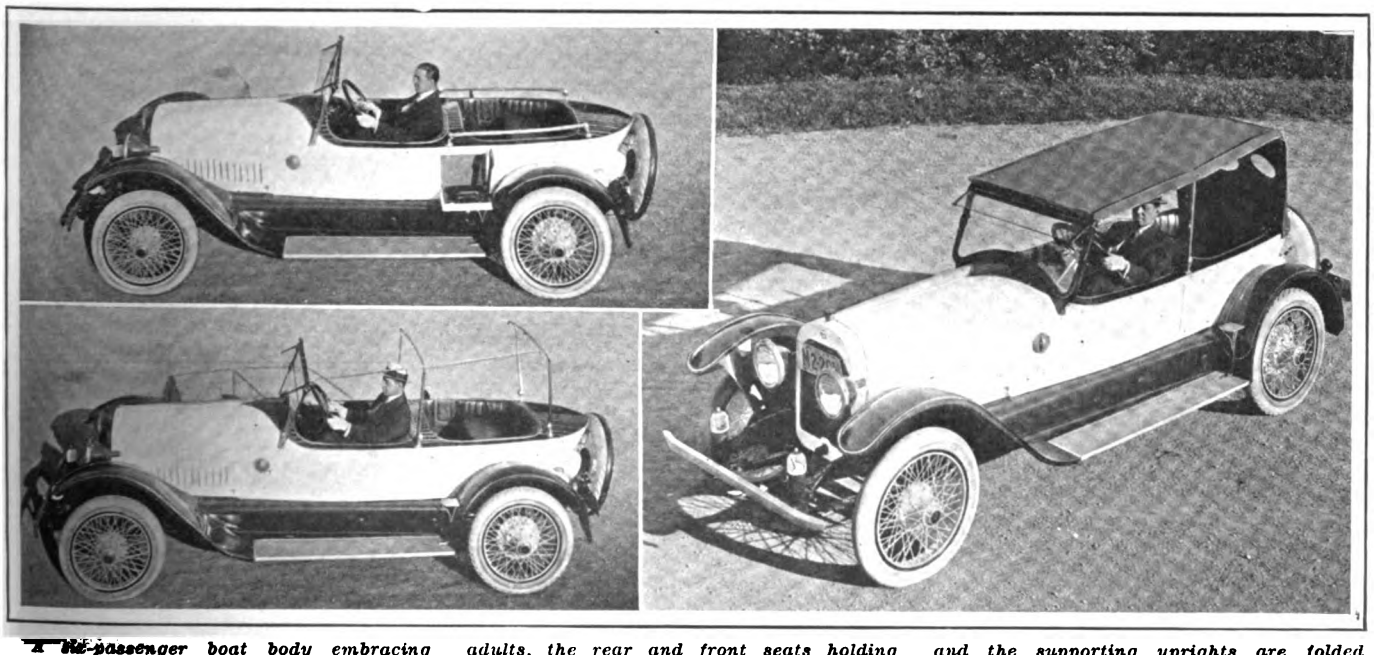
leather-faced cone clutch and the characteristic Stutz rear axle gearset which has been used by this company since its inception are unchanged. In the matter of shifting gears, however, there is an alteration in that the shifting lever positions are reversed to what they were on previous models. With the former construction the high-gear position was on the inside and toward the driver. This position was slightly inconvenient inasmuch as the lever was in the way of the driver's leg. The change has been made, as stated above, by reversing the shifting positions so that now the lever when in high is against the body and out of the way. A padlock for locking the shifting lever in neutral has been added.

Returning to the motor, as in previous models, the camshafts operate roller-type pushrods and the valves, which are tungsten steel, 2¼ in. in the clear, have the mechanism inclosed by individual housings. The camshaft is by helical gearing. Lubrication is by force feed through a hollow crankshaft, carburetion by a Stromberg, and ignition by Bosch double-distributor magneto, with a Remy system taking care of starting and lighting.

Upholstering on all new models is either brilliant-finished, long-grain, hand-buffed black leather or dark brown Spanish hand-buffed leather. The fenders are now slightly crowned, which adds to the appearance of the assembly. Battleship-gray and Mercedes-red are the new standard colors. Stutz has departed from the use of wood wheels altogether and will furnish Houk wire wheel in one size, 34 x 4½, one extra wheel going as regular equipment without additional cost. In tires an option of either Goodrich Silvertown cord or Goodyear cord is offered.

Accessories include a Boyce Moto-meter, windshield spotlight and double-bulb lamps, with the small bulb out of focus to comply with dimmer ordinances.

Special Body on Mitchell Chassis



A six-passenger boat body embracing many novel features has been built by the Mitchell Motors Co., Inc., New York. The body is finished in white enamel with green upholstery and running gear, and is equipped with Houk wire wheels.

The normal capacity of the car is four adults, the rear and front seats holding two each. Concealed seats in the side of the body may be let down over the running boards and a small folding seat in the forward compartment comfortably provide for two more grown-ups and a child.

The top is concealed when not in use, and the supporting uprights are folded down on the side of the tonneau, where they have much the appearance of the deck rails on a launch. The top may be raised or lowered in a few moments and is equipped with side curtains for stormy weather.

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Accessories & Supplies



HEADLIGHT REGULATOR FOR FORD

General Electric Co., Fort Wayne, Ind. PRICE, $3.65; dealers, $2.75.

The Wayne light is a small transformer designed to steady the headlight illumination of Ford cars. The current passes from the magneto through the transformer to the lamps, which are wired in multiple. Such wiring prevents the possibility of both lamps going out, as is the case with the usual series winding. It is claimed that the transformer furnishes a steady light at all speeds above 10 m.p.h. The installation is simple, it being only necessary to substitute 6-volt lamps in place of 9-volt lamps, attach the present headlight wire to one of the magneto terminals of the transformer and ground the other transformer terminal to the frame. A pair of wires, each connected to a lamp, extend to the two lamp terminals of the transformer. The Wayne light may be placed on the dash, under the hood or floor boards, or wherever it is most convenient.

COMET DASH AND TROUBLE LAMP

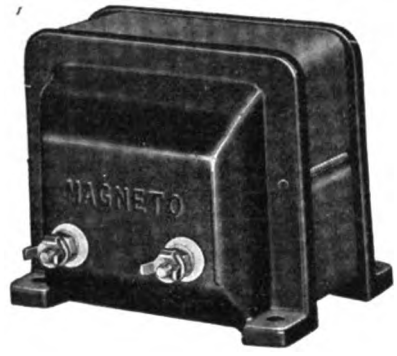
Auto Specialty Co., Galesburg, Ill. PRICE, $5, complete.

A combination dash and trouble light. As a dash light it fits into a socket on the instrument board and has the appearance of an ordinary dash lamp. If light is wanted at any part of the car it is only necessary to grasp the socket and carry it where desired. Ten feet of lamp cord is carried on an automatic rewind within a neat case underneath the hood. This rewind is spring-operated and carries the lamp back to its place on the dash. Installation may be made on any car.

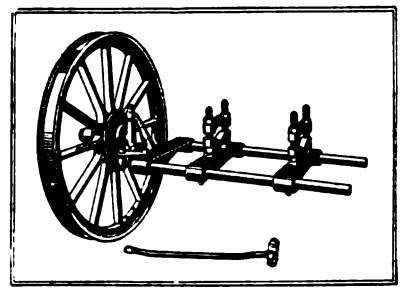
JOHNSON'S BLACK-LAC

S. C. Johnson & Son, Racine, Wis. PRICES: Quarts, $1.10; pints, 65 cents; half-pints, 40 cents. Dealers, 33 1 3 per cent; jobbers, 50 per cent.

An all-service dressing, made by the manufacturers of Johnson's prepared wax, for touching up automobile parts. It is a liquid, applied with a brush, and is said to dry in 15 min. One coat is said to give a rich black finish to tops, leather cushions, side curtains, tire covers and trucks; or it may be used for blackening fenders, rims, running boards, radiators, guards, lamps and all worn metal parts. The product can be used without injurious effect on the finest leather; in fact, it is claimed to act as a preservative and not to come off on the hands or clothing.



The Waynelite transformer steadies the Ford headlights



The Compo Crutch will fit any car, either on the front or rear axle, and is readily applied

THE COMPO CRUTCH

The Gearless Differential Co., Detroit, Mich. PRICE, complete with wheel for 3½-in. tire (tire and tube not included), $30.

Brings home any car having wheel, axle or spindle broken. An artillery-type wheel carrying a 3½-in. tire is fastened through an axle to a strong steel frame. The axle of the disabled car is jacked up and the frame clamped onto it. In the case of a front wheel, a steering arm is supplied that may be attached to the tie-rod of the steering gear and the car may be brought home under its own power. The attachment is practically the same for a rear wheel, except that the steering arm of the crutch is replaced by a link coupling which holds the wheel in a straight line. The device may be attached to any make of car by an inexperienced person, it is said. Compactness in transit is secured by detaching the wheel from the frame, it only being necessary to remove one bolt. The weight is 63 lb.

KEROSENE VAPORIZER

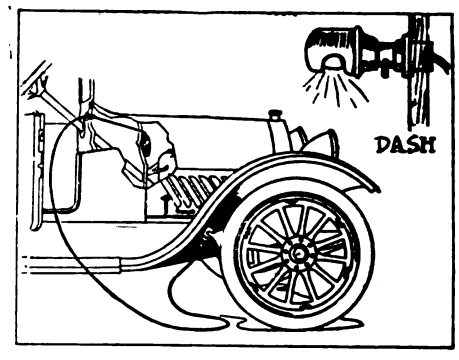
C. W. Lundy, Malad, Idaho.

A device claimed to enable the motor to run on kerosene, alcohol or even crude oil. Furthermore, the claim is made that the vaporizer will increase the gasoline mileage very nearly 50 per cent, and that carbon deposits are practically eliminated. The device takes the place of the intake manifold and utilizes the entire exhaust for heating the gases. Gas from the carbureter passes through small tubes within a barrel. These tubes are very thin and, surrounded by the heat from the exhaust, are almost instantly heated to a temperature at which, the maker claims, kerosene or even heavier oils readily vaporize.

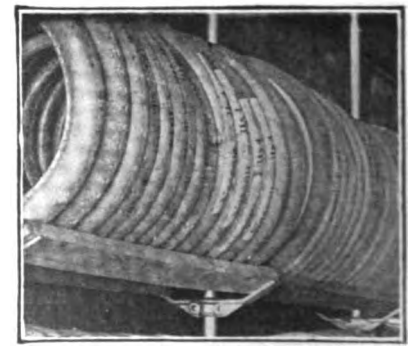
ELGIN TIRE RACK BRACKETS

Elgin Motor Power Mfg. Co., Cedar Rapids, Iowa. PRICE, $9 per dozen.

Brackets enabling the dealer to build his own tire racks. Upright standards of 1½-in. pipe are erected at about 6-ft. intervals and the brackets are clamped onto the pipes. Planks are then screwed onto the brackets, making the racks continuous. In a 480-tire installation, 110 ft. of 1½-in. pipe and thirty-three brackets were used. The complete fixture cost less than $35. One dozen brackets are sufficient for a 150-casing rack.



The Comet dash and trouble lamp combined



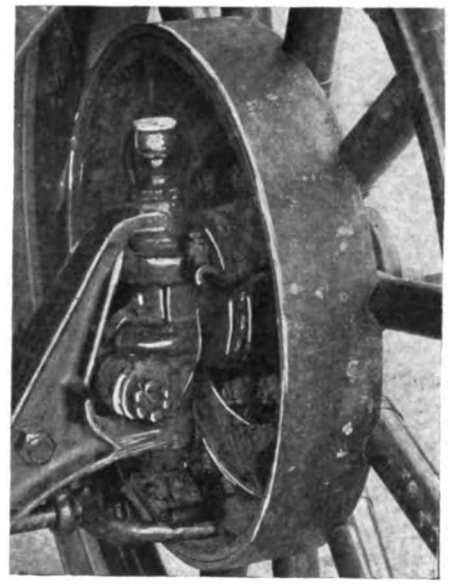
Elgin tire rack brackets enable the dealer to construct his own tire racks

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MORTON FRONT WHEEL BRAKES

Morton Brake Co., 45 South Tenth Street, Minneapolis.

A front wheel braking system for most makes of cars. No alterations to the car are required in the installation, and the brakes are said not to interfere with the proper operation of any part of the car. The brakes are of the expanding type, and so connected that the braking effort is applied to all four wheels at once. Quickness in stopping and prevention of side sliding or skidding are the advantages claimed for these brakes.



The Morton front-wheel brakes are of the expanding type, and connected with the rear-wheel braking system

VENTILATING HOOD HOLDER

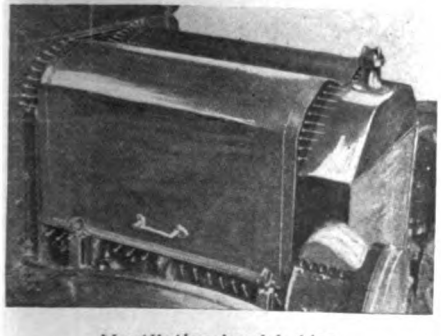
The V Air Valve & Mfg. Co., Denver. PRICE, $4.50 per set of four.

Permits the free circulation of air beneath the hood. These holders are substituted for the standard clamps and allow the hood to be clamped in an elevated position. The forced draft, caused by the motion of the car, passes over the motor and escapes at the rear. The running temperature of the engine is lowered and the peformance is bettered, it is claimed. In cool weather the hood may be locked in the closed position.

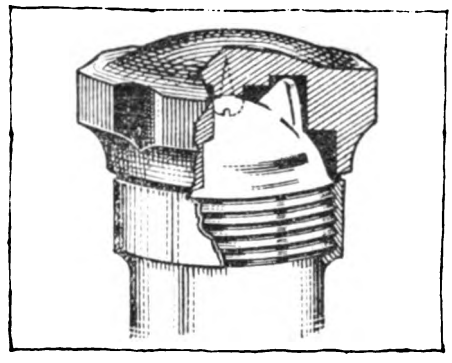
SAFETY SPARK SET FOR FORD

Witherspoon Jeffords, Florence, S. C. PRICE, $4, complete.

An automatic safety set for use on Ford cars. With the device attached the spark is automatically retarded while the engine is being cranked, thereby preventing back kicking and possible injury to the operator if he has neglected to retard the spark before cranking. The safety spark set also prevents the spark lever advancing from vibration while the engine is being cranked. To apply the device to a Ford, remove the commutator case from the engine in the usual manner and fasten a spark set to it with a single set-screw. It is only necessary to drill one hole to make the installation. A ratchet design to work in conjunction with the regulating lever on the spark set is inserted in place of the ordinary ratchet. When the spark lever is improperly set, the lever locks in a notch in the ratchet, and when the motor is turned one-half a revolution, this lever releases, causing the spark to retard.



Ventilating hood holder

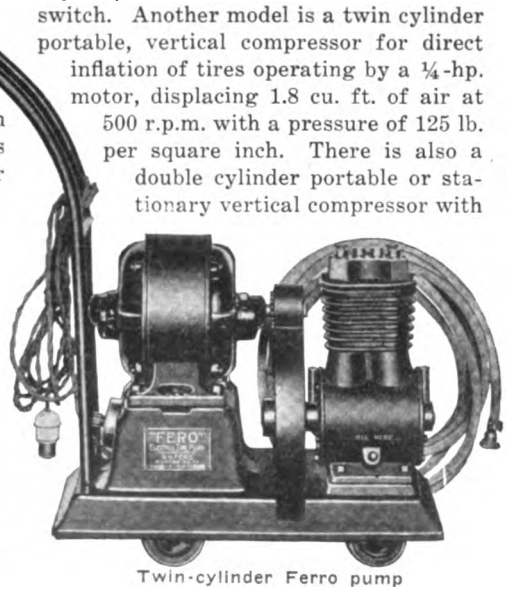


Bridges radiator cap top

FERRO ELECTRIC AIR PUMPS

B. M. Ferro, Wilkinsburg, Pa.

A complete line of electrically-operated air pumps is produced. The line includes a single cylinder, horizontal, stationary compressor driven by a ¼ hp. motor to meet the requirements of garages housing not more than twenty cars. It is used in connection with an air tank of 20-gal. capacity, together with an automatic switch. Another model is a twin cylinder portable, vertical compressor for direct inflation of tires operating by a ¼-hp. motor, displacing 1.8 cu. ft. of air at 500 r.p.m. with a pressure of 125 lb. per square inch. There is also a double cylinder portable or stationary vertical compressor with a 1/3-hp. motor for direct inflation of tires or for use in connection with an air tank, and a heavy duty double cylinder vertical compressor with a ¾-hp. motor suitable for operation in connection with an air tank. This model will start the pump against a tank pressure of 125 lb. and compress to 175 lb. or 200 lb. tank pressure, the latter being automatically controlled. Westinghouse motor equipment, alternating current or direct current, as required, is used. The Westinghouse alternating and direct current motor is used exclusively with these compressors.



Twin-cylinder Ferro pump

FORD RADIATOR CAP TOP

C. E. Bridges, 4537 North Whipple Street, Chicago. PRICE, 25 cents; dealers, 12½ cents.

A composition cap top, fastened to the top of the Ford radiator cap. After drilling a small hole in the top of the Ford cap the composition cap is secured by means of a screw. A fiber washer is placed under the head of the screw to prevent the escape of steam. This cap top is a non-conductor of heat and improves the appearance of the car.

FORD ACCELERATOR

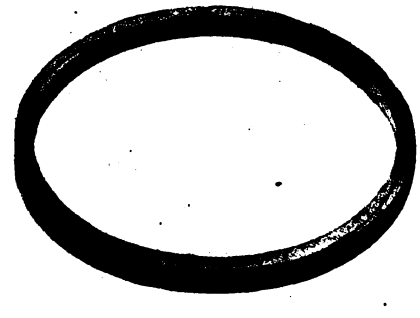
W. H. Thomas Co., Spencer, Iowa. PRICE, $2.50.

Permits the throttle of the Ford to be operated by the foot. All parts are of soft steel, and the control is direct from the pedal to the throttle. The hand throttle is in no way affected, and the installation may be made very readily, it is said. A foot rest is supplied that makes possible steady driving over rough roads.

HI-COMP PISTON RINGS

Continental Piston Ring Co., Memphis, Tenn. PRICE, all sizes to 5½ in., $1.65 each.

Two eccentric interlocking rings are combined to form a single concentric ring. The rings are made from soft gray iron and ground together. It is not necessary to take the rings apart, as they expand sufficiently to fit over the piston. The design of the ring is said to give an equal expansive power on all parts of the cylinder, even though worn out of round. Two rings are required per piston.



Hi-comp piston ring

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 798) WIRE BEADING FORMER

The appearance of tool boxes and bodies may be greatly improved by fitting brass strips or beading over the corners and joints. Similar beading is often required in body repair work. It is not an easy matter, however, to hold such a strip while bending it to fit a curved edge. A forming vise may be constructed in the manner shown and, though holding the beading securely while being bent, permits a ready change of position in forming or removal for fitting. The lower locking strip is adjustable and will accommodate all ordinary-sized beading. —Packard Motor Car Co., Boston.

(No. 799) SHAFT STRAIGHTENING

A shaft, such as a bent rear axle or driveshaft, may readily be straightened by the aid of the device shown. The ends of the pipe are placed on steel V-blocks and pressure applied to the bend by the clamp screw shown. This clamp closely resembles the common pipe vise, except that the lower jaws are replaced by an opening for the shaft, and is bolted to the bench. The shaft to be straightened is passed through this opening and a V-block placed under each end. The upper clamp is thrown back until the highest point of bend is determined, either by the aid of a piece of chalk or a Bath indicator and turning the shaft. The clamp is then locked down and pressure applied to the high point of the shaft by turning the clamp screw. All bends may be removed by repeated applications of pressure, the indicator determining each time where the pressure should be applied.—Packard Motor Car Co., Boston.

(No. 800) REPLACING GUIDES

The valve guides of T- or L-head motors may be driven from the cylinder casting from above. The fitting of new guides must be done with more care, however, as a slight distortion of the guide will cause the valve to stick. The puller illustrated is ideal for this work, as it applies a steady, even pull to the guide in a manner that cannot spring it out of shape. An old cylinder cap is drilled and tapped to carry the threaded rod, which may be made on the lathe in a few minutes.—Packard Motor Car Co., Boston.

(No. 801) FLANGE PULLER

A puller of the common type is poorly adapted to removing flanges at the best and often cannot be used at all. Where the volume of work warrants, the puller illustrated is very efficient. A plate, having holes mating with holes in the flange to be removed, is secured through a swivel joint to a threaded rod. The U-bar is made of heavy iron, and the upright is a short length of iron pipe. In use, the plate is fastened to the flange to be removed by two bolts, and the legs of the U-bar braced at some convenient point. By screwing down the nut, an even strain is applied to the flange, removing it with little opportunity for injury.—Packard Motor Car Co., Boston.

(No. 802) ROD WRENCH

Bent or twisted connecting-rods may be straightened with the aid of the proper wrench. Although an extra large adjustable wrench is often used, a special solid wrench is advisable for this purpose. The wrench shown is made from heavy bar steel, filed to a close fit on the connecting-rod, and case hardened. The offset jaw is used in removing bends, and the other for removing twists in the connecting-rod. A suitable means of testing the alignment of the bearings should be used in connection with the wrench.—Packard Motor Car Co., Boston.

(No. 803) SPRING CLIP TONG

Spring clips may be sprung into place and driven home much more readily by the use of suitable bending tongs. The device is made from ¼-in. round rod, bent in the manner shown. A powerful leverage may be applied to the free side of the clip, forcing it into alignment with the hole in the strap, and a single blow with a hammer forces the clip into place.—Packard Motor Car Co., Boston.

(No. 804) QUICK-ACTION JACK

A quick-acting jack, to be used in conjunction with auxiliary jacks, is illustrated. The jack consists of a steel upright, riveted together and supporting a long lever arm. One side of this lever is hooked to give a firm hold on the wheel hub, the other being fitted with a long handle made up of 2-in. pipe. The auxiliary jacks are made up from cast-iron, and are slipped beneath the axle after the car has been raised with the lever jack. These auxiliary jacks offer a ready support for cars left in dead storage and may be cast in any foundry at a very low cost.—Packard Motor Car Co., Boston.

(No. 805) TAP WRENCH

The tap wrench shown herewith, in addition to having openings for several sized taps, possesses the advantage of being able to grip the tap firmly in its jaws. A minimum of time is used in fitting the tap into the wrench and an over- or under-sized tap cap be held with equal ease.—Packard Motor Car Co., Boston.

(No. 806) TRANSMISSION SUPPORT

Rear axle transmission housings, when removed from the axle, may be conveniently held by a ¼-in. plate in the manner shown, and when clamped in a vise leave all parts of the transmission accessible. The material in the plate is removed to within ½ in. of the bolt hole line, and the holes are drilled to match the holes in the housing. Two or three bolts are sufficient to hold the transmission to the plate.—Packard Motor Car Co., Boston.

(No. 807) WRIST-PIN BORING JIG

A piston may be securely held and the wrist-pin bearing accurately bored by the use of a proper jig, which may be made in the manner shown. The piston is clamped in the V-block by a steel strap, adjusted to the proper position by the screw at the end, and then securely locked by the strap. The rear of the jig casting is threaded to fit the headstock of a lathe, and after drilling a small hole the bearing is finished with an inside lathe tool.—Twentieth Century Garage, Boston.

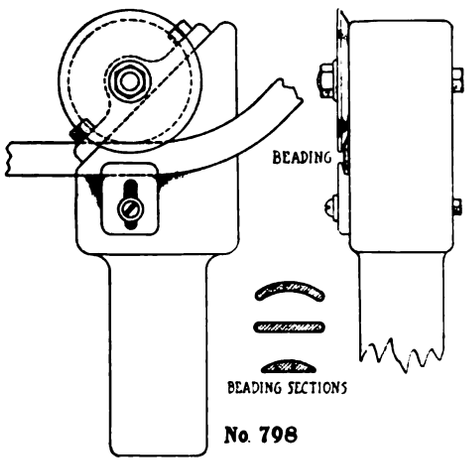
(No. 808) CLUTCH BEARING PULLER

Although designed for removing the clutch bearing from the Packard, a puller of this type has many features recommending it to general repairshop work. The construction is simple and sturdy, and the puller may be used in removing gears, collars and steering wheels.—Packard Motor Car Co., Boston.

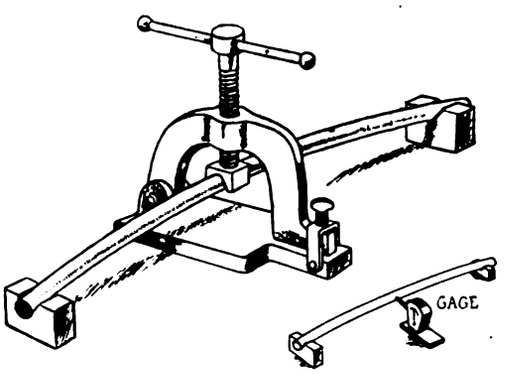
(No. 809) PUNCH O. K. SYSTEM

Many repairshop systems require the foreman to sign the work-card on the completion of the job. Time is often lost in locating a pencil, and the signature resulting is not permanent. The use of a conductor's punch for this purpose has many advantages—it is quick, distinct and cannot be forged.

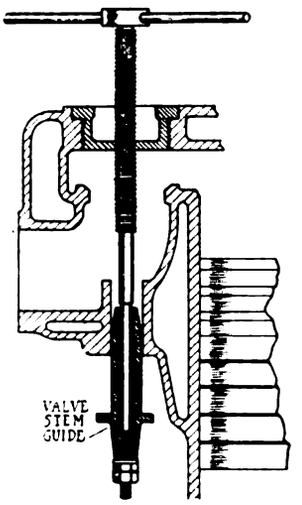
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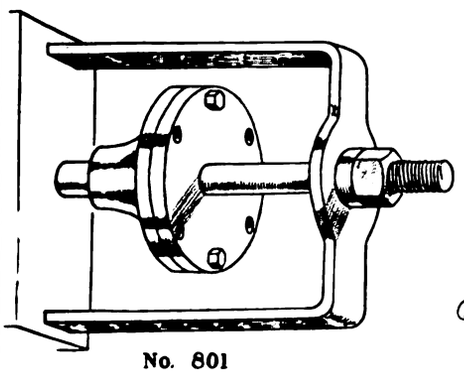
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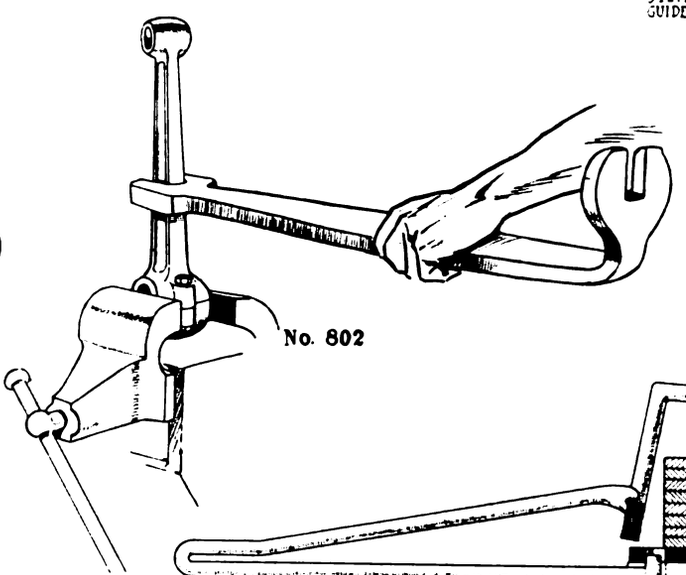
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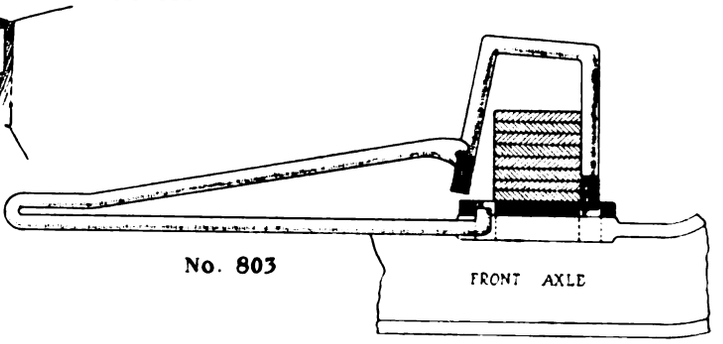
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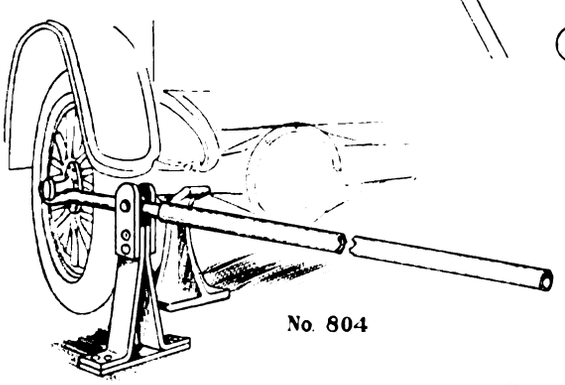
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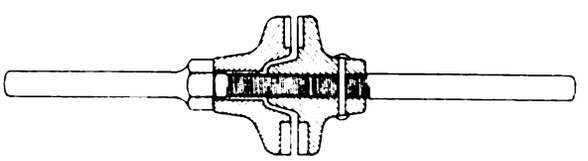
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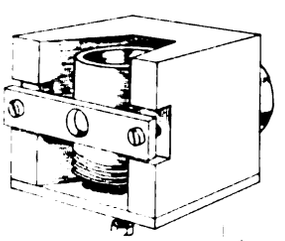


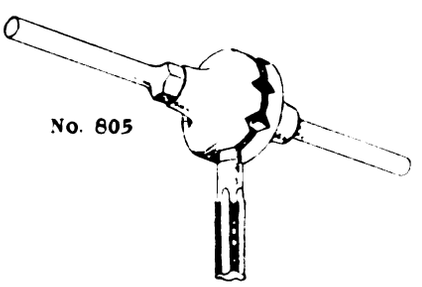
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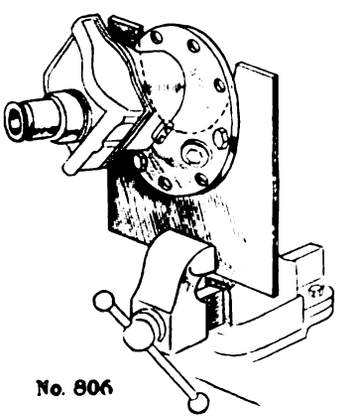
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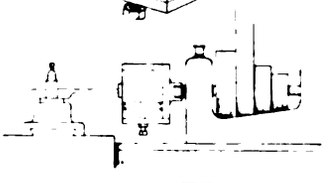




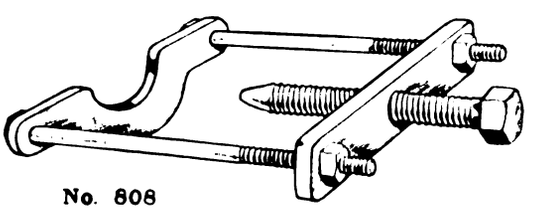
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Broken Tractor Promises

THE National Farm Tractor demonstrations which have been held in Dallas, Tex.; Hutchinson, Kan., and St. Louis, Mo., have not been wholly satisfying either to the farmers who went to see them or to the motor car dealers and garagemen who went to them seeking first-hand knowledge of what a tractor can do.

The demonstrations had been widely heralded as being COMPLETE, as being intended to show all of the manifold operations that can be done with a tractor on the farm.

But that promise has been badly broken. There have been no public demonstrations of tractors working on plowed ground except in isolated cases, and there have been no demonstrations of what the tractor can do in the way of belt work—running ensilage machines, feed cutters and wood saws, threshers, cream separators, etc.

What Else Will It Do?

These are some of the things both the farmer and the prospective dealer want to know. Nearly everyone knows that a tractor will plow; but there are very few who know whether the tractor that is seen successfully pulling three or four plow bottoms to-day on hard soil will go out immediately after and pull a harrow or a seed drill, or a roller, over the freshly plowed land.

Similarly, there is no doubt but that the tractor which has sufficient power to propel itself over the ground and pull three or four plows will have power to run some of the various pieces of farm machinery with which the farm is stocked.

But Just WHAT Will It Do?

The farmer is from Missouri—and so is the dealer and the garageman who is contemplating taking on the agency for a tractor.

The tractor manufacturer may console himself with the thought that those who visited the demonstrations were not greatly interested in these other duties of the farm tractor, but he is wrong if he does so. No right-minded person seeking the agency for a new pleasure car would ever take the word of the manufacturer for the hill-climbing ability of the car or for its easy riding qualities. He wants to know all about the machine. And so it is with the farm tractor.

Hot on the Dealer's Trail

These demonstrations were put on for the purpose of increasing the sale of tractors largely by the establishment of new dealers. Some few retail sales were made, but all the manufacturers who exhibited were hot on the trail of the new dealer.

But they did not show the prospective dealer ALL the machine would do. They showed him that the machine will plow, and let it go at that except in one or two instances. There was nothing but the manufacturer's word for the ability of the tractor to work on plowed ground and to put its belt pulley to some useful purpose.

One expected these demonstrations to be a complete exhibition of the farm tractor to reduce man labor and animal labor on the farm. But one was sadly disappointed—except in the work that can be done with plows.

Nothing But Tractors Exhibited

Probably the reason why some of these manifold belt uses of the tractor were not demonstrated was because manufacturers of such implements as use power were not invited to exhibit at the demonstrations. But some of the tractor makers had disk harrows, tooth harrows, seed drills and one even had a manure spreader on the ground.

There seems no real reason why a manufacturer really anxious to demonstrate the all-around ability of his tractor should not do so—and it is all-around ability that the motor car man and the garageman went there to see. He has got to see these things to rivet his allegiance to the tractor and the longer he is delayed in seeing them the longer will he delay in assisting the tractor manufacturer by signing a contract with him.

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ANGLES OF THE LAW



By George F. Kaiser

That "League" Again

Editor Motor World:

I have a client who, in May, 1910, signed an application for membership buying privileges in the "International Automobile League" of Buffalo, N. Y., agreeing to pay $10 per year for this membership. This client has never used this service and has tried to resign, and they are now, I am informed, making demand on her for this membership privilege for 5 years.

I spoke to Mr. Jerome P. Parker, an automobile dealer in Memphis, who informs me that he thought that he had read in your paper an article referring to the prosecution and conviction of the head of this concern for fraud. He isn't sure that it was this company, but is sure that the article he had in mind referred to a company engaged in a similar business, and thought that you would be able to tell me fully what sort of people the International Automobile League was, and whether or not they were doing a legitimate business.

I will very much appreciate any information or suggestion you will give me on this subject.

Yours very truly,
(Signed) H. H. Barker.

Memphis, Tenn.

It is just a short time ago that I was consulted by a person who had joined this association some time ago. He had paid dues for 2 years, and a few months before his membership expired advised them that he wished to resign. Five or six months after that time he received a statement for 5 cents, which they claimed was due on his last order. A year and a half after paying the 5 cents he received another bill for dues and a letter which claimed that, as he was in arrears in the sum of 5 cents when he attempted to resign, his resignation was not properly made.

I advised this man to disregard all further notices which he might receive and to sit back and wait for suit to be started against him, if the association felt so disposed. It is not likely that he will hear anything further from the association, however, as the president and two of its representatives were indicted in Uniontown, Pa., on charges of conspiracy and of obtaining money under false pretences some time ago, it appearing on investigation that the league had no contracts with manufacturers of standard supplies and accessories. In the "Ohio Motorist," Mr. Richard H. Lee, chairman of the A. A. A. Legislative Board and president of the Cleveland Automobile Club, stated:

ASK

THERE are many things that come up in the course of a week's business on which the opinion of an attorney is valuable and interesting. There is one on this page. Have you one you would like discussed?

Owing to the great number of individuals throughout the United States who have at one time or another contributed to the International Automobile League, Inc., of Buffalo, N. Y., considerable interest will be displayed in developments at St. John, New Brunswick, Canada, where two agents of the International, named Harold Cottrell and Roy Grey, are under arrest charged with receiving money under false pretences.

The attorney general upon opening court moved to have the prisoners, who were represented by counsel, immediately enter pleas of guilty. They were not prosecuted on the other ten counts charged against them. The judge suspended the passing of any sentence and let the prisoners go on a recognizance of $1,000 each and warned them that they must refrain from acting as agents of the International Automobile League.

The attorney general stated that he felt justified in taking this course in suspending the sentence, in view of the fact that the public welfare would be sufficiently served by preventing the operation of the International Automobile League of Buffalo in this territory; that although the prisoners had made improper and untrue representations, they were to a certain extent victims of the system pursued by the parent company at Buffalo for the purpose of getting money from the public without intention to give an honest return for it.

This association is sending out a slip with its bills, citing the case of Boston Club vs. Potter, 98 N. E., page 614, which was decided in the Supreme Judicial Court of Massachusetts, Suffolk County, on May 23, 1912. This case held that, in order for a member of a club to resign so as to relieve himself from liability for dues, he must comply with the provisions of the by-laws relating to resignations; that the by-laws of a club constitute a contract between the members of the corporation, and that where they could permit members who have paid up all their dues to resign, a member in arrears cannot resign and be relieved from further liability as such; and, further, that a member cannot terminate his liability by failure to pay dues, though the club may drop him under its by-laws.

You will note the facts in this case are different from those in case of the league. See a story elsewhere in Motor World this week.

Don't Do This

If a dealer keeps an open continuous running account with a customer and recovers judgment for less than the full amount, he cannot thereafter recover judgment for the balance, according to the St. Louis Court of Appeals.

A dealer was engaged in selling automobiles and automobile parts, accessories and supplies, and conducted a repairshop.

An account was opened with a customer for various items, consisting of repairs, parts, accessories, gasoline, oil, etc. The dealer claimed that although the sum of $396.35 had been paid, this constituted only a small part of the account.

When suit was instituted for the balance, however, the court held that by accepting the smaller amount the dealer had waived its claim for the balance and could not recover any more on the bill; having recovered once on the account, it forfeited its rights to a further recovery. —Pepper vs. St. Louis, 187 S. W., page 109.

This Is Fraud

Where the owner of a motor car, after selling it, keeps it in a public garage and continues to use it under its old license plate, an attempted sale is fraudulent and void, although the purchaser pays for the storage, according to the decision of the Supreme Court of Colorado in a recent case.

It was further held that a creditor of the owner might levy and seize the car in a case of this kind, notwithstanding the supposed sale, as the Colorado statutes provides:

Every sale made by a vendor of goods and chattels in his possession or under his control, and every assignment of goods and chattels, unless the same be accompanied by an immediate delivery and be followed by an actual and continued change of possession of the things sold or assigned, shall be presumed to be fraudulent and void, as against the creditors of the vendor, or the creditors of the person making such assignment, or subsequent purchasers in good faith, and this presumption shall be conclusive.

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STAR VENTILATORS

Fig. 1

Merchant & Evans Co., Philadelphia.

A pipe ventilator located above the ridge or slope of the roof. The warm air, rising, passes through the ventilator, carrying with it the fumes of burning oil and gasoline. Ventilators are constructed to give from one to fifteen changes of air in any given area. Four types of ventilators are produced, the New Standard Star Ventilator, the New Fire-Retarding Star Ventilator, the Skylight Star Ventilator and the Fire-Retarding Star Ventilator. The fire-retarding ventilator has a disk damper, controlled with a chain and a fusible link. In event of fire the link melts and the damper drops closed by the force of gravity, cutting off the draft. The skylight ventilator distributes light through a section made up of heavy wired glass. Each ventilator is designed for the building it is to occupy.

PLAN FOR REMODELING GARAGE 45 x 90

Fig. 2

Editor Motor World:

I am going to occupy building Aug. 1 as a garage and shop. What suggestions can you offer to make this place of the most value to my customers and myself in the matter of economy of space and with the minimum of help?

What system of accounting will be best for my use—garage, accessories, repair? Would thank you very much if you will give me sample sheets of forms, such as stock record, shop ticket, etc.

Will the attached form be simple enough, or have you something better? —E. D. Green, Victoria, Tex.

We have made some changes in the present lay-out, although in general it is the same, Fig. 2.

In the first place, we have brought the width of the accessory store and office out to the edge of the entrance door. To have this room any narrower than this is a waste of space, as the extra area can be used for no other purpose.

A shop 40 ft. deep is too deep. But from your sketch we believe that probably the depth is not about 40 ft., as you estimate, but less. Thirty feet should be sufficient.

Cars should be stored on each side of the central aisle.

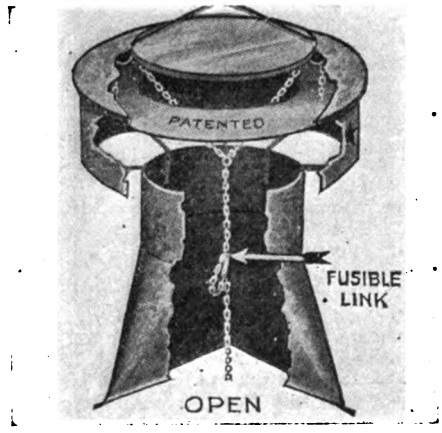


Fig. 1. Merchant & Evans Star ventilator

Regarding your accessory card, which is really an inventory card, would say that we have one which is better and will cost you less. If you have the cards printed specially you will find that the expense will be considerable. Our cards are made in two sizes and sell as follows:

Subscribers	
4 x 6 in., 100 lots or more.....	$ 0.85
4 x 6 in., 1000 lots or more.....	8.00
5 x 8 in., 100 lots or more.....	1.00
5 x 8 in., 1000 lots or more.....	9.50

Non-subscribers	
4 x 6 in., 100 lots or more.....	$ 1.00
4 x 6 in., 1000 lots or more.....	9.50
5 x 8 in., 100 lots or more.....	1.25
5 x 8 in., 1000 lots or more.....	12.00

We believe that the most satisfactory accounting system for you is that developed by us. This system is the result of many months of investigation and careful study, and it has been installed in several hundred garages and every one of them has found it very satisfactory.

You will probably need a stockroom for your accessories in addition to the space in the office. In order to save space you might have this room from a hanging platform or balcony, or you might place it between the wash-rack and the shop. This latter will be a particularly good location if you have sufficient shop equipment to require a tool room. Thus tools and accessory stock, as well as spare parts, may be combined into the one room, which is exceedingly convenient to the shop and convenient enough to the store also.

DURABLE AND QUICK-DRYING CONCRETE PATCHES

One of the objections sometimes raised against the use of concrete-finished floors in garages is the difficulty and cost of successfully repairing places that become worn or damaged. For best results it is usually considered necessary to cut down the worn place at least 1½ in. into the unbroken concrete, undercut the edges, clean out the dust and loose particles thoroughly, wash with a thin cement grout, fill in with a paste grout, and finally float to a level surface a mortar of cement and crushed stone or gravel. The patch must then be kept moist for at least a week or 10 days, keeping all traffic off in the meantime.

Mr. W. P. Anderson, president of the Ferro Concrete Construction Co., states that his company often uses a method of patching concrete floors which is much cheaper and requires far less time than the method commonly used. His method requires the use of a mastic material made from asbestos fiber and rubber gum. This mixture is applied with a trowel after thoroughly cleaning the damaged surface. Very little cutting of the old concrete is necessary, other than to break off loose particles. The gum can be worked to a feather edge so that it will readily join with the undamaged

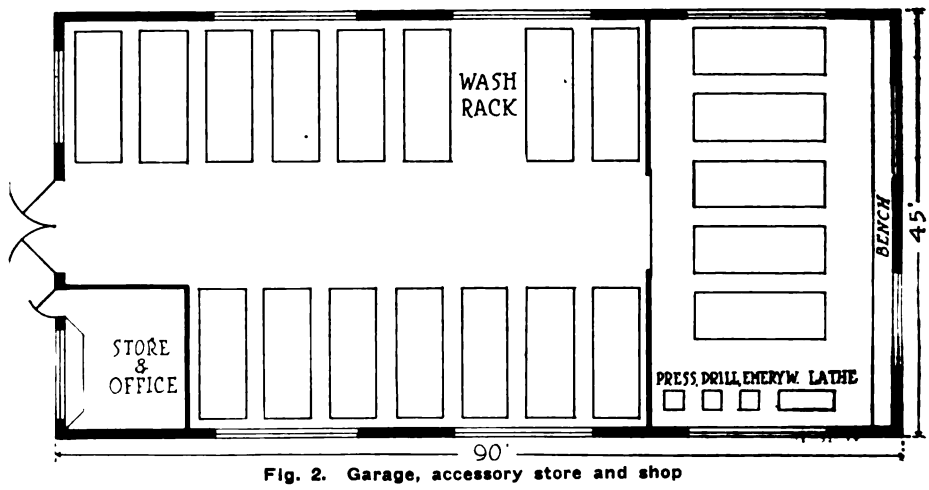


Fig. 2. Garage, accessory store and shop

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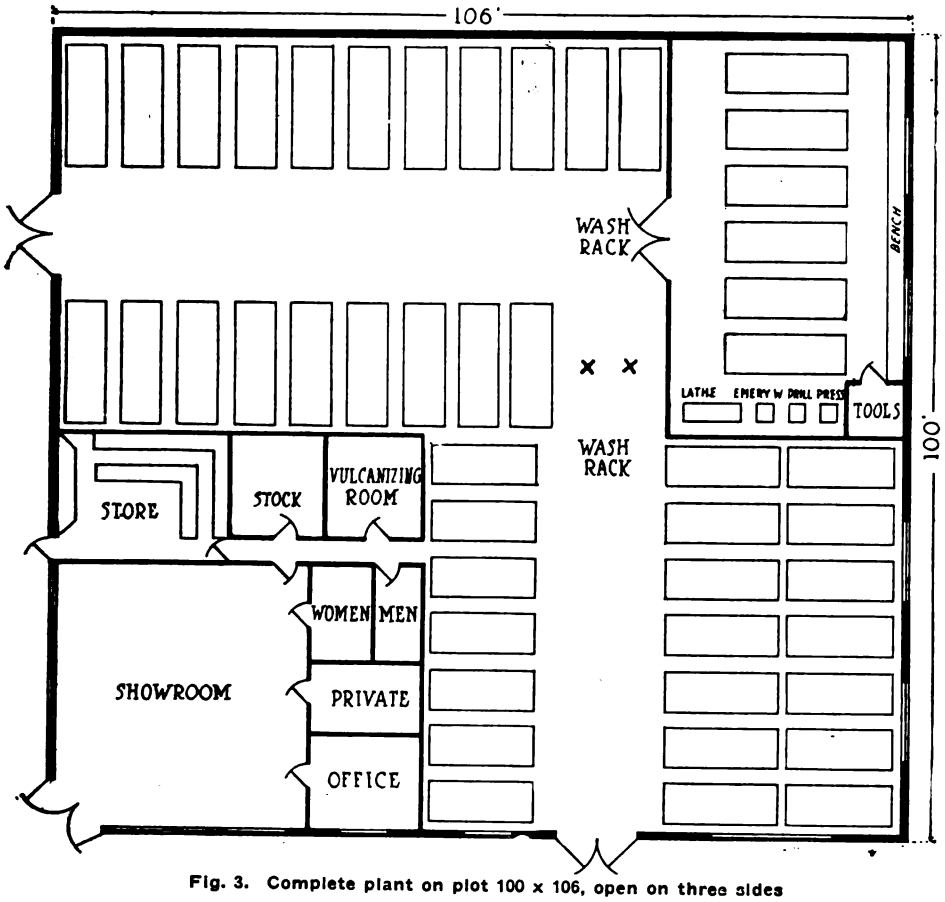


Fig. 3. Complete plant on plot 100 x 106, open on three sides

concrete surface and eliminate the undercutting required with the old style of patch.

A patch of this sort can be opened to foot traffic within a few hours and to heavier traffic within a day. It is thus possible to repair a much-used portion of a garage floor overnight. The cost varies with the size of the patch, but will amount to about 18 cents per square foot. The patch looks well and wears well, sometimes better than would the regular concrete patch.

ONE-STORY COMPLETE BUILDING 100 x 106

Figs. 3 and 4

Editor Motor World:

Will you kindly give me plans for a modern garage building to be constructed on sitt located as per diagram inclosed. The building is to be one story without basement, as we intend to use municipal heat.

We sell cars and accessories and also do a general garage business, storage being an important part.

Would like showroom for two cars, accessory room, shop for six cars, washrack, vulcanizing department, office, stock room, ladies' waiting room and toilets. Thanking you in advance for this information, I am.—Subscriber.

Possibly the showroom, Fig. 3, is slightly larger than you expected, but you should bear in mind that it is poor policy to crowd cars which are displayed for sale.

You say that you want an accessory room. Whether you meant a store by this or not, we are not sure. However, we have provided a store for you. Inasmuch as you are on the main street, you will probably have considerable accessory trade, and the store is therefore desirable just as much as it would be for the grocer, the butcher, or any other merchant.

The wash-racks are placed directly in the aisle. This will not be an objection, as most of your washing is undoubtedly done at night, when there is little or no traffic in the garage.

The aisles between the two parts of the garage ordinarily will be connected, but at night, when the garage is crowded, the cars can be placed in the spaces indicated with the crosses.

We wish to compliment you on the completeness of your letter. Every detail that could be of any possible use in laying out a plan was given. The idea of drawing a rough plan of the surrounding territory is one that other readers might do well to copy.

BOWLING ALLEY AND OFFICES ADD TO REVENUE

Seven hundred dollars per year is a small amount to pay for the rental of 10,000 sq. ft. of floor space for garage purposes, yet this is actually what it costs the Adirondack Garage Co., Hudson Falls, N. Y. This company owns its building, but by renting out parts of it for various purposes sufficient revenue is obtained to reduce the estimated rental of the remaining space to the figure stated.

The building is a three-story and basement structure, 42 x 150 ft., with a bowling alley in the basement, part of the second floor devoted to offices, and the top floor to a roller skating rink and dance hall.

The total income per year is as follows:

Four bowling alleys.....	$400
Three offices	500
Roller rink	800
	$1,700

The building cost about $40,000 and its rental is estimated at $2,500, so that the residue which the garage company must charge itself amounts to the difference between this and $1,700, or $800.

The bowling alleys occupy a space 26 x 122, the remaining space on the side being used for storage of old parts, scrap and bulky stock. Furnace and coal bin are in a separate room at the end, 28 x 42.

The first floor is devoted entirely to the garage business, and the second floor is used for repair work and storage of stock, except for a strip across the front of the building, which contains the three offices.

The entire top floor is used for roller skating, dancing, basket ball games, etc. The floor is approximately 100 x 42 ft. Dressing rooms for men and women and a coat checking room are provided.

Have Surveyed Spanish Trail

DALLAS, TEX., Aug. 7—Field Engineer Harry Locke of the Old Spanish Trail Association, has just completed surveying the route from California to Florida. He is now in Dallas compiling maps for the forthcoming official guide books of this highway. The Dallas Automobile Club will furnish the guide books to its members and tourists.

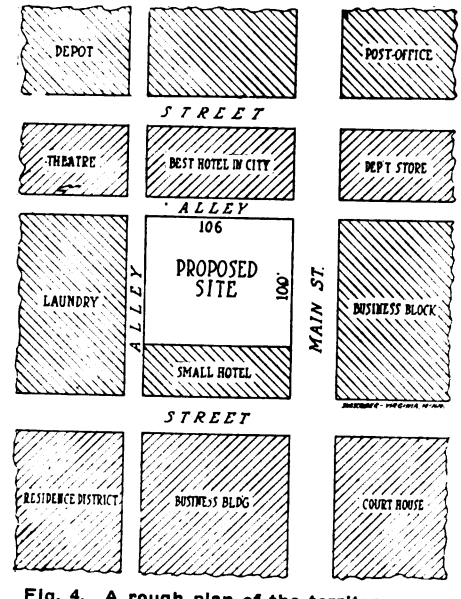


Fig. 4. A rough plan of the territory surrounding the garage is a great aid in determining the best way to lay the building out

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The RETAIL NEWS

MIDDLE WEST

The Tranton Motor Sales Co., Cleveland, has taken the agency for the Peugeot, which is represented in the United States by the Peugeot Import Co. of New York.

The Aperson-Cleveland Co., Cleveland, Aperson dealer, has also taken the agency for the Empire in northern Ohio.

The Grasser Motor Co., Detroit, distributor of the Hupmobile, has taken possession of its new store at 1299-1305 Woodward Avenue.

The Peterson-Keyes Auto Co., Indianapolis, has apointed B. W. Habel sales manager. Habel has been connected with the Maxwell Motor Sales Corp. for the last three years, first serving in the capacity of special sales representative and for the last year and a half as district sales manager, with headquarters at Indianapolis.

The Cincinnati Chevrolet Motor Co., Cincinnati, has been incorporated at $5,000, to deal in motor cars, by C. H. Horn, W. B. Stewart, I. L. Nichol, L. L. Evans and Paul J. Bickel.

The Dillonvale Garage Co., Dillonvale, Ohio, has been incorporated at $1,000, to operate a garage, by Ray C. Hess, R. F. Riggs, Louis Sommers, Homer J. Findley and Charles Nassiff.

R. R. Kuehn and **A. C. Price,** South Bend, Ind., have taken the agency of the Cadillac since the promotion of G. H. Grieger, formerly manager in South Bend, to the Indianapolis branch.

Claude Huff, South Bend, Ind., has purchased the garage of James Hatch, Niles, Mich., and has taken possession.

The South Bend Auto Sheet Metal Works, South Bend, Ind., has been opened for business on East Washington Avenue. M. Lewis is the owner and manager of the plant, which will specialize in the manufacture and repair of radiators, fenders, gas tanks, lamps and bodies.

Abbott distributers recently appointed are: J. B. Maxwell, Philadelphia; Maykel Auto Co., Worcester, Mass.; C. S. Bateham, Norwalk, Ohio; Charles Weaver, Irwin, Pa.; L. A. Colton, Geneva, N. Y.; S. L. Foster, Taunton, Mass.; R. M. Howard, Burlington, Vt.

The Lenardson Garage, Britton, Mich., has been leased by Bert Vanes of Detroit.

The Morrice Garage, Fowlerville, Mich., has been opened to the public by McCreary & Tuttle.

The Beelby-Neureither Motor Sales Co., Grand Rapids, Mich., distributer of the Chevrolet, has awarded the contract for its new $20,000 garage, to be located on Island Street, S. E.

Frank Nebel and **William Hunter,** Mount Clemens, Mich., have leased from Charles Burkhardt the property at 40 Pearl Street, where they will conduct a vulcanizing shop. A complete line of accessories will be carried.

David C. Beggs and **John D. Karns,** Columbus, Ohio, have purchased the State Street Coliseum, where many fistic events have been held, and will remodel it into a modern garage.

The Central Garage, Ontonagon, Mich., has been opened by R. J. Barbera. Besides doing repairing and vulcanizing, a line of Ford accessories is carried.

The Opera House Motor Sales & Garage Co., Pontiac, Mich., recently organized, has leased the old opera house on South Saginaw Street, which has been remodeled and is now ready for occupancy. The stockholders are A. F. Newberry, Charles W. Shaw and Louis E. Shaw.

Ralph Hayden, P. R. Coster and **W. H. Orr,** Holland, Mich., have formed a company and purchased the garage on Seventh Street and the Ford agency from Fred Jackson. Hayden will assume active management of the business for the new company. Jackson will retire from the garage business, but he will continue in the automobile business.

The Alsop Motor Co., Richmond, Va., will hereafter handle the Chalmers line in forty-five counties of Virginia.

The Knuteen Motor Truck Co., Cleveland, has been incorporated at $50,000, to deal in motor trucks, by Otto Fr. Knuteen, George E. Hoffman, E. L. Kratzer, B. M. A. Little and A. L. Winsper.

The Duttenhofer-Weibel Co., Cincinnati, has been incorporated at $10,000, to deal in automobile supplies of all kinds, by Barton H. Weibel, Clifford G. Duttenhofer, Frank H. Kirchner, Val Duttenhofer, Jr., and David F. Schorr.

The Dobyns Motor Car Co., Hilliards, Ohio, has been incorporated at $25,000, to deal in automobiles, by LeRoy Dobyns, Arlington C. Harvey, E. V. Mahaffey, M. C. Campbell and S. E. Smith.

The Cleveland-Chevrolet Motor Co., Cleveland, has been incorporated at $5,000, to deal in motor cars, by I. L. Evans, Paul J. Bickel, W. B. Stewart, Rose Cone and I. L. Nichols.

Thomas Perry, St. Augustine, Ill., has had plans drawn for a new garage and sales agency on the north side of the public square.

F. E. Avery & Son, Columbus, Ohio, central Ohio Jeffery dealers, have opened a branch at the Standard Motor Co., Marion, Ohio, managed by Frank L. Vincent.

The Abbott-Grandy Motor Sales Co., Toledo, Ohio, is the name of a new concern formed by A. M. Abbott and C. B. Grandy to handle the Dixie Flyer in northern Ohio.

The Harris-Llewilyn Rubber Co., Columbus, Ohio, suffered a heavy loss because of fire recently. Within 6 hr. after the fire new quarters were secured at 186 East Gay Street and a new stock of tires and tubes arrived the following morning.

Cooke & Co., Columbus, Ohio, accessory dealers, will soon move into new quarters at 168 North Fourth Street.

H. F. Witker, Toledo, Ohio, who has been connected with accessory houses in Toledo, has become associated with the Paige-Toledo Co., Paige and Marmon dealer.

The Clifton Garage, Ottawa, Ill., formerly operated by Matthew Roseele, was sold by the creditors to G. M. Petty, owner of the Standard Garage on West Madison Street. The Clifton Garage, which is located on Columbus Street, will be operated by Petty independent of his other business.

B. J. Holkenbrink, Jacksonville, Ill., has opened a garage at 216 North Main Street, which will be devoted to repair work, specializing in batteries, vulcanizing and welding. Accessories will be carried, and in addition the owner will operate a motor livery.

Gale T. Willis, Jackson, Mich., Haynes distributer for Jackson and Washtenaw counties, has added the Maxwell for Jackson County. His present headquarters are at the Orpheum Garage.

The Mount Clemens Garage & Motor Sales Co., Mount Clemens, Mich., has secured the agency for the Milburn electric.

R. T. Sprague, Fowlerville, Mich., will build a brick garage 66 x 120.

The L. & M. Auto Co., Cleveland, has been incorporated at $10,000 by L. Lamden, Louis Jacobson, A. Gordon, Joseph N. Ackerman and Joseph M. Bernstein.

The Cleveland Tire & Rubber Co., Cleveland, has been incorporated at $10,000, to deal in tires, by E. P. Schloaser, W. C. Kelley, M. L. Harrington, P. C. Jacobs and E. H. Rooke.

The Cleveland Standard Motor Co., Cleveland, has been incorporated at $30,000, to deal in motor cars and accessories, by George W. Clarke, William M. Clarke, W. B. Stewart, Paul J. Bickel and W. C. Merrick.

The Used Motor Car Co., Cleveland, has been incorporated at $20,000, to deal in automobiles, by R. D. Neale, M. S. Foster, Charles H. Olds, S. W. Sangster and Frank J. Merrick.

The Burd-Ring Sales Co., 813 Grand Avenue, Milwaukee, has appointed Arthur W. Mierow manager of service for Milwaukee and Wisconsin.

Ray C. Chidester, manager of the Milwaukee branch of the Packard Motor Car Co. of Chicago, has been appointed a member of the executive committee of Milwaukee sales managers to organize a Milwaukee salesmanship club.

Harry Ewing, Hartford, Wis., who opened a garage on West Sumner Street some time ago, has closed out the business and has become associated with the new Knickerbocker Garage Co., Hartford.

The Flach-Schneeberg Co., 764 Thirty-second Street, Milwaukee, operating a garage and machine shop, has filed a voluntary petition in bankruptcy. Liabilities are scheduled at $3,173 and assets at $6,396.

The Algoma Motor Car Co., Algoma, Wis., has taken occupancy of its new $10,000 garage at Fourth and Fremont Streets. Berl F. Rider is owner.

The Suburban Garage Co., 26 State Street, Wauwatosa, Wis., has broken ground for a two-story shop addition 20 x 40 and a full second story to the present garage 55 x 144. The improvements will cost $10,000. Warren Bros. are the owners.

The Wisconsin State Rubber Co., 213 Second Street, Milwaukee, has moved to new and larger quarters at 181 Fourth Street. The concern handles the Mohawk, Capitol and Packard pneumatics and Mots cushion tires.

John Hagenbuch of Cook & Hagenbuch, Three Rivers, Mich., has taken the agency for the Briscoe.

A. J. Kraft, Utica, Mich., is now conducting the garage formerly operated by W. C. Wert, who has retired from the garage business.

James Evans, Madison, Wis., will build a garage and repairshop 66 x 198, two stories and basement, at Henry and Dayton Streets.

Otto Meister, Black Earth, Wis., is building a 30 x 50-ft. addition to his garage, to be used for a repairshop. The shop will be operated by O. A. Tupper.

H. C. Biddison, 1516 Williamson Street, Milwaukee, manufacturing oiling devices and conducting a repairshop, is erecting a new machine shop at Rogers and Williamson Streets. It will be of brick, 44 x 60, one story and basement.

Thomas Eagen, Stanley, Wis., has awarded contracts for a garage and repairshop 40 x 66, adjoining the H. F. Brick Garage.

The Hugh Agner Automobile Co., Burlington, Wis., has revised plans for its new fireproof garage, making it one story instead of two stories, but with foundations for two. The high price of steel induced the change.

H. M. Younglove and **A. E. Schultz,** Wautoma, Wis., have formed a partnership, under the style of Younglove & Schultz, to operate a garage and repairshop and handle the Overland and Ford.

F. J. Rogers, Crandon, Wis., has opened a garage and repairshop in the Muller Building, with Edward Jencks as manager.

Clyde Mayhew of the Studebaker Garage, Platteville, Wis., has taken the agency for the Hupmobile.

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The Oconto Garage, Oconto, Wis., owned by Sophus Nelson, Green Bay, Wis., has been purchased by Hugo Lingelbach, agent for the Overland and Jeffery. Harry Lievan of the Four Wheel Drive Auto Co., Clintonville, Wis., has joined Lingelbach as mechanical superintendent.

The Duplex Tire Co., 219 Pearl Street, La Crosse, Wis., has sold its business to the Natenshon Co., which recently purchased the building. The business will be continued under the new ownership.

The Lake Mills Auto Co., Lake Mills, Wis., is now controlled by Lloyd Cook, who has purchased the interest of his partner, G. H. Bruns.

The New London Motor Co., New London, Wis., is the new style of the Maxwell Motor Co.

Mayes & Perkins, Alma, Mich., has opened a repairshop at the rear of the State Savings Bank Building.

The Overland Wisconsin Co., 510-516 Broadway, Milwaukee, state agent for the Overland, is building a large one-story steel and concrete warehouse covering one-fourth of a block, adjoining its three-story salesroom, storage and service station building at Broadway and Biddle Streets.

Roy Bertrand, Neosho, Wis., has retired from the Neosho Garage to become manager of the W. G. Menzel garage, Fond du Lac, Wis.

The Otto Motor Co., Seymour, Wis., has passed into the ownership of C. A. Van Vuren, who purchased the interest of Charles Otto.

William Glassow, Jr., of the Howard Garage, Neillsville, Wis., is a new Maxwell agent in northern Wisconsin.

W. A. Behnke, Washburn, Wis., has opened a garage and repairshop in the new garage building just erected adjacent to the Northern State Bank Building at Washburn.

The Davis-Southern Co., Fort Worth, Tex., has secured the distributing agency in northern Texas for the Scripps-Booth, with headquarters in both Fort Worth and Dallas.

F. M. Backus, Howell, Mich., has bought an interest in the Howell Garage.

James McClure, Calumet, Mich., has become distributer for the Buick.

The Main Garage, Midland, Mich., has been sold to George Benner and Morley Blackhurst.

Murray & Co., Gaylord, Mich., have taken possession of their new garage on Main Street.

EAST

Shubel A. Foster, Hartford, Conn., has severed his connection with the White Motors Co., 45 Gold Street, and has joined the Britton Co., 121 Allyn Street, as sales manager of the Stearns Knight department. He succeeds Hamilton W. Jones, who recently resigned from the Britton Co. to join Milton J. Budlong in New York City.

James H. Whaley, Hartford, Conn., for the past five years with the Buick organization as cashier and salesman, has severed his connection with the Hartford Buick Co. to go into business for himself. He has plans for a one-story brick service station and repairshop on Wethersfield Avenue, 200 x 50. Work will start within a few days. There is to be a salesroom, machine shop and repairshop. Another department will be devoted to used cars.

T. F. Russell, Springfield, Mass., has taken the agency for the Redden Truck Maker.

Warren Locke, Worcester, Mass., owner of the Palace Garage, has started enlarging his place and the Worcester Taxicab Co. has leased quarters there.

The Metz Co., Worcester, Mass., will move into its new building shortly.

The Drenco Machine & Garage Corporations, New York City, which heretofore has occupied nearly all of the garage building between Broadway and Seventh Avenue below West Fiftieth Street, has taken over the remainder, consisting of the Peugeot salesrooms. The company plans to sell a foreign car in the salesrooms and also display there the specialties it handles, including the Master carbureter, Kenair air spring and others. "Drenco" is made from the names of the proprietors, Driscoll, Renn and Coon.

The Chalmers Agency in Hartford, Conn., has passed from F. L. Caulkins of Middletown, who maintained a branch in Hartford under the name of the Chalmers Auto Agency, to the A. C. Hine Co., Oakland and Krebs truck distributer. The Hine Co. is to control Hartford, Litchfield, Tolland, Windham, Middlesex and New London counties and will also sell in Meriden, which is in New Haven County. Caulkins will continue to represent the Chalmers in Middlesex County. John W. Kemp, manager of the Chalmers Auto Agency, has joined the sales force of the Hine Co. and will be connected with the Chalmers department.

Robert R. Ashwell, Hartford, Conn., has been appointed service representative of the Prest-O-Lite storage battery.

Edward S. Clark, Hartford, Conn., Paige distributer, has leased nearly all of the new Fuller Storage Battery Co. building at 331 Church Street. Part of the first floor will be used for a car salesroom, the whole of the second and third floors for a repair department and service station. Removal from the old location, 183 Allyn Street, will be in a few days.

The Packard Motor Car Co., 317 North Broad Street, Philadelphia, has purchased a number of dwellings on Wood and Pearl Streets, on the site of which it will erect a large addition.

The Lance Motor Co., Reading, Pa., has moved from 126 Penn Street to 136 Beach Street, where its three-story garage is located.

The Oakland Motor Co., 227 North Broad Street, Philadelphia has purchased the property at 918 North Broad Street and will erect a new sales and service building on the site.

The Standard Supply & Equipment Co., Thirteenth and Cherry Streets, Philadelphia, has leased the building now being erected at 249-53 North Jupiter Street for ten years.

T. S. Johnson, Philadelphia branch manager of the Oakland Motor Co., has resigned and opened offices in the Abbott Building as eastern distributer of the Monroe.

Emanuel Weil, Philadelphia, is erecting a one-story brick garage, 140 x 108, on Atlantic Street between Nineteenth and Twentieth Streets.

The Davis Mfg. Co., Los Angeles, is the latest automobile machine shop to enter the field in southern California. The new concern is to be located at 1238-44 South Flower Street and when the installation is completed, it is to be the finest machine shop in the State. In addition to doing general machine work, making parts for any automobile and doing heavy truck work, the company is to manufacture complete, the Standard truck attachment. Leo Linkogel is to be mechanical superintendent of the plant and Roy Martin, who for the past nineteen years has been with the W. J. Burt Motor Car Co., Los Angeles, is to be estimator.

COAST

W. J. McCulley, Los Angeles, Cal., has been placed in charge of the Los Angeles branch of the Jewett Car Co., Newark, Ohio. The branch is located at 432-34 West Pico Street.

The Sunset Battery and Ignition Works, Los Angeles, has opened a U. S. L. service station at 924 South Los Angeles Street, just one door south of the Master Carburetor Company's branch.

L. E. Crowe, Los Angeles, distributer of the Allen, has moved from Eleventh and Olive Streets to 1053-55 South Olive Street.

E. E. Bradley, Fresno, Cal., is to occupy a new garage being built at Locust and Center Streets.

Lynn C. Buxton, Los Angeles, has taken over the store just east of his garage at Pico and Olive Streets and is using the new location for a used-car department.

The Bell-Wyman Implement Co., North Yakima, Wash., has taken the agency for the Chalmers.

The Little & Kennedy Co., Tacoma, Wash., has opened a retail supply and accessory store at 739-45 Broadway.

C. R. Reeves, Tacoma, Wash., has been named dealer for the Wright truck attachment.

H. Katterhagen, Uniontown, Wash., has purchased the business of Swen Swenson and has signed a contract to handle the Hudson.

Tenth Avenue Garage, Seattle, Wash., will be remodeled. A modern machine shop is included in the plans.

Fred L. Ward, Los Angeles, has leased a brick store building at Hill and Ninth Streets and will open a tire store.

The Al. G. Faulkner Co., Los Angeles, Marmon dealer, is to occupy a two-story brick and stone building at Figuroa and Seventeenth Streets, now under construction. The building will be ready for occupancy Oct. 1.

The Sunset Accessory Co., Los Angeles, Cal., has opened up at 433 South Flower Street.

The Olson Fender & Body Works, Los Angeles, has opened a well-equipped plant at 443 South Flower Street.

Glenn Phillips, Los Angeles, plans to move into larger quarters, having outgrown his quarters at 443 South Figuroa Street.

The Apperson Motor Car Co., Los Angeles, has opened a used-car department and garage at 1130-32 South Olive Street.

"Bob" Weaver, Los Angeles, has been placed in charge of the wholesale business of the Oldsmobile Co. of California, with headquarters in Los Angeles.

Valois & McFarlan, Los Angeles, have opened a garage at 315-17 West Twelfth Street, in the building recently vacated by the Electric Equipment Co.

The G. J. Bennett Tire & Rubber Co., Los Angeles, has moved from 1102 South Broadway to Broadway and Tenth Street.

The Studebaker Corp. of America, Los Angeles branch, inaugurated a day and night sales force July 24, with the salesmen working in shifts.

C. A. Page, Los Angeles, has moved from 1234 South Olive Street to 439-41 South Flower.

The Firestone Tire & Rubber Co., Los Angeles branch, is to have 40,000 ft. of floor when a new three-story building is completed at a cost of $125,000.

The Curlew Motor Co., Curlew, Wash., has opened a new garage. It is the only service station for 31 miles. J. H. Benson and C. P. Boerner, owners of the garage, have also secured the Maxwell agency.

Wright & Wright, Los Angeles, have purchased the garage business of the Motor Service Co.; 811-13 South Spring Street, continuing the business under the former name.

George H. Yohraus, Los Angeles, has purchased the garage business of J. Korenag at 4319 Stephenson Avenue.

Howard Goddard, Los Angeles, has opened a garage and repairshop on East Twelfth Street, near San Pedro.

A. Greenfield, Los Angeles, has opened a large salvage establishment at 1028-30 South Main Street.

L. W. Evarts, Los Angeles, has purchased the Echo Garage, 1553 Sunset Boulevard, from Howard H. Wilson.

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SOUTH

G. R. Hardy, Louisville, Ky., is the new general manager of the Southern Motors Co., distributer of the Packard, Hudson, Dodge Bros. and Detroit electric. Hardy has for the past 7 years been president and treasurer of the Rock Falls Mfg. Co., Sterling, Ill., and succeeds G. S. Loomis, who recently resigned to become connected with the Packard-Missouri Co.

SOUTHWEST

The St. Louis Top Co., St. Louis, has doubled its first floor space by moving offices and sample rooms to 3025 Olive Street, a room 30 x 100, adjoining the old quarters, and has installed an elevator in the shop.

The Chevrolet Motor Co. of St. Louis, Inc., has opened new uptown showrooms. The building fronts on five streets, this being made possible because of the roadway cut-off from Olive Street to Lindell Boulevard, a traffic expedient. The streets are Olive, Lindell, Locust, Channing and Leonard. J. D. Cathey is uptown manager.

Moomaw's Garage, Joplin, Mo., formerly the B. B. Garage, is now in its new location at 824 Joplin Street.

Hahn Bros., Coffeyville, Kan., have secured the agency for the Overland; they will erect a new building.

W. H. Reynolds, Sedalia, Mo., Chalmers, Briscoe and Franklin dealer, has opened a repairshop and accessory store.

Earl Park, Harrisonville, Mo., will soon open the Patrick Garage, with the Overland. He formerly was at Freeman.

Charles Smith, Independence, Kan., is now sole owner of the Overland agency, Carl Benson having retired.

Briggs & Son, Memphis, Mo., have purchased the interest of J. Milo Chasteen in the Overland Memphis Co.

Louis Ingennousz, Sumner, Mo., has bought the Sumner Garage.

Scott & Jaeger Garage, Clarksville, Mo., Dodge Bros. dealer, has opened a repair and accessory department.

S. Carpenter, Jr., Oswego, Kan., has purchased the Scott & Hollingsworth Garage and will move to a new location.

John Turnbull, Jr., Maple Hill, Kan., has secured the agency for the Overland.

The Buick agency, Manhattan, Kan., will occupy new quarters Dec. 1 in a building now being erected.

W. Cheal, Robinson, Kan., manager of the Robinson Garage, is now operating his repair department in an addition recently completed.

Frank Hoover, Marion, Kan., has taken charge of a garage recently leased by Henry Sallee.

Lloyd Lumpee and **Paul Spurlock,** Versailles, Mo., have opened the Electric Garage.

George H. Davis, Mexico, Mo., has purchased the Draper Bros. Garage and will enlarge it, equipping for repair work.

Samuel Lorantos, Lexington, Mo., recently lost his garage by fire.

The Sands Garage, Kirksville, Mo., has opened for business.

Otto Kistler, El Dorado, Kan., has purchased the interest of his partner, Harry Smith, in the Maxwell Garage.

Stewart Munsinger, Howard, Kan., has purchased the interest of his partner, Jesse Cole, in the Howard Motor Co.

Thomas and **George Woolwine,** Pratt, Kan., have purchased the J. W. Farmer Garage.

Mays Bros., Atchison, Kan., have leased a building which will be remodeled as a garage.

B. O. Howard, Texhoma, Okla., has bought the interest of his partner, J. C. Jennings, in the Lone Star Garage.

Travelute & Son, Marysville, Kan., are remodeling a building for garage purposes.

Rainey & Ross, Stanberry, Mo., have bought the interest of W. S. Summers in the Stanberry Machine & Garage Co.

E. H. Beetler and **J. V. Gray,** Marceline, Mo., will soon open a garage and repairshop.

W. E. Hunsaker and **L. F. Comer,** Olean, Mo., have bought an undertaking business and will establish a garage and motor livery in connection.

Loren Shinn, Vandalia, Mo., has purchased the interest of George Kaylor in the Kaylor & Saxe Garage.

Jolly & Son, Stafford, Kan., have succeeded Jolly & Maupin, Maupin retiring from the business.

George DeBilbiss and **R. R. King,** Everest, Kan., have bought the garage of the Bichlemeir Auto Co. and changed the name to the Scenic Route Garage.

D. G. Roth, Moundridge, Kan., has bought the interest of his partner, C. C. Kaegi, in the Meridian Road Garage. Ted Roth, brother of D. G., is now interested in the company.

John McClure, El Dorado, Kan., proprietor of the McClure Garage, has leased quarters, where he will establish a service station, salesroom and battery charging plant, retaining his present garage for storage and repairs.

The Overland-Irwin Co., Hannibal, Mo., has been organized, capital $20,000, to handle the Overland and Willys-Knight and accessories in northeast Missouri. Stockholders are Leaton Irwin, F. R. Lusk, M. E. Lusk, Jr., Albert Wilber, C. H. Wood and A. B. Grubb of Quincy, Ill.; L. G Wilhelm, Ethel Wilhelm and Fenton B. Morris of Hannibal. Incorporation is now under way. Headquarters will be temporarily in quarters of the Hannibal-Overland company, which the new company succeeds. Mr. Wilhelm has been for two years distributer here for the Overland. The Quincy stockholders are interested with Irwin in the Irwin-Overland company of that city.

H. B. Bell, Dodge City, Kan., Chalmers dealer, has secured also the Oakland.

The Howard & Murphy Motor Car Co., Kansas City, Mo., is opening a branch in Hutchinson, Kan., in a new garage at 110 Sherman Street. J. J. Murphy will be manager, and George Martin field agent. The firm is distributer for the Hupmobile.

The Butler Motor Co., Kansas City, distributer of the Dodge Bros. Car, 1523-25 Grand Avenue, is opening a service station at Fifteenth and Harrison Streets.

Miles and **Allen Shores,** Richmond, Mo., Oakland dealers, have secured the agency for the Maxwell.

Edgar Rash, Thayer, Mo., has secured the agency for the Overland. Headquarters will be the Oil Belt Garage, in which Rash is interested.

NORTHWEST

The Standard Oil Co., St. Paul, will erect a $1,500 filling station of brick on Grand Avenue between St. Albans and Grotto Streets.

The Reilly-Herz Co., Inc., 827 Hennepin Avenue, Minneapolis, has secured the Elgin for Minnesota and the Dakotas, also the western half of Wisconsin.

The Martin Motor Sales Co., 723 Third Avenue S., Minneapolis, has taken the agency for the Enger.

L. F. Powell, Marshall, Minn., will build a garage and Ford salesroom.

Louis Dreilbeibis, Butte, Mont., is building an $8,000 garage on Main Street.

J. A. Reuter, Garrison, N. D., is erecting a garage.

The Winona Motor Co., Winona, Minn., will erect a two-story garage at Third and Johnson Streets.

A. E. Gessner, Penn, N. D., has been given the Elcar agency.

The Hillsboro Auto Co., Hillsboro, N. D., has taken the Dort agency.

The South Side Auto Co., New Ulm, Minn., has taken the Overland agency.

Peterson & Johnson, Virginia, Minn., Turnquist Block, have moved to their new garage, 111 North Mesaba Avenue.

F. E. Hutton, Egan, S. D., has opened a new cement garage, 50 x 100.

J. L. Holub, Preston, Minn., has rented the Munkel Garage.

Wreisner Bros., Dassel, Minn., will begin an addition to their garage, 20 x 60, Sept. 1.

C. E. Rossmon and **A. C. Rasmusson,** Thief River Falls, Minn., are contemplating a $10,000 garage on Main Avenue N.

R. E. Anderson, Mankato, Minn., is erecting a garage on Front Street, 44 x 150. He has taken the Ford agency.

G. H. Young, La Moure, N. D., has bought the Studebaker and Maxwell contracts from his father, John Young.

The Denby Motor Truck Co., Detroit, has opened a branch house in Des Moines at 1213-14-15 West Locust Street.

The Times Square Automobile Co. has opened an accessory house at North and Locust Streets, Des Moines.

Martin & Carter, Lenox, Iowa, has sold out to Charles Sturm and Charles Preston. The new firm continues to handle the Buick and Studebaker.

A. D. Kinder and **R. A. Carpenter,** Meservey, Iowa, are now conducting separate garages, but will combine forces and open for business together in a new building now being erected for them on Main Street.

The Henricksen Motor Co., Ringsted, Iowa, has sold its garage to P. W. Petersen, who comes from the farm to enter the motor car business.

E. D. Rockufeler, Rinard, Iowa, has opened a new garage and repairshop.

Thode & Shallau, Blairstown, Iowa, will build a modern fireproof garage.

The Stewart Products Service Station, Des Moines, Iowa, has moved into a new building at 1443 Locust Street.

The Schultz Auto Co., Blairstown, Iowa, has established a new garage in the Charles Haubold Building.

The Smith Motor Co., Davenport, Iowa, has established an agency for the Chalmers in the old Standard Theater Building, which is being remodeled.

The Madrid Auto Co., Madrid, Iowa, has added the Buick to its business.

H. V. Adamsen, Lake City, Iowa, has joined W. A. Van Eps in the motor car business.

The Jones Auto Co., Madrid, Iowa, has added the Dodge Bros.

Albert Schumann, Correctionville, Iowa, has sold his garage business to Herman and Walter Lahann.

William Stevenson, Popejoy, Iowa, will open a new garage.

Mulder & Myerhoff, George, Iowa, has sold its garage business to Frank Roth and Sudenga Bros.

A. W. Heinrich, Newhall, Iowa, lost his garage and repairshop in a fire which caused him a total loss of $9,000, partially insured.

E. W. Buchan, Grundy Center, Iowa, has sold his garage and repairshop to F. E. Wernz and H. B. Kahler.

H. C. Frank, Sumner, Iowa, is building a new garage of steel, cement and pressed brick.

Samuel Onerem, Thor, Iowa, has sold his interest in the Pederson-Onerem business to his brother, Jacob Onerem.

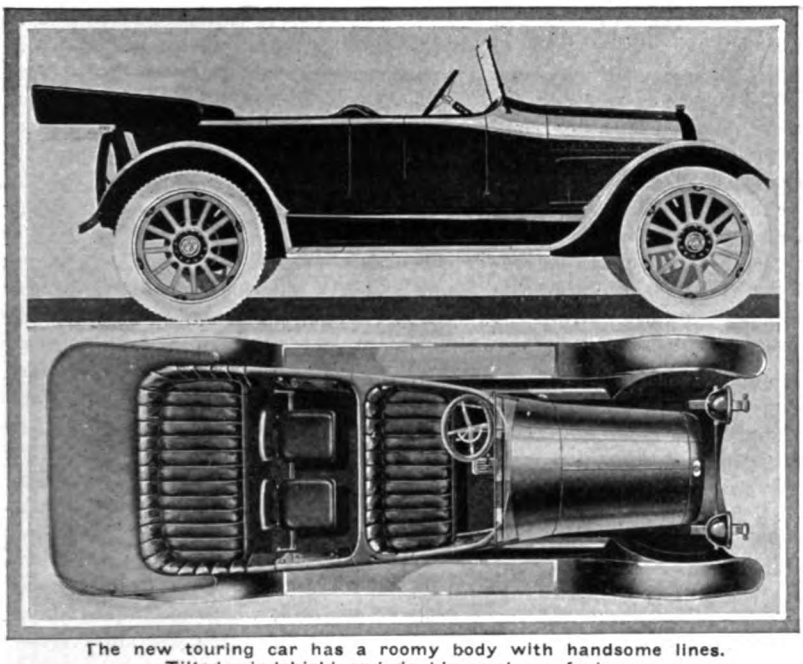
S. J. Culver, Pomeroy, Iowa, is building a new brick garage.

W. A. Wehrman, Luzerne, Iowa, will build a new garage.

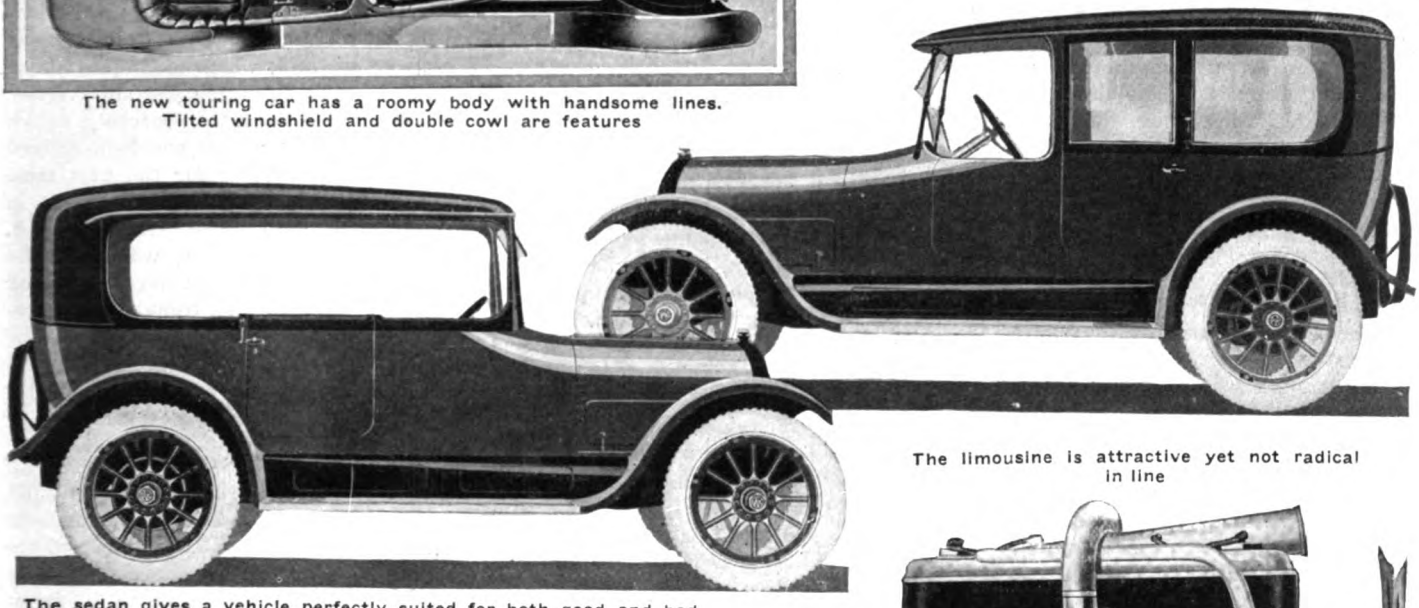
Satre Brothers, Stanhope, Iowa, have secured the agency for the Overland.

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Body Beauty Marks New Line of Willys-Knights



The new touring car has a roomy body with handsome lines. Tilted windshield and double cowl are features



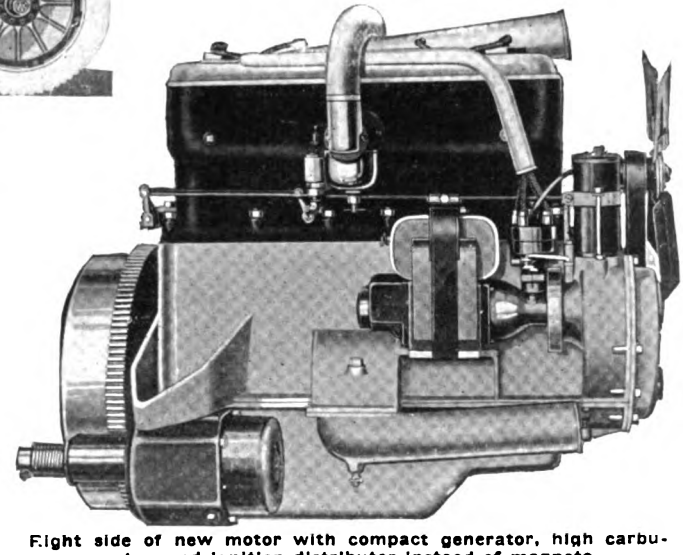
The limousine is attractive yet not radical in line

The sedan gives a vehicle perfectly suited for both good and bad weather

THE new Willys-Knight four is the most comfortable car ever turned out of the Willys-Overland factory in Toledo. It is a seven-passenger car with most modern lines and fittings; it has an improved system of cantilever spring suspension, an entirely new rear axle and a new gearset in combination with the axle. As a result of all these improvements the price has been increased to $1,285 for the touring car, an advance of $160. There is a seven-passenger touring sedan of the Springfield pattern, with a permanent top and glass windows which remove completely, and a seven-passenger limousine.

WILLYS-KNIGHT FOUR

Price—	
Touring, seven-passenger	$1,285
Limousine	1,950
Sedan	1,950
Make of motor	Own
Number of cylinders	Four
Shape	Knight
How cast	Block
Bore	4 1/8
Stroke	4 1/2
S. A. E. horsepower	27.2
Ignition	Connecticut
Carbureter	Tillotson
Engine starter	Auto-Lite
Lighting system	Auto-Lite
Clutch	Cone
Gearset	3-speed
Wheelbase	120
Front tires	34 x 4 1/2
Type rear axle	Full-floating



Right side of new motor with compact generator, high carbureter, and ignition distributor instead of magneto

Great care is taken with the finish, which is maintained at a quality in keeping with the fine lines of the bodies. It is becoming almost platitudinous to describe a 1917 car as having a custom-built aspect, but this is really the best way to sum up the external points of the new Willys-Knight group of models.

The engine, 4⅛ x 4½ in., is the same as the 1916 series except for the ignition, which is now the Connecticut battery system instead of the magneto. The electrical equipment is now all Auto-Lite except the actual distributor; the generator, which is very little larger than a magneto, is mounted on the right side of the engine and chain-driven direct from the crankshaft. With it the igni-

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tion unit is combined and the coil is mounted in a clip on top of the chain case, this making the wiring of minimum length. To drive the generator, the chain pinion has an internally toothed ring outside the case, and the generator shaft a pinion with a corresponding number of teeth which fits inside the ring. This gives the small amount of universal action required to allow for minute differences in alignment and also allows the generator and ignitor to be removed by merely detaching the wires and undoing a single screw holding the clip which retains the generator on its platform.

The starting motor has a Bendix pinion which draws forward, toward the body of the motor, to engage, so that there is a minimum of overhang when the starter is operating. The motor lies just beneath the right rear supporting arm of the engine where it does not interfere with the accessibility of any other part. Completing the electrical system, the battery is housed beneath the floor in the driver's compartment, on the right side, and is accessible through a detachable panel in the guard strip which joins the runningboard to the frame.

Sleeve Lubrication Different

One of the features of the engine is the system of lubrication. The earlier Knight engines were all splash lubricated, but the Willys-Knight has a pressure feed to each main bearing on the crankshaft, whence drilled holes carry the oil to the connecting-rod ends. Thence the overflow is whirled out by the cranks, so reaching the sleeves which are grooved to conduct an adequate supply to every part of the working surfaces. The oil pump is a plunger pattern, located in the base of the crankcase, and the supply delivered to the bearings is controlled by a throttle working in conjunction with the carbureter throttle, so that the engine receives oil in proportion to the work demanded at the moment. One noticeable result of this control is that the Willys-Knight engine is not prone to smoke.

Experience with the 12,000 cars made in the past year shows that this engine has the quality common to all Knight motors of insusceptibility to carbon. Firstly, carbon does not form so fast as in an L-head engine, and secondly, when it does form it has much less effect on the running. Up to a point, carbon is actually beneficial to a Knight engine, putting a sheen on the sleeves and port edges. The exact reason why this should be so has not yet been stated, but probably the absence of trouble due to presence of carbon is because of the almost spherical shape of the combustion space and the absence of any roughness. In a Knight engine every part of the combustion chamber is machined, and there are no angles or pockets to house thick deposits which could get red hot and cause pre-ignition.

Thermo-syphon cooling, which has been used for the 1916 series, is retained for the new model. There is a passage through the crankcase which makes the inlet to the cylinders from the radiator, as seen in the illustration of the right side of the motor. From the top of the cylinders a large aluminum header returns the hot water to the radiator, the water path being almost ideal for straightness and freedom from twists.

Same Carbureter

As before, carburetion is cared for by a Tillotson instrument of horizontal form bolting directly to the cylinders and drawing hot air from a muff on the exhaust pipe. The gasoline tank is at the rear end of the chassis and the fuel supply is maintained by a Stewart vacuum feed.

The transmission system follows the same general lines. The gearset is in a unit with the back axle and a stout torque tube incloses the propeller shaft. This tube is hung on pivots at the front end. Though at first glance the gearset appears much the same as previously, it is a new design, having the countershaft beneath the mainshaft instead of beside it, making the box narrower and so stiffer. Three speeds are used and the arrangement of the bearings is rather out of the ordinary. As usual, the tail end bearing on the mainshaft takes the bevel pinion thrust, and is a large double-row New Departure ball bearing. At the front end of the mainshaft is a substantial single-row ball race and the spigot bearing is a Hyatt roller. The countershaft is fixed in the case, the whole set of countershaft gears being assembled into a unit which is bored out larger than the fixed shaft, the space between being filled completely with Hyatt rollers from end to end.

New Rear Construction

Another notable change is in the rear axle construction. Formerly the axle had a cast center case with tubes bolted to it, but now there it is a steel stamping of the so-called "banjo" form, the differential being carried on brackets projecting from the back of the gearbox. At the back of the axle a simple cover plate completes the inclosure of the differential, so that inspection is possible with the removal of only a few nuts. The road wheels are mounted outside tubular sleeves which are fixed in the ends of the banjo stamping, so the new axle is full floating. Throughout it the bearings used are Timken taper roller adjustable.

Still another transmission change is in the universal joint, which is now six leather disks in two sets of three. This gives perfect universality without any metallic moving parts, there are no surfaces to wear and nothing that can ever make a noise. The life of the leather is said to be entirely satisfactory and it is worth noting that real leather is used, not a composition. It is the same sort of leather as is commonly employed for facing cone clutches. The flexibility of this universal is quite remarkable; it feels, when moved by hand, as free as any metal joint and more free than some of them.

The cantilever rear springs are 48 in. long and 2½ in. wide, and applying the test of driving across a railroad at 20 m.p.h. proved their ability to absorb shock. At this speed the rear seat passengers can just feel the crossing, but are not shaken off the seat, and the front seat occupants feel nothing.

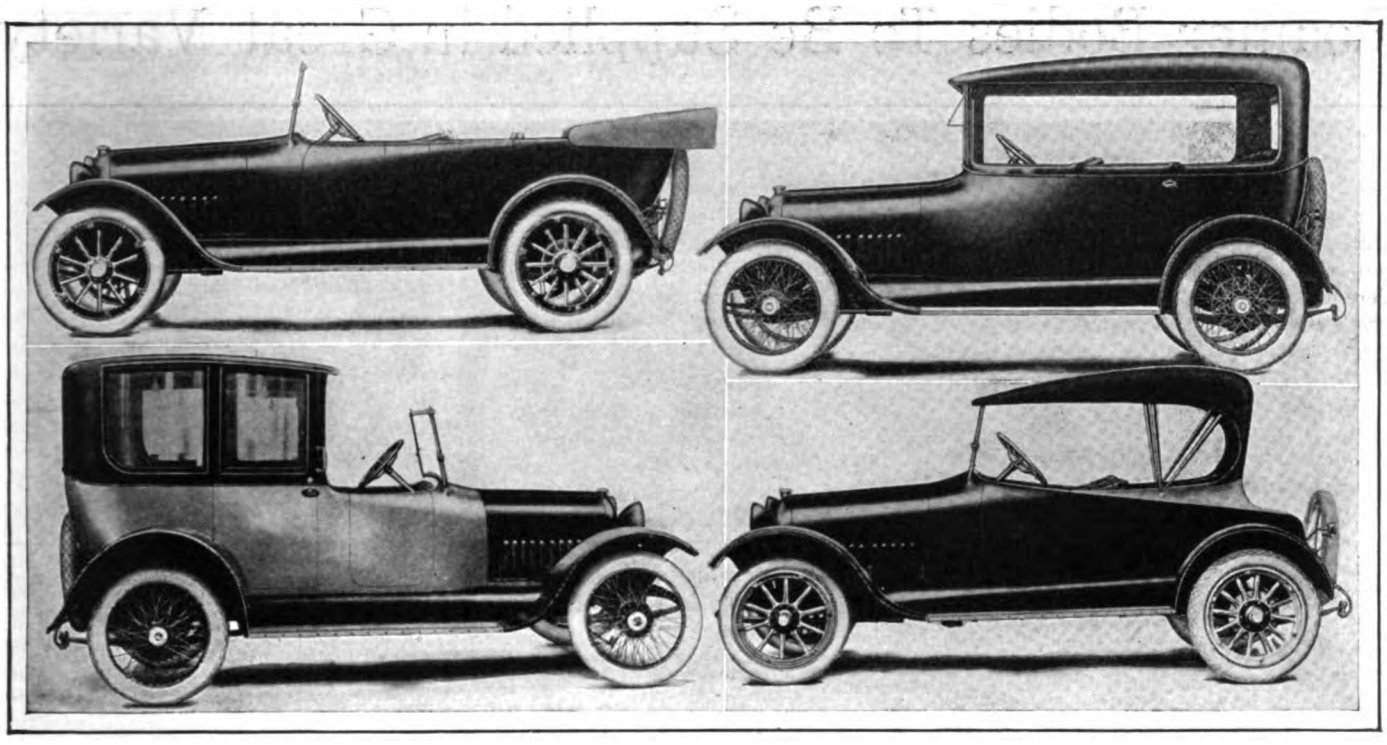
In handling, the most noticeable feature is the ease of gear shifting, due to the soft acting cone clutch and the strong clutch brake which quickly brings the cone to rest. Still, with a high gear ratio of 4.6 to 1, which is the standard, there is little need for the shift lever, as the engine operates smoothly below 5 m.p.h. Another point which is noticed when driving the car for the first time is that there is no apparent increase in vibration at high speed. At 20 m.p.h. there is a slight tremor, which can be felt in the front seat but not in the rear one. At 40 m.p.h. this tremor is, if anything, less noticeable, while the engine is, of course, just as quiet at 50 as at 20. The pulling at slow speed is markedly good, and the acceleration smooth.

Rattle-proof Bodies

The bodywork is much more rugged in construction and great pains have been taken to strengthen all points where weakness might lead to squeak or rattle production. The engine being so quiet the need for soundless bodywork is greater than ever, and this can only be obtained by solidity of frame and careful fitting of doors, etc. The upholstery is deep and very soft, both the cushions and the back padding being the kind that the body sinks into. Whichever way one leans there is a springy give conforming to the attitude taken. For the cowlboard and for the back of the front seat into which the folding seats disappear a grained finish is employed, so cunningly devised that the closest examination does not disclose the fact that the material is really steel. The carpet used in the tonneau is of heavy material, in keeping with the leather of the upholstery; in fact, every detail is in keeping with the rest.

The finish is in a dark rich blue, upholstery, body and hood all matching. Road wheels are grey, and black is used for the fenders; fittings are of nickel or polished aluminum. Tires are 34 x 4½ for the touring car, with plain treads on the front and non-skids on the rear. The closed cars have non-skids all around. There is a spare demountable rim included in the equipment.

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Four of the light six Velie models. Upper, left—Five-passenger touring car. Upper, right—Springfield type sedan. Lower, left—Town car, Lower, right—Four-passenger runabout

Complete Line of Attractive Bodies on Small Velie Six

Both Chassis Practically Unchanged—Prices Slightly Higher—Large Six a Seven-Passenger Only

FOR the coming year a choice of four very attractive bodies may be had on the small six Velie Biltwell chassis. In addition to the two- and five-passenger models, which are continued with some improvements, there is a four-passenger runabout, a convertible sedan and a handsome town car and several others. The larger six is made only with a seven-passenger body. The chassis are practically the same, but prices are slightly higher, the five-passenger selling for $1,085, an increase of $20, and the seven-passenger for $1,550 instead of $1,450, an advance of $100.

The five-passenger touring car has been improved in appearance by employing a roll edge around the top of the body, by a slightly tilted windshield, which, by the way, is standard on all models, and just the suggestion of a double cowl. The lines are straighter and the whole exterior smoother. There is an inch more room in the front and 4 in. more in the rear, due to giving the body a greater overhang.

The most striking of the new models is a four-passenger runabout with divided front seats and sloping rear deck which is molded up around the rear compartment, giving a motorboat effect. It sells for $1,085.

There is a town car of unusually good lines at $2,200, a touring sedan of the Springfield type at $1,685, a coupe at $1,750, a two-passenger runabout at $1,065 and a cabriolet at $1,485.

The principal change in the small six is the return to Timken axles, front and rear. An oil-level gage on the motor has replaced the measuring rod used this year. The vibrating horn has given way to a Stewart motor-driven model under the hood.

A special Velie-Continental motor, 3¼ x 4¼, which develops over 40 hp., is used in the small six. It is a standard L-head design with removable cylinder head. The motor is in unit with the clutch and gearbox. Increased economy and smoother running have been obtained by slight refinements in the motor, mainly due to increased compression and somewhat higher speed. Water circulation is by pump.

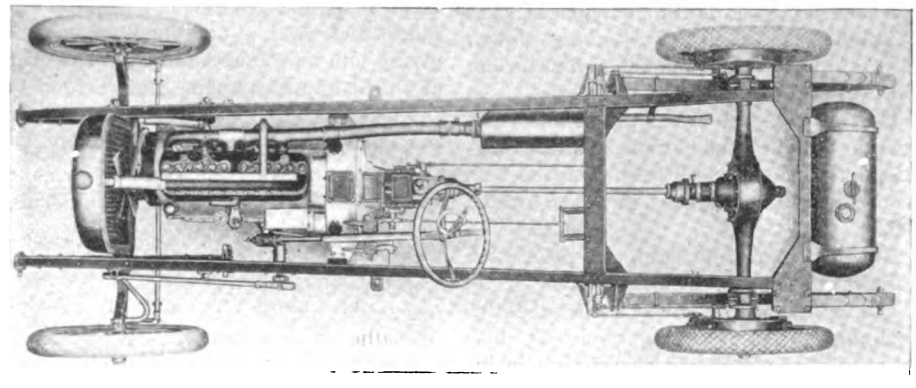
A Stewart vacuum system and a model B-1 Stromberg carbureter are used. The electric equipment is Remy throughout.

A dry-disk clutch and three-speed gearset are employed, and the rear axle is a floating design with spiral bevel drive.

Two Velie Sixes

Made by the Velie Motor Vehicle Co., Moline, Ill.

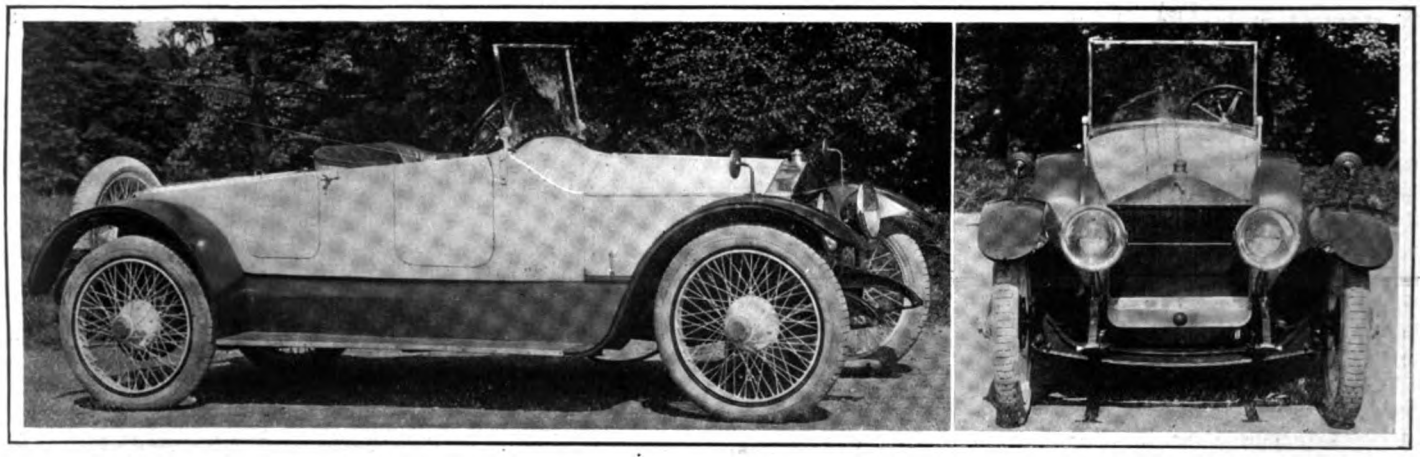
Touring, 5-pass.	$1,085	7-pass. $1,550
Roadster, 4-pass.	1,085	
Roadster, 2-pass.	1,065	
Coupé	1,750	
Touring, Sedan	1,685	
Touring Car	2,200	
Make of motor	Velie-Continental	
Number of cylinders	Six	
Shape	L-head	
How cast	Block	
Bore	3¼	3½
Stroke	4¼	5¼
S.A.E. horsepower	25.3	29.4
Magneto	Remy	
Carbureter	Stromberg	
Starting and lighting system	Remy	
Clutch	Dry disk	
Gearset	3-speed	4-speed
Wheelbase	115	124
Tires	32 x 4	34 x 4
Make of axles	Timkin	
Type rear axle	Floating	



Timken axles front and rear are the only changes of note in the small Velie chassis

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Roamer Bodies To Be Supplied in Great Variety



ROAMER CARS are being produced in a number of designs of pleasing variety in carrying out the company's policy of custom work. The illustration herewith shows one type of body, a special four-passenger roadster job, selling at $1,900. The regular club touring model lists at $1,800. Mechanically, these cars are all mounted on a stock chassis of 124-in. wheelbase. They have the 3⅛ x 5 Rutenber engine fitted with Bosch magneto ignition and Bijur lighting and starting. Other special parts and fittings are: Hess axle, Grant-Lees gearset, and Houk wire wheels. The cars are offered in a great variety of finish, and, as a matter of fact, each purchaser has his choice of color. Harry J. Everall, Inc., who is now handling the car in New York, has placed an order for 150 of the Roamer chassis and for twenty-five special enclosed bodies for the New York trade. In Boston, arrangements have been made with Alfred Cutler Morse, agent for the Rolls-Royce and Lancia companies, to handle the Roamer, and in Philadelphia, the Oliver agency, handling the Mercer, will take on the Roamer.

Price of Gas Still Continues to Fall

New York, New Jersey, Connecticut and Boston Get 1-cent Cut

NEW YORK, Aug. 7—Gasoline is 1 cent per gallon lower all over the country. Reports from such scattered points as Dallas, Columbus, Boston, Cleveland and New York, all bear out the reduction. The primary cause is the fall in crude prices, which have dropped from 5 to 10 cents a barrel. Chicago reports the only exception to the general reduction.

For the first time in several years Dallas is enjoying 18-cent gasoline, prices having been all the way up to 22. Throughout the Middle West, including Ohio, Indiana and Illinois and in New York and neighboring States, the price of gasoline is 23 cents per gallon retail in place of 24 last week. In Boston prices are 1 cent higher, being 24, a reduction of 1 cent from the 25 charged for the past few months.

Both Columbus, Ohio, and Dallas, Tex., are now enjoying lower fuel prices, the Columbus wholesale price going down from 24 to 23 cents and the Dallas price now being 18 cents.

It is freely predicted that further reduction will be made in the near future and that as much as 3 cents may be cut from the present figures in some localities.

Chicago reports no change in price and no immediate prospect of a change.

The reduction is ascribed to the steadily declining price of crude, which is due largely to the reopening of old wells in Pennsylvania and Oklahoma and to the greater quantities of gasoline which are being produced both by the Burton process and from natural gas.

Business Brisk on Coast

LOS ANGELES, Aug. 4—Automobile sales throughout Southern California and Arizona have been 50 per cent better this summer than last. This figure is reached from a canvass of twenty of the largest dealers in Los Angeles, and in spite of the fact that it has been difficult to secure the 1917 shipments in many instances.

Rickenbacher Wins In Tacoma Montamarathon

TACOMA, Aug. 5 (Special Telegram)—Eddie Rickenbacher in a Maxwell won the 300-mile Montamarathon to-day at an average of 89.3 miles per hour. Ralph De Palma in a Mercedes led consistently until his jinx reasserted itself at 175 miles and engine trouble delayed him, giving him only fourth money. The order of finish appears in the table below.

Rickenbacher's 100th lap at 96 miles per hour was the fastest of the day.

Milton received the regular prize of $2,000 and an extra $500 and the Golden Potlatch trophy for leading at 100 and 200 miles.

D'Alene, Duesenberg, at sixty-four laps went out with a broken universal.

Mossie, Gandy Special, retired at the thirtieth lap with a burned bearing.

Johnson, Crawford, injured his eye in the first lap with broken goggles, but returned at the third lap and stayed until the sixty-ninth, until a broken valve put him out.

Latta, Dodge Special, ran consistently until the ninety-eighth lap, when engine trouble stopped him.

Oldfield, Delage, was forced out nine laps from the finish through the failure of his valve mechanism.

Lewis drove a thrilling race, running open on the curves and frequently taking the lead until the eighty-first lap, when he went to the pits with his car afire. After a quick tire change he brought the crowd to their feet by sweeping into third place and making one lap at the rate of 94 miles. Henderson covered 150 laps without a stop. Fast work by the pit men of De Palma and Rickenbacher helped them greatly. The winners' cars were equipped with Goodyear cord tires. The weather was good and the track was fast.

Montreal Race in September

MONTREAL, Aug. 5—An automobile race and aviation meet will be held late in September by the Montreal Automobile Trade Association.

Finish	Driver	Car	Time	Average	Prize
1	Rickenbacher	Maxwell	3:21:40.1	89.3	$4,000
2	Milton	Duesenberg	3:23:05.62	88.6	2,500
3	Lewis	Crawford	3:24:29.35	88	1,500
4	De Palma	Mercedes	3:27:20.41	87	1,000
5	Henderson	Maxwell	3:33:03.96	84.5	750
6	Toft	Omar	3:33:25.62	84.4	250
7	Chandler	Crawford	3:37:31.29		

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Buick Dealer to Send Cars on Fair Circuit

Northwest Buick Co. Plans Series of Exhibits at State Fairs in Washington

TACOMA, Aug. 5—The Northwest Buick Co., distributer of Buick pleasure cars and G. M. C. trucks in the Pacific Northwest and maintaining headquarters in Seattle and Spokane, will show at all fairs and exhibitions in the State of Washington this year a complete line of Buick cars and G. M. C. trucks under their own canvas.

The initial effort in this direction was made in Lincoln County, Wash., during the encampment of the Pioneers' Association of Lincoln and Adams counties, June 21 to 23. While not intending to engage in the circus business, this company has purchased its own tent, 40 x 80 ft., and in which are contained a Buick D-6-45 and a Buick D-6-55, with a ¾-ton, a 2-ton with trailer, and a 5-ton G. M. C. truck. At the conclusion of the exhibition the tent and accoutrements were folded, packed and hauled away on the G. M. C. trucks, much after the fashion of a circus.

Sues "Karoline" Makers

COLUMBUS, Aug. 8—In a suit for violation of contract, Clarence W. Miller has made charges against the Union Oil & Grease Co. and Grant C. Holliday and Warren C. Miller, claiming that the product known as "Karoline," a substitute for gasoline, is simply kerosene with a small percentage of gasoline added. The plaintiff claimed that the company demanded $200 from him for a certain territory and he was to receive $20 weekly as local sales manager. He worked for some time, but found his customers complaining of the product and thus he had an analysis made. He asks for $422 damages.

Some Gasoline Law!

ST. LOUIS, Aug. 7—Small dealers in gasoline are bringing pressure to bear on Mayor Kiel to have him veto the bill passed by the Board of Aldermen last week, forbidding the delivery of more than 3 gal. of gasoline to a motor at any place except a filling station. Paul Browne of the Independent Oil Co., who is spokesman for the small dealers, declares that the bill was introduced on behalf of the Pierce Oil Corp., which owns twenty-five of the 100 filling stations in the city.

Alderman J. W. Renick, author of the bill, is a Pierce corporation salesman, but he denies his employees had anything to do with originating the bill, declaring its origin was in suggestions made to him by Commissioner of Public Safety Swingley and the fire department. The bill was passed under suspension of rules and unexpectedly. Downtown firms who have trucks filled from tank wagons and whose headquarters are distant from filling stations are supporting the fight. The bill passed with only one dissenting vote, that alderman taking the position that street traffic in gasoline should be stopped altogether if dangerous and that the 3-gal. limit was foolish.

Predict Gasoline Will Drop

WASHINGTON, D. C., Aug. 7—*Special Telegram*—There will be a decided drop in the price of gasoline this month if the prediction of the Federal Bureau of Mines is correct. The prediction is based upon the report of Bureau agents who state that new wells are being opened and that all existing wells are being worked to capacity.

It is also reported here that the Federal Trade Commission investigation of the Standard Oil Co. will disclose no illegal activities, although it is said that the Commission found that approximately twenty directors controlled the different gasoline companies and that gasoline could be sold with profit at 17 cents.

Hollier to Add a Six

CHELSEA, MICH., Aug. 8—The Lewis Spring & Axle Co., which has heretofore made only the Hollier 8, will build a six for the coming season in addition to the 8. It will sell at $1,085 with either a five-passenger touring or a four-passenger roadster body. It will have left drive, cantilever rear springs, floating axle, valve-in-head block motor, 3 x 4¼, 116 in. wheelbase, wood wheels and 33 x 4 non-skid tires all around.

Colorado Law Upheld

DENVER, Aug. 5—Colorado's law requiring a State license each year for motor vehicles has been upheld as constitutional by District Judge Burke of Sterling in a decision just handed down in the first suit brought to contest the law since it went into effect 3 years ago this month. The case was started nearly a year ago when several Logan County car owners refused to pay their license fee. Secretary of State Ramer brought suit to collect the fees and a justice of peace declared the law unconstitutional.

New Gray & Davis Starter for Fords

BOSTON, Aug. 8—Gray & Davis has just brought out a two-unit electric lighting and starting system for Fords; it sells for $75. The motor and generator are separate, though they are inclosed in the same housing. The system may be attached quickly and easily.

New Gas Tank Rules Made for Cincinnati

Thicknesses of Walls Are Specified for Different Sizes of Fuel Storage

CINCINNATI, Aug. 7—New regulations governing the storage of gasoline in Cincinnati are embodied in an ordinance passed by the City Council under a suspension of rules. Restrictions as to location of public garages and automobile filling stations are removed. It provides that gasoline shall be stored in closed tanks of steel, coated on the outside with tar. All joints shall be tightly corked or soldered.

The tanks must be placed on a firm foundation and must be located under ground, the top being not less than 3 ft. below the surface of the ground and the same distance below the level of the lowest pipe in the building to be supplied.

The thickness of the steel required varies according to the capacity of the tank. The scale is: 1 to 30 gal., 18 gage; 31 to 350 gal., 16 gage; 351 to 1000 gal., 14 gage; 1001 to 3000 gal., 10 gage; 3001 to 5000 gal., 7 gage; 5001 to 10,000 gal., ¼ in.; 10,001 to 20,000 gal., 5/16 in.; 20,001 to 30,000 gal., ⅜ in.

Not more than 10 gal. of gasoline shall be kept in vessels in a garage, and then in approved safety cans, constructed of metal and self-closing and of not more than 5 gal.

Permits will be granted for the construction of filling stations and garages only when the plans meet with the approval of the building commissioner and conform to the provisions of the ordinance.

Tests Kerosene Carburetor

BOSTON, Aug. 5—Frederick D. Jordan and Dr. E. R. Hackett made a trip to this city from Maine a few days ago in a Ford car fitted with a kerosene carbureter invented by Jordan. The device worked all right, and those who have seen it demonstrated believe that it will be a big factor in the fuel problem. He used a low grade of kerosene such as can be bought for 10 cents a gallon and traveled from 35 to 40 miles with one gallon.

Fight Gas Adulteration

COLUMBUS, Aug. 1—The Columbus Automobile Club is back of an ordinance which is pending in the City Council to prevent the adulteration of gasoline with kerosene or other foreign body. The ordinance, which will be enacted soon, provides for a stiff fine for adulteration. This is to prevent dealers from mixing gasoline with kerosene, which has been done in Columbus. The proposed provisions to fix the specific gravity and the boiling point was found to be impracticable.

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Kill All But One of the Year's Bad Bills

Massachusetts Associations Check Great Flood of Drastic Legislation—One Is Good

BOSTON, Aug. 5—Dealers and car owners of Massachusetts, working together, killed all but one drastic would-be law in the legislature this year.

Secretary James Fortesque of the Massachusetts State A. A. has just filed his report relative to the legislative work of his organization, assisted by James T. Sullivan, Bay State A. A., and John B. Sullivan, Jr., Boston Automobile Dealers Association. There were just fifty-nine measures introduced relative to motor vehicles. A number were duplicates of the same idea, so that there were practically fifty bills up for consideration.

When it is considered that out of that number there were only nine measures passed, and of that nine but one was against the motorists, it shows that the legislative committee did excellent work. The one bill against which the motorists worked in vain made more stringent the law for reckless and intoxicated drivers, but it is so worded that it makes no distinction between a man who has taken one glass of beer and the fellow who is incapable of handling a car, nor between the really reckless driver and the man who may go a mile faster than the law allows. The motorists wanted a law against the really reckless and drunken drivers, but not the one that was steam-rollered through to "make political capital for the Governor."

Favored a Number

All the other laws enacted were advocated by the motor organization. One of these called for lights on all vehicles using the highways to be lit uniformly from half an hour after sunset to half an hour before sunrise. In other years the horse-drawn vehicles were lighted 1 hr. after and the motor vehicles half an hour. A law was passed also, compelling all vehicles that have become stalled or stop on a road at night for any reason to show two white lights.

The nuisance caused by contractors spreading tar and oil over the entire surface of the highways has been made an offense now, and the new law provides that only one-half the width of the road be so treated at one time, thus allowing vehicles to pass without danger from skidding or occupants getting all over tar and oil. There was passed also a law allowing owners in other States within 15 miles of the boundary of Massachusetts to register in the Bay State for a $2 fee. Another bill allowed all the motor vehicles of a city or town to be registered for a fee of $2. In the past, some paid a full rate, according to horsepower, and others did not pay anything.

The motorists had the horses in mind when they favored a bill to allow the Highway Commission to build experimental roads where the sides would be made safe for horses, while the center would be smooth for motor cars. The fee for getting a renewal of a license to drive has been raised from 50 cents to $1. Another bill gives cities and towns the right to regulate the jitney business. A bill was also passed covering what are known as autopeds, allowing their registration at a low figure.

Among the bills that were killed were some designed to amalgamate the Highway Commission with other boards; bills that would compel all owners of motor cars to file bonds before they could get a license to drive their cars, some bonds to be $2,000 and others $5,000; others that would create crosswalk zones in cities and towns; to compel the equipment of cars with safety signals front and rear; to prevent women driving cars more than 30 hp.; to compel every applicant for a license to pass a physical examination; to raise the age limit for those allowed to operate to 20 years; to compel motor trucks used in transportation to be so built that the driver would have an unobstructed view of the rear wheels, and others of minor importance.

They Do but They Don't

DALLAS, Aug. 5—That the ruling of the Texas attorney-general several months back, in the prosecution of certain automobile concerns in Texas for alleged violation of the Texas anti-trust laws, has not hurt the automobile industry in Texas is the belief of automobile dealers.

As a result, however, of the attorney-general's holding on the question it was necessary for automobile distributers to make new arrangements and agreements. Under his ruling it was a violation of the law for automobile distributers to make contracts in writing for the sale of certain cars in certain prescribed territory. The new plan is for the automobile distributer and the automobile manufacturer to get together and by verbal agreement decide what territory he shall cover. This, it is declared, is not a violation of the law, while if the contract is put in writing it would be a violation of the law.

At any rate, as a result of the ruling of the attorney-general automobile distributers are said to have made these new agreements. It was feared at first that the attitude of the attorney-general in connection with the contracts by automobile distributers would retard the sale or distribution of cars in the State. On the contrary, it has not.

Atlantic City Stages Show on Its Big Pier

Opens Pageant at a Time When Pleasure Seekers Throng Famous Summer Resort

ATLANTIC CITY, N. J., Aug. 7—The First Annual Automobile Exposition opened on Young's Million-Dollar Pier this morning. The exposition will last 2 weeks, or until Aug. 20, and it will be visited by thousands of people from all parts of the country.

When the doors of the famous pier opened the dealers who occupy space were in high spirits, as prospects for making sales during the show are excellent. Owing to the nature of Atlantic City and its transient population, it is expected that the number of prospects obtained will exceed actual sales; but these, if followed up properly, will justify the space taken.

August was selected by the managers because the Queen of Resorts, which indeed this cosmopolitan city is, entertains most of its visitors in that period. While a large number of these visitors are excursionists who come down for the day only, they include persons in all classes and stations of life.

A large number, too, are tourists who come all the way by automobile from points as far west as Cleveland and as far south as Richmond. The time and the place are exceptionally appropriate because of national touring week, which starts to-day and which will bring a larger number of tourists to Atlantic City than ever before. The value of the show, therefore, will be more national than local in scope.

Most of the exhibitors are from Philadelphia, although New York and other Eastern cities are more or less represented. Among the cars on the floor this morning were the Empire, MacFarland, Apperson, Cole, Grant, Oldsmobile, Ford, Moline-Knight, King, Maxwell, Briscoe, Peerless and the Jeffery. The show is being managed by W. E. Shackelford and Thomas Beran.

No More Street Tire Changes

HARTFORD, CONN., Aug. 7—Changing tires in front of dealers' places of business has been forbidden by Chief of Police Farrell. The case of which a test will be made is that concerning Jack, the Tire Expert, 128 Allyn Street.

Steal 21 Cars a Week

ST. LOUIS, Aug. 7—Twenty-one cars were stolen last week in this city and several suspects are held by the police. It has been found that parts on stolen cars are interchanged and the identity of the vehicles altered.

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Dealers Everywhere Hold Sales Sessions

Opening of New Season Finds Men Who Sell Cars Learning of Cars and How to Sell

WEST TORONTO, ONT., Aug. 5—Ten million dollars' worth of Overlands sold in 3 days is a new record for Canadian business, whether in the motor car business or any other industry, but that is what was achieved by Willys-Overland, Ltd., during the first annual Canadian convention, held in the Thousand Island House at Alexandria Bay. There were contracts to show for it, bearing the signatures of 150 of the best business men in the Dominion of Canada.

The 150 dealers present at this 3-day convention were guests of Willys-Overland, Ltd., and it was the largest convention of Canadian automobile dealers ever held. These men represented nearly every district from Victoria, B. C., to St. John, N. B. The convention adopted as the slogan for the coming year: "Ten Thousand Willys-Knight and Overland Automobiles for 1917; Not 9,999."

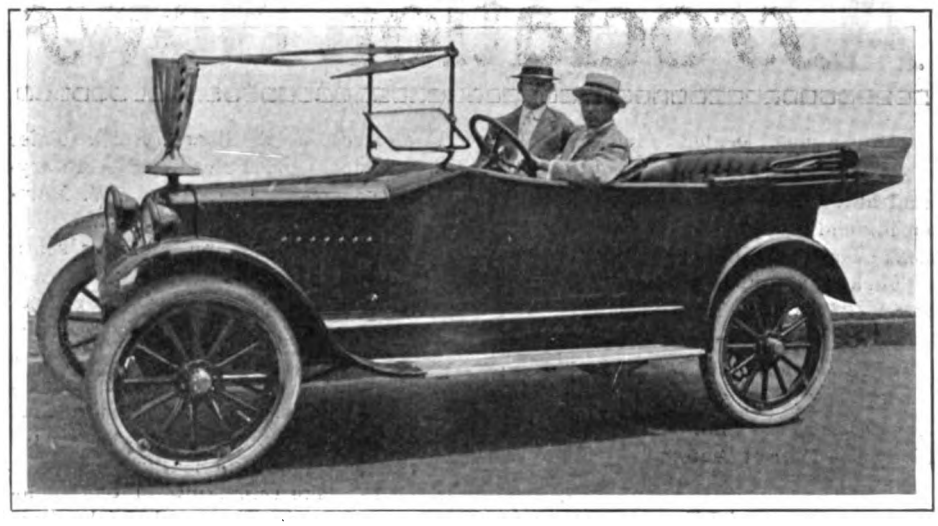
In anticipation of this increased volume of business, Overland service has taken a new departure in order to meet the needs of the new owners without lessening, but rather increasing, the service to the present owners of Overland cars. The Canadian corporation has enlarged the authority previously placed in the dealer, knowing that he has adequate knowledge of the service requirements. A service interchange policy has been planned so that an owner touring in another territory or province is assured of obtaining the same attention that he would receive from his local Overland dealer. Enthusiasm was much increased by the showing of moving pictures of the Willys-Overland factory, followed by a lecture on the Knight motor by H. H. Hower of Toledo.

Henshaw Celebrates as Dodge Leader

BOSTON, Aug. 4—The Henshaw Motor Co., Dodge Bros. dealers in eastern Massachusetts, had a two days' celebration here, ending Saturday, in honor of the big success the company has attained here. Friday evening there was a banquet at the Hotel Somerset, when C. W. Matheson of the factory force was the guest of honor. There were addresses by various heads of departments. Henshaw read a telegram from George H. Phelps, director of advertising, stating that after going over the records for the year the Henshaw Motor Co. led all the other dealers, standing first. This telegram evoked much enthusiasm.

Saturday the entire party went to Nahant, where Henshaw has his summer home, and there they were treated to a clambake and this was followed by a series of outdoor sports. The guests all received souvenirs of the outing. Henshaw paid all the expenses of the celebration.

Takes Advantage of Test Run Result



The Frye Motor Car Co., St. Louis, is making an exhibition of the silver trophy won by a six-cylinder Saxon car in the Saxon factory's recent gasoline conservation contest. The trophy is mounted on radiator cap and the car driven about town at times when the crowds on the street are most apt to loiter and look. The gasoline contest was participated in by 206 Saxon cars and the Frye company car, driven by Martin J. C. Ghio of the Frye staff, won by an average of slightly more than 34.68 miles to the gallon. The nearest competitor was 31 miles and the average was 23.59 miles per gallon. The Frye company has named the car "The Saxon Economy Car" and through judicious advertising the name has caught on.

Maine Chalmers Dealers Confer

PORTLAND, ME., Aug. 5—The Maine Motor Car Co. held a Chalmers dealers' conference here last week which was attended by twenty Chalmers dealers in Maine. Several carloads of cars had arrived and the machines were turned over to the dealers following the conference on sales methods. Then the party motored to Pine Point, where a shore dinner was served, after which they left for their respective cities. The Maine Motor Car Co. has just added the Marmon to its line.

Dealers Honor Collins and Nash

ST. LOUIS, Aug. 5—F. W. A. Vesper, president of the Vesper-Buick Auto Co. of this city, has completed arrangements for the presentation of silver services to R. H. Collins, sales manager of the Buick Motor Co., and to C. W. Nash, president of the General Motors Co. The centerpiece of each service is a large tray, on which is engraved the fac simile signatures of the thirty-eight Buick branch managers and distributers. The gifts were made to these two officials who retired from the Buick service Aug. 1. Vesper was selected to purchase the gifts by the other donors because of his long association with them while in service at the Buick factory.

Distributer Entertains Dealers

MILWAUKEE, Aug. 5—The Wisconsin Oakland Co., distributer of the Oakland in Wisconsin and upper Michigan, recently entertained 125 of its retail dealers at Milwaukee. The afternoon was devoted to a 4-hr. cruise on Lake Michigan in a large passenger steamer, and in the evening a seven-course banquet was served in the Fern Room of the Hotel Pfister. W. H. Upham, manager of the company, was in charge.

Two Peugeots for Harvest Classic

INDIANAPOLIS, Aug. 5—Entries for the Harvest Classic, to be held on the local speedway, Sept. 9, have started to come in. The two Peugeots driven by John Aitken and Charles Merz are the first two entries. There will be a total of $12,000 in prize money in this race, which will be over a distance of 300 miles. The entry of the two Peugeot cars is made by the Indianapolis Speedway Team Co. and the car which Aitken is to drive is the same as that with which he won the Coney Island Cup at New York this spring.

Can Still Use "Midgley"

LANCASTER, OHIO, Aug. 5—The Lancaster Tire & Rubber Co. has the right to continue the use of the term Midgley, the petition of Thomas Midgley, Sr., for an injunction restraining the company from the use of his name having been refused by the court.

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Association News

Springfield Dealers Plan Show

SPRINGFIELD, MO., Aug. 5—An annual automobile show is planned by the Springfield Automobile Dealers Association. The committee in charge consists of Richard Tumphrey, W. M. Baldwin and B. B. Axbury.

To Hold Trade Association Excursion

DETROIT, Aug. 5—A moonlight excursion to Lake St. Clair will be held Aug. 22 by the Detroit Automobile Trade Association.

Los Angeles Wants Big Show

LOS ANGELES, Aug. 5—There has been no date set for the Los Angeles automobile show, but there is a strong sentiment in favor of but one show, and a big league show that will put Los Angeles on the map as a motor car market.

Los Angeles, in the center of the world's richest motor market, believes it should be able to stage a great motor car show each year which would give publicity to the city throughout the United States. Last season Los Angeles had two shows. Both were successful, but they were conducted by rival interests and neither one was the success that it would have been had it not been for the antagonizing influences of the other.

There is some talk in Los Angeles of a great used-car show, to be held in the fall. This would be a novelty show and would have nothing to do with the great show planned by the dealers, as the used cars are all handled by used-car merchants, who are specialists in the line, or by managers of used-car departments conducted by the dealers and distributers.

Show Building for Brockton Fair

BROCKTON, MASS., Aug. 5—The contract has been awarded for a permanent motor show building on the grounds owned by the Brockton Fair Association. The Brockton fair is the most widely attended in New England and the managers have approved plans for a building to cost $25,000, in which motor cars and trucks will be shown. It will be finished in September in ample time to sell space for the October fair week.

California Association Elects

STOCKTON, CAL., July 29—The annual meeting of the California Automobile Trade Association was held here last week and these officers were elected: President (re-elected), L. F. Tarnell, Stockton, Saxon dealer; vice-president (re-elected), J. E. Sloane, Buick dealer in San Jose and Palo Alto; secretary-treasurer (re-elected), Robert W. Martland, Martland-Priest Co., Oakland.

During the discussion a strong sentiment developed against price-cutting and other so-called illegitimate forms of business. A safety first movement was discussed and it was decided that a course of education to the public in keeping its head in emergencies would do more than the imposition of fines. It was suggested that members be supplied with cards on which to make complaints of traffic violations. A protest was made to the State Highway Commission against ordering the road signs of a certain tire company cut of the State. A number of addresses were delivered.

Want New Law in Columbus

COLUMBUS, Aug. 1—The Columbus Automobile Club is backing a traffic ordinance which has been favorably reported by a special committee. The ordinance will provide that all traffic, automobile, horse-drawn and pedestrian, must obey the crossing rules, and no "jay walking" is allowed. Stiff penalties are provided for all traffic which fails to obey the law. Headlights must be dimmed. No change is made in the regulations relating to speed, as that is controlled by the State law.

Arrange Credit Plan

SPRINGFIELD, MO., Aug. 1—The Springfield Automobile Dealers Association has arranged with the United Mercantile Agency to handle credits and to assist in bringing about other features of co-operation. The association appointed the following committee to make arrangements for the annual automobile show: Richard Humphrey, chairman; W. M. Baldwin, B. B. Asbury. The officers of the association are: John C. Hastie, president; Al White, vice-president; C. K. Curran, secretary; George W. Culler, treasurer. The executive committee includes George Culler, chairman; Keet Curran, J. A. White, W. H. Yandell and Rex Wheeler. The membership committee consists of Keet Curran, Huy Haskett and H. McCune.

Pass Drastic Ordinances

PHILADELPHIA, Aug. 1—With very few modifications the ordinances regulating automobile traffic in Philadelphia were passed by the Council. They are the most drastic of any laws made in this city for the regulation of traffic. Parking privileges in the congested districts of the city, especially along Motor Row are greatly restricted, and in some sections where traffic is heaviest no more time is allowed than is necessary to take on and discharge passengers. The ordinances also include the regulation of horns, lights and highway signs.

Boosting for Jefferson Highway

DES MOINES, IOWA, Aug. 2—Talking and driving in relays, a great inspection and boosting tour of the Jefferson Highway Section from St. Joseph, Mo., to St. Paul, Minn., a distance of 470 miles, was staged last week. Four cars of speakers led the tour and each car of speakers worked 10 min. at each town, leaving immediately upon the arrival of the next car.

Totten Drowned in River

ROCK ISLAND, ILL., Aug. 5—William C. Totten, president of the Totten Automobile Co., was drowned while bathing in the Mississippi River this week. He founded the Totten company 7 years ago and also operated a taxicab company for a number of years.

Firestone Outing in Boston

BOSTON, Aug. 8—The New England branch of the B. F. Goodrich Tire Co. at Boston was closed tightly to-day while the 200 employees attended the second annual outing, at Riverside Recreation Grounds, Newton.

Springfield Hudson Men Play

SPRINGFIELD, MASS., Aug. 5—All the employees of the Harrington-Gifford Co. of this city, and the Harrington-Hudson Co. of Hartford, both of which are affiliated in the handling of the Hudson, held an outing and clambake with sports at Riverside Park, Wednesday. There were several interesting contests in which much rivalry was displayed between the Hartford and Springfield men.

It Was Some Race!

AUGUSTA, ME., Aug. 5—Some of the motor car dealers here are wondering now if the Secretary of State will take any action following the race between a Hudson and a Westcott from Augusta to Winthrop and return at an early hour the other morning. The race was the outcome of an argument between the dealers handling the two lines. Perley M. Lawrence drove the Hudson and Edgar F. Marden the Westcott. The race ended in a mixup, for the Hudson burned out a bearing, but it finished first, coasting down a hill. The Westcott blew out a shoe that delayed it. Both drivers were haled into court and fined.

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PULLMAN DEALERS held a convention at the factory at York, Pa. The men grouped at the center are: 1—W. F. Grove, manager of the York Motor Car Co., the retailing company in York. 2—H. W. Heyden, general manager. 3—A. R. Cosgrove, general sales manager. 4—C. G. Swartz, factory superintendent. 5—H. P. Jones, secretary-treasurer, Pullman company

Pullman Dealers Hold Sales Convention at York

YORK, PA., Aug. 5—One hundred and twenty-five dealers of the Pullman Motor Car Co., not only from this country, but also from the foreign field, assembled in York last week to attend the annual Pullman dealers' convention, July 27, 28 and 29. The automobile trade prospects for the 1917 season were discussed and attention was given to the new Pullman models. Special entertainment features were provided by the Pullman company and York Motor Car Co. for the dealers during their stay in the city.

The spacious room in the Coliseum, North George Street, several doors south of the Pullman plant, was used for the convention hall, and all the sessions were held there. A half a dozen or more of Pullman cars, including touring car, roadster and commercial car models, were on display for the inspection of the dealers, and the general public on the last day of the convention. The convention opened on Thursday morning with the registration of the dealers at the factory. At noon a luncheon was served at the Colonial Hotel, where the dealers were registered during their stay in York. The first session was held at 1.30 o'clock in the convention hall.

A shore dinner was tendered the dealers on Friday evening at the Colonial Hotel. H. W. Hayden, general manager of the Pullman plant, was the toastmaster and toasts were responded to by the following dealers: G. C. Eichelberger of the Pullman Sales Co. of Pittsburgh; R. C. Wrege of the Pullman Automobile Co. of Milwaukee, Wis.; J. A. Bland of the Pegau Auto Co. of Des Moines, Iowa; E. E. Miller of the T. G. Northwall Co. of Omaha, Neb.; L. C. Aston of the Aston Motor Car Co, Los Angeles, Cal.; W. T. Minor of the Durham Buggy Co., Durham, N. C.; D. O. Myattm of the Gulf States Auto Sales Co., New Orleans, La.; M. D. Coate of the Coate Motor Car Co., Cleveland. Ohio; John Fabick of the Ideal Motor Sales Co., St. Louis, Mo.; George E. Hannan of Denver. Music was furnished by an orchestra and a male quartet. At noon on Friday a group photograph of the dealers was taken in front of the convention hall.

Among those present were: W. L. Forney, Chambersburg, Pa.; E. B. Williams, L. A. W. Motors Co., Syracuse, N. Y.; G. C. Eichelberger, Pullman Sales Co., Pittsburgh; R. C. Wrege, Pullman Automobile Co., Milwaukee, Wis.; W. F. Grove, York, Pa.; J. A. Bland, Pegau Auto Co., Des Moines, Iowa; E. E. Miller, the T. G. Northwall Co., Omaha, Neb.; W. F. Parry, Ball-Washburne Motor Co., Rochester, N. Y.; J. A. Bentz, Bentz-Landis Auto Co., Harrisburg, Pa.; F. W. Bartlow, Hughesville Garage, Hughesville, Pa.; H. J. Morrison, Arcanum Garage, Arcanum, Ohio; R. B. Harlacker, Williamsport, Pa.; E. W. Van Dusen and L. L. Stevenson, Atlanta, Ga.; W. L. Tyson, Okolona Motor Co., Okolona, Miss.; J. W. David, Standard Motor Car Co., Philadelphia; W. P. Barnhart and Paul Barnhart, William P. Barnhart & Co., Washington, D. C.; L. C. Aston, Aston Motor Car Co., Los Angeles, Cal.; W. A. McGiven, Pullman Automobile Co., Chicago; R. W. Kelly, Knoxville, Tenn.; W. T. Minor, Durham Buggy Co., Durham, N. C.

W. A. Bosworth, Lowman, N. Y.; W. W. Hanke, Jr., Hanke Motor Car Co., Fort Wayne, Ind.; A. J. Morris, Peoria, Ill.; G. M. Dewey, Freeville, N. Y.; Elmer Frantz, Motor Supplies Co., Reading, Pa.; D. O. Myatt, Gulf States Auto Co., New Orleans, La.; P. C. Bertram, Pullman Motor Car Co., Cincinnati, Ohio; Henry Drouet, Pullman Motor Car Co., New York City; G. A. Coats, Pullman Motor Sales Co., Kalamazoo, Mich.; M. D. Coate, the Coate Motor Co., Cleveland, Ohio; John Fabick and Edward Strosberg, Ideal Motor Sales Co., St. Louis, Mo.; W. C. Stopher, Pullman Motor Co., Wichita, Kan.; George E. Hannan, Denver, Col.; M. Keller and D. Eller, Pullman export department, 100 Broad Street, New York City; A. F. Mette and George Crawford, T. B. Bennett & Co., Flanagan, Ill.; J. A. Snider, Pullman Motor Co., Kansas City, Mo.



The Des Moines branch of the Studebaker Corp. and the Schee Co., Central Iowa distributer, held a sales conference for Iowa Studebaker dealers July 21, and 150 Iowa automobile men attended. The dealers were entertained at a noon luncheon with talks by L. J. Ollier, vice-president of the Studebaker Corp.; F. C. O'Meara, salesmanship expert for the Studebaker organization; and H. M. Johnson of the Commercial Investment Trust. All three of the talks were constructive and designed to help the dealers in perfecting their organization, salesmanship, and financial methods. No dealer who attended the conference failed to gain enthusiasm and ideas for promoting his business.

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Uncle Sam Hits at Bidwell

Promoter of "Leagues" and Other Multitudinous Enterprises Is Denied the Use of the Mails

WASHINGTON, D. C., Aug. 5—Uncle Sam has clapped the lid onto A. C. Bidwell and his International Automobile League and allied enterprises. A fraud order has been issued by Postmaster General Burleson, denying the use of the mails to Bidwell and his schemes.

It is charged, after nearly 5 months of investigation, that Bidwell has been fleecing the motoring public. The story of his schemes, as told by Uncle Sam's agents, is long and involved, but it throws light upon a tangled mess, in which an army of car owners and dealers has been enmeshed—and "trimmed."

Forty-six days were consumed in the Bidwell hearings before the Solicitor of the Post Office Department. Listen to Uncle Sam's story of Bidwell. In his memorandum to the Postmaster General with reference to this case, the Solicitor says:

Bidwell Uber Alles

"The International Automobile League is a corporation, practically all of the stock of which is owned by one Alfred C. Bidwell, its president, by whom the corporation is absolutely controlled. Under his own name as president he signs letters, receives mail, and uses the post office establishment substantially to the same extent as he does under the name of the corporation.

"The league undertakes to furnish each member automobile tires and supplies, which it may be able to obtain, at *dealers'*, *jobbers'* or *manufacturers'* prices, to maintain without expense to the member a home office, and to mail quotations from time to time. Membership, *so-called*, costs $10 per year *in advance* where the member owns but one automobile, and $5 per year additional *in advance* for each automobile in excess of one owned by the member.

Another Corporation

"In addition to the league, Bidwell has organized and *absolutely controls* another corporation, namely, the International Automobile League Tire Co., whose stock, in pursuance of a contract between it and the league, the league is selling on a commission basis of 40 per cent. The par value of the stock is $100 per share. No stock is sold by the league for less than par value.

"The prospectuses and other publications upon which the public was induced to subscribe for the stock in the tire company, contained representations which have been *varied from time to time*. In substance, they are to the effect that:

"1. *A tire factory or factories would be constructed and put into early operation.*

"2. *Large dividends would be paid upon the stock.*

"3. *Purchasers would be furnished all the tires required at actual cost of manufacture, and*

"4. *By reason of the large membership of the league, its financial responsibility and resources, which by contract were put behind the tire company, the accomplishment of these promises was assured.*

The "Lucky" Jobbers

"The league is also engaged in selling a so-called *jobbers'* contract, under which the jobber is *promised* the tire company's tires for resale at the same price as such tires are furnished to stockholders. The undertaking of the league in this connection is subject to the following conditions: Strikes, fires, ACTS OF GOD, contingencies beyond the control of the league, and its ability to fill the order.

"The jobber is also entitled to sell memberships on a commission basis of 50 per cent. The jobbers' contract, while a consideration of $1,000 is specified on its face, if that amount cannot be obtained, is sold for practically *any sum that can be procured* between $100 and $1,000.

"The business is the outgrowth of a plan conceived by Bidwell some time in 1907. He was at that time in the wallpaper business, and after purchasing an automobile was astonished at the high prices charged for tires and accessories. He learned that there was a considerable difference between the price to the jobber and the price to the consumer.

"He conceived the idea of putting himself in a position where he could obtain the jobbers' prices both for himself and for his *friends*, and with that end in view he built a garage capable of housing more than one car, thereby *seeking to classify himself as a jobber*. He obtained some supplies at jobbers' prices. After that he put his plan on a business basis and began charging a fee for this service to others.

Still the Wonder Grew

"He then found himself beset with numerous difficulties, for as soon as it was found that he was distributing these supplies at the same price for which he obtained them, the manufacturers refused to sell him.

"However, the business grew steadily, until the league was incorporated in 1908. After its incorporation the league began selling stock in the International Automobile League Tire & Rubber Co., a New York corporation organized for the purpose of building a factory and supplying tires to its stockholders at cost of manufacture, which was *under the absolute control of Bidwell.*

"This stock was sold by the league on a 40 per cent commission basis and under representations that a factory would be built, and that not only would the stockholders be furnished tires at cost of manufacture, but that they would be paid an *enormous dividend*, earned through the sale of its tires to members of the International Automobile League. This membership, however, was *greatly exaggerated* for the *purpose of selling the stock.*"

About 1912 a reorganization committee of the stockholders of the International Automobile League Tire & Rubber Co. was formed, and after a long controversy Bidwell was finally compelled to discontinue his association with the company, it having been found that he had *appropriated to his own use all the money obtained in the sale of the company's stock.*

Moved to California

After losing control of the International Automobile League Tire & Rubber Co., Bidwell went to California and organized a corporation first known as the Western I. A. L. Purchasing Corp., the name very soon thereafter being changed to the International Automobile League Tire Co.

The memorandum further says: "The organization and conduct of the California company, when compared with the organization and conduct of the Northland company while under the control of Bidwell, *clearly demonstrates the fraudulent character* of his recent operations with the California company. In the promotion of the New York company, the number of active members of the league, which was to furnish the market for the output of that tire company, was *grossly exaggerated in order to sell the stock.*

Where Were the Assets?

"Similar *misrepresentations* were made in the promotion of the California company. With the New York company the league received 40 per cent commission for the sale of stock. The same kind of an agreement was made between the league and the California company.

"When the organization committee took control of the Northland, although it should have been entitled to assets of some $600,000, there was *not a dollar* in the treasury and little or no available assets in its name. In that matter Bidwell had brought home to him in the most forcible manner the fact that his entire conduct with respect to the Northland company *had been illegal*, and he was forced to make restitution to the extent of over half a million dollars.

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"When Bidwell was cited to appear and show cause why a fraud order should not issue against him in March of this year, there was *not a dollar in the treasury* of the California company, notwithstanding the fact that over $112,000 had been actually taken in in cash on the sale of the stock, not including 40 per cent commission paid to the league, *all of which had been appropriated by Bidwell* through various means, but there was also a charge against the California company of something like $192,000 by the league on account of various items, many of which have been examined into and found to be illegal charges."

Bidwell has been indicted by the Federal Grand Jury in Rochester, charged with using the mails to further a scheme to defraud, and by the grand jury of Fayette County, Pa., with two of his agents, on the charge of conspiracy to defraud.

The inquiry into the league was made at the request of the Associated Advertising Clubs of the World and the American Automobile Association, to protect motor car owners as a part of the nation-wide campaign of the Advertising Clubs for "Truth in advertising and honesty in selling."

TRACTOR MAKERS STILL GETTING DEALERS

(*Continued from page* 9)

harvested. Another reason is that on Tuesday there was a primary election, which naturally kept the farmers at home. Another reason is that the demonstration field, which is in Kinloch Park, is 16 miles from the city, and the transportation facilities are not all that might be desired. It is expected that later in the week the farmers will flock to the field and that dealers and distributers also will put in an appearance.

Demonstration Is Divided

Unfortunately—here again is demonstrated the smallness of Missouri farms—it was not possible for those in charge of the demonstration to secure one large field, as in Dallas and Hutchinson, where all the machines might plow at once. Ground for plowing is limited, and for this reason many of the companies are compelled to demonstrate only their small machines. Some of the machines are in one field and the remainder in another field perhaps a quarter of a mile distant. At least the smallness of the available field has had the advantage of bringing into prominence the work of the smaller tractor, and in the opinion of agricultural experts it is the small tractor that Missouri must look to for the most part.

Kerosene is used slightly more extensively here than at either Dallas or Hutchinson. During the first day of plowing thirty-three of the machines were working on kerosene as against twenty-one operating on gasoline.

Fremont Demonstration to Be Biggest of Year

Ford Tractor to Appear Here—Was Largest Show Last Year—Expect Crowd of 100,000

FREMONT, NEB., Aug. 7—Although Fremont is not a big city, it bears the distinction of being the first American city to foster the promotion of an extensive farm tractor exhibition, and is prepared to produce a repetition of its former successes at the fourth 1916 National Farm Tractor Demonstration, which opens here to-day. Numerically and in its representation of tractor manufacturers, the field is superior to any former power show.

Those who have followed the swift rise of tractor exhibitions in the United States know that it found its inception in the first of the Fremont demonstrations, held early in the fall of 1913, on a relatively small tract of Dodge County land. Cradled out here in the broad domain of the middle corn belt region, where a bountiful agriculture demanded the ultimate of thrift and economy in tillage, cultivation and harvesting, the demonstration idea developed from a single show with sixteen entrants to the present national circuit, embracing the West from Texas to Canada.

Fremont, because of its intimate identification with the exploitation of the new farm power, has come to be regarded as the home of all of the important demonstrations. Response to the call for exhibitors has been such that upwards of 100 different makes and types of machines will be found in operation upon the fields at various times during the week. Every branch of power farming, from the breaking of virgin sod to the harvesting of the matured crop, will be exhibited this year. Sufficient acreage has been obtained within 20 min. ride of Fremont to permit work in a variety of soils, from gumbo to loose sand.

To convince western farmers that the tractor is not a "one-line" worker, exhibitions of disking, cultivating corn, reaping wheat and other small grains, threshing, operating ensilage machinery, drilling in seed, furnishing power for hay balers, corn shellers and electric light plants, spreading, road grading and the like, will be staged.

Another department of the demonstration that will attract wide attention is the big accessory display which will be an integral part of the main show. Estimates compiled on a census taken among manufacturers last year indicated that more than $1,250,000 worth of accessory business was written during the week.

The Mid-West Retail Implement Dealers' Association will have headquarters on the ground, in charge of Secretary James Wallace. Special entertainment will be provided for all dealers, and an especial invitation has been extended to the trade to come to Fremont and bring as large a number of customers along as possible.

At the 1913 meet, there were present about 22,000 farmers to witness the demonstration of the crude tractors of that now distant day. At the coming demonstration it is anticipated there will be from 80,000 to 100,000 men to watch the work of the most up-to-the-minute machinery which the tractor field of to-day has produced. Hotel accommodations will be given especial attention, and every indication is that the event will be another red-letter day in the history of Fremont, the Tractor City.

Hyatt Going by Special Train

DETROIT, Aug. 7—The Hyatt Roller Bearing Co. has arranged for a special private car to convey some of its representatives and a party of engineers and friends from this city to the National Farm Tractor Demonstration which opens at Fremont, Neb., to-morrow. The car will leave Detroit to-night and reach Chicago to-morrow morning. Tuesday will be spent in Chicago, with headquarters at the Hotel Blackstone. The party will leave at 6.05 p. m. Tuesday, arriving in Fremont Wednesday morning. Following are those who will make up the party:

George W. Dunham, president, Society Automobile Engineers; A. P. Sloan, Jr., general manager, Hyatt Roller Bearing Co.; C. W. Nash, Nash Motors Co.; C. S. Mott, Weston-Mott Co.; C. S. Kettering and E. A. Deeds, Dayton Engineering Laboratories Co.; John W. Bate, Mitchell Motors Co.; Harry Bassett, Weston-Mott Co.; C. L. Barnes, Barton W. Currie, Country Gentleman; Henry Ewald, Campbell Ewald Co.; P. G. Koether, general sales manager, Automobile Department, Hyatt Roller Bearing Co.; R. L. Lane, chief engineer, Detroit office, Hyatt Roller Bearing Co.; J. G. Weiss, works manager, Hyatt Roller Bearing Co., Newark, N. J.; C. M. Eason, manager, Tractor Bearings Department, Hyatt Roller Bearing Co., Chicago.

In addition, the following Hyatt representatives will be at the Fremont demonstration: H. O. Kuchenmeister, assistant sales manager; H. M. Carroll, advertising department; O. W. Young and J. R. Bateman, sales engineers; J. E. Martin, dynamometer department, L. S. Newman, mechanical inspector.

Ford to Be At Fremont

DETROIT, Aug. 7—Henry Ford and his son, Edsel, will be at the Fremont, Neb., national tractor demonstration with three of Ford's new tractors. The three tractors will be of the same type, but will be operated on gasoline, kerosene and alcohol, respectively. In addition to the tractors, Ford will also have a comprehensive display of the various parts which enter into the construction of this machine.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

V. K. McBride, who has been in the sales department of the Federal Motor Truck Co. for over 2 years, has been appointed assistant sales manager of the company.

H. A. Conlon, formerly a special sales representative of the Federal Motor Truck Co. in England, has been promoted to field sales manager.

A. G. Williams has joined the Ross Automobile Co., Detroit, Mich., as traveling representative.

D. D. Brush, formerly factory engineer for the Mutual Motors Co., has been made manager of the service department of the Marion-Handley Sales Co. of Kansas City.

F. O. Burkholder, St. Louis, manager for the Ahlberg Bearing Co., who was married July 15 to Miss Eva P. Bender of Chicago, has been promoted to management of the Boston branch as a wedding present. H. J. Stern of Chicago comes to St. Louis as manager.

William O. Hardin, St. Louis, for two years manager of the St. Louis motor shows and secretary of the St. Louis Automobile Mfrs'. and Dealers' Association, who resigned a week ago, has bought the Multi-Print Letter & Advertising Co., which specializes in motor work.

H. W. Prine, former motor car editor of the Pittsburgh "Post," has been made Pathfinder district manager in eastern Pennsylvania.

Ferdinand Jehle has resigned as laboratory engineer of the Automobile Club of America, New York City, to assume the position of service engineer with the Aluminum Castings Co., Cleveland.

C. C. Hinckley, chief engineer of the Chalmers Motor Co., has taken over the production department in addition to directing the engineering work of the company following the resignation of S. H. Humphrey as production manager of the company.

C. H. King and J. P. Winterson have joined the sales organization of the Chalmers Motor Co. as territorial representatives.

Frank G. Kane, formerly head of the department of journalism at the University of Washington, Seattle, has left that institution to take up new duties in the advertising and publicity department of the Packard Motor Car Co., Detroit.

H. O. Harvey, for the past ten years manager of the Underwood typewriter branch in Seattle and Spokane, has given up the typewriter business to enter the automobile business as sales manager of the Seattle Automobile Co., distributer of the Maxwell and Chandler.

Melbert W. Taber has been made Detroit manager of the Asbestos Protected Metal Co., Pittsburgh. Formerly he was manager of maintenance and construction of the Packard Motor Car Co.

H. E. Merrithew, former vice-president and general manager of the O. & M. Supply Co., Kansas City, has been appointed district manager by the Findeisen & Kropf Co., manufacturer of the Rayfield carbureter.

E. W. Corman has been appointed sales and advertising manager of the Denneem Motor Co., Cleveland, maker of the Denmo truck. Corman left a similar position with the Elgin Motor Car Corp., Chicago, and was formerly with the Saxon Motor Co., Detroit.

J. H. Beaton, former assistant sales manager of the McLaughlin Co., Oshawa, Ont., has been appointed sales manager for all of Canada.

E. Ver Linden, factory manager and associate executive of the Olds Motor Works, Lansing, Mich., has been made general manager of that concern, following the resignation of Jay Hall, his associate on the Olds executive committee. With the appointment of Ver Linden the committee system of management at the Olds Motor Works is abolished and the organization is once more under one-man control.

Hugh McVey, recently of Successful Farming, Des Moines, Iowa, has been made advertising counselor of the Capper farm papers, Topeka, Kan.

W. C. Goodchild, formerly manager of the Metz Co.'s branch in Providence, R. I., has been promoted to manager of the Boston branch.

Guy D. Niles has been appointed manager of the New England branch of the Portage Tire & Rubber Co. at Boston.

Percival S. Clark, secretary-treasurer of the Rhode Island Automobile Dealers Association, who retired from the motor business some time ago to devote his time to the association show work, has formed a new company to handle the Apperson in Providence.

H. M. Richardson, assistant manager, has been appointed manager of the Detroit branch of the Chevrolet Motor Co. He succeeds C. E. Dawson, who has been appointed zone supervisor.

W. O. Derry, passenger agent of the Chicago & Alton Railroad, has resigned to become sales manager for the Elgin Motor Corp., Chicago.

R. C. Caples has resigned as general traffic manager of the Western Maryland Railway to become associated in a confidential position with John N. Willys, president of the Willys-Overland Co., Toledo.

A. C. Leverton, formerly general superintendent of the Chalmers Motor Co., has been appointed factory manager of the Briscoe Motor Corp., Jackson.

H. W. Easterly, for several years general manager of the Sheboygan Gas Light Co., Sheboygan, Wis., has resigned to accept a position with the Sterling Motor Truck Co., Milwaukee, as field and sales representative in the Russian Empire, with headquarters in Petrograd.

T. F. Flanagan has been made sales and advertising manager of the Pyrene Mfg. Co., New York, succeeding C. Louis Allen, who was promoted to president.

Frank R. Kern, who for several years has been connected with the export department of the Willys-Overland Co., Toledo, for the last year as factory representative in Australia, has returned for a brief stay at the factory.

A. J. Langford is the new Dallas manager for the Ford Motor Co. He succeeds E. T. Backus, who has been transferred to the Ford plant in Baltimore.

F. X. Devlin has resigned as purchasing agent of the Federal Motor Truck Co., Detroit, to become identified with the Elgin Motor Car Corp., Chicago. Devlin had been connected with the Federal company since its formation 6 years ago.

Felix Van Cleef has returned to San Francisco after visiting the Hawaiian Islands for the Van Cleef Bros., cement manufacturers. He plans an extended American trip.

Fred Cardway, who for many years has been interested in promoting business intercourse between nations both in Europe and America, will leave early in September for an extended tour of South America in the interest of the Packard Motor Car Co.

Packard Sets Record With Aviation Motor

Goes 100 m. p. h. on Indianapolis Speedway With Its New Type of "12" Engine

INDIANAPOLIS, Aug. 4—The Packard aeroplane twelve unofficially broke the speedway record here to-day by a half-minute. This is the first time that a lap of the 2-mile track has been made by a 300-in. motor at more than 100 miles per hour. The time was 1 min. 29.32 sec. The previous time for a motor under 300 cu. in. was that of Boileau in a Peugeot, 1 min. 30.13 sec., in 1914.

This is the same car that J. G. Vincent, vice-president of engineering of the Packard company, had at New York during April and May this year, with the exception that a new intake header had been added for better performance at high speeds. The car was driven by Rader, who carried a mechanic and 10 gal. of gasoline, and this is the first of a series of tests which are to be made by the engineering department to demonstrate the efficiency of the small-bore twelve. Vincent states that the twelve-cylinder motor was of great advantage at Indianapolis, as the steady torque made the car hold the turns at the high speed.

Electrical timing and five stop watches were used, the electrical instrument being the same as that used in timing the classics over the Hoosier track on past Memorial Days.

Displacing exactly 300 cu. in., this car has already distinguished itself as of exceptional speed. Laps were made with it during the spring at speeds of from 100 to 110 miles per hour on the Sheepshead Bay track. The motor is a V-twelve, 2 21/32 x 4½ bore and stroke. The valve diameters are 1 7/16 in. and the lift is 0.34 in., giving a very extensive area for gas flow.

Saxon Makes Relay Record

SAN FRANCISCO, July 27—Forty-three Saxon sixes, racing in relays, established a new transcontinental record when the last car reached this city at 4.40 Saturday morning, 6 days, 18 hr. and 10 min. after leaving New York City.

This record from coast to coast was made carrying a message from Mayor Mitchel of New York to Mayor Rolf of San Francisco over the proposed Lincoln Highway route.

An official observer started with the first Saxon car at 10.26 a. m. Saturday, July 15, and went the entire distance by changing from car to car as the relay progressed.

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Factory News of the Week

Warner to Make Heavy Trailers

BELOIT, WIS., Aug. 5—The Warner Mfg. Co., in which the principal is A. P. Warner, former builder of the Warner Auto Meter, will shortly put on the market heavy duty trailers of 2, 3 and 5 tons capacity. The Warner trailer coupling will be standard equipment on the trucks manufactured by several of the best-known truck builders.

Warner, together with his engineers, has been experimenting with these trailers for the past 2 years, and states that they will introduce features new in trailer construction. The company has already introduced the Warner Prairie Schooner for camping and touring, and the Warner Auto Trailer for fast delivery work.

Alter Motor Breaks Ground

GRAND HAVEN, MICH., Aug. 5—Ground has been broken for the new Alter Motor Car Co.'s building. The building will be of brick, 60 x 400, and one story.

Gehl Bros. Building Tractor

WEST BEND, WIS., Aug. 5—The Gehl Bros. Mfg. Co., a manufacturer of power and manual farm implements and machinery, is now engaged in the production of a new type of general utility farm tractor, propelled by a four-cylinder gasoline-kerosene engine, 4¼ x 5¾, and rated at 25 hp. at 900 r.p.m. The tractor weighs 4000 lb. and is self-guiding for plowing. Simple changes make it ready for other farm work, such as operating belt-driven machinery.

Wald Machine to Triple Output

SHEBOYGAN, WIS., Aug. 5—Ground was broken to-day by the Wald Machine Co., a producer of motor car and cycle accessories and mechanical specialties, for a new shop building, 80 x 100. The new shop will make it possible to increase the production nearly 300 per cent.

Mayo-Skinner Succeeds Mayo

CHICAGO, Aug. 5—The Mayo Mfg. Co. has been succeeded by the Mayo-Skinner Mfg. Co. and will continue the business of making motor car accessories and supplies, but on an increased scale. The factory at 54-60 East Eighteenth Street will be retained until a new building is completed.

Goodman to Furnish Custom Bodies

NEW YORK, Aug. 5—The Goodman Auto Body Co., which was formed recently by Henry Goodman to handle the Eastern business of the Springfield Metal Body Co., has arranged to supply custom bodies to dealers.

Dort Raises Price to $695

FLINT, Aug. 5—The Dort Motor Car Co., this city, has raised the price of its touring car from $665 to $695, beginning Aug. 1.

Torbenson to Add to Plant

CLEVELAND, Aug. 7—Four acres of land have just been purchased here by the Torbenson Gear & Axle Co. of this city. This is in addition to the buildings which are now under construction and which will by Aug. 15 place 50,000 sq. ft. of manufacturing space at the disposal of this concern. The principal product of the company is the Torbenson drive internal-gear rear axle for commercial vehicles. The new factories will be of the monitor type, constructed of brick and steel with metal sashes.

Milburn Opens Branch Factory

TOLEDO, Aug. 5—The Milburn Wagon Co. has opened a branch factory in Toledo on Summit Street in the factory building formerly occupied by the Toledo Bending Co. The Milburn company is transferring its business wagon department to the new branch and will also use its new quarters for the building of custom-made automobile bodies and quantity standard body orders.

Studebaker Common Pays 10 Per Cent

SOUTH BEND, IND., Aug. 5—Studebaker common stock has been placed on a 10 per cent basis by the declaration of a 2½ per cent quarterly dividend, payable Sept. 1. Heretofore the common has paid 7. At a meeting of the directors it was disclosed that earnings of the first 6 months of this year were $6,028,329.16, including $180,000 from war orders. Deducting the war order business of last year, the regular business this year netted twice as much as last year's regular business.

General Rubber Increases Capital

AKRON, OHIO, Aug. 5—The General Tire & Rubber Co. has increased its capital by 150 per cent. The present capitalization is $500,000; was $200,000.

American to Build a Six

PLAINFIELD, N. J., Aug. 7—A six-cylinder car will be marketed by the American Motors Corp., which has erected a plant in this city. It is expected that the first cars will be finished in the fall. It will be equipped with the Amco motor, built by the Amco Motor Co., South Norwalk, Conn. This is a 3 x 5, L-head, block design, stated to develop 45 hp. at 2100 r.p.m. It has pump cooling, three-bearing crankshaft, two-unit starting and lighting and three-point suspension. Louis Chevrolet, well known as a racing driver and developer of speed cars, is chief engineer and vice-president.

Ford Truck in the Fall

DETROIT, Aug. 5—Some time during next fall the Ford 1-ton worm-drive truck is expected to be ready for delivery. Demonstrators are expected to be in the hands of Ford distributers or agents within the next few months.

What the price will be at which the Ford Motor Co. will sell this truck, officials claim not to know themselves, as it has not yet been decided, they say. It was stated from other sources that the price will be around $500, possibly a bit lower than this, and that it is expected that 200,000 of these trucks will be made during the first year.

Reo Makes Few Changes

LANSING, MICH., Aug. 5—Nineteen hundred and seventeen models of the Reo Motor Car Co. and the Reo Motor Truck Co. will be practically duplicates of the 1916 cars and trucks.

In the passenger car line the Reo four will sell at $875, as during the past season, and the Reo six, which formerly was sold at $1,250, will now sell at $1,150. An inclosed body has been added to the line of Reo fours and it will sell at $1,025, while the new Reo six sedan will sell at $1,750.

The price of the 1500-lb. Reo truck has been reduced to $1,000, $75 less than the past season. The price of the 2-ton truck remains unchanged at $1,650.

Savidge to Sell Own Product

INDIANAPOLIS, Aug. 5—The Savidge Co. will hereafter sell its own product, which heretofore has been sold through the Meixell Co. W. S. Harrah has been made sales manager.

Chase to Add 3-Tonner

SYRACUSE, Aug. 5—The Chase Motor Truck Co. will shortly announce Model X, a 3-ton, worm-drive job, to retail at $2,800, equipped with cab. This new model will round out a line of trucks of ¾, 1, 1½, 3 and 3½ ton capacities.

Buys Ohio Tractor Assets

MARION, OHIO, Aug. 5—W. H. Houghton, president of the Houghton Sulky Co., has purchased at receiver's sale the personal property of the Ohio Tractor Mfg. Co., which includes the material on hand, finished product, machinery, patterns and patents, which have been in the hands of Charles H. Lewis as receiver. Houghton announces that he may manufacture tractors, using the patterns of the Ohio company. It is generally understood that Mr. Houghton and his associates will purchase the building from the receiver as soon as the court forms can be complied with.

Pierce Lights Remove Road Menace

BUFFALO, Aug. 5—With a desire to make night driving safe for its own users, as well as all other motorists, the Pierce-Arrow Motor Car Co. has adopted as part of its equipment the Sutterly offset reflector. The upper and lower half of the reflector are each true parabolic sections, but have different focal lengths.

As a result, all the light is projected on the road, and the level of the beam is reduced so as not to dazzle the eyes of other users of the highway.

At 400 ft. distant a man can be seen distinctly, with the exception of his head. It is possible to drive or walk toward these lights and get no bad glare unless the eye level is lowered to approximately 3½ ft. from the road.

Scripps and Sterling Merge

DETROIT, July 31—The Scripps-Booth Co., which makes the Scripps-Booth, and the Sterling Motor Co., which makes motors only, have been merged as the Scripps-Booth Corp.

Bauer Declares Big Dividend

DETROIT, MICH., July 24—The Bauer Roller Bearing Co. at its July directors' meeting declared a 15 per cent cash dividend as its regular quarterly dividend.

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Maxwell Common to Pay 10 Per Cent

NEW YORK, Aug. 5—Maxwell common will pay 10 per cent and second preferred 6 per cent if the recommendation of the executive committee is sustained. Earnings for the year ending July 31 will exceed $5,000,000.

From Everywhere

Los Angeles—The Los Angeles Trailer Co. has been incorporated at $50,000. J. N. Patterson, formerly of Detroit, is to be president, and G. A. Norton, from Detroit, will be vice-president and chief engineer.

Los Angeles—The Moreland Motor Truck Co. has announced a new 1500-lb., rapid-service, utility model, the chassis to sell at $990. The equipment includes: Wisconsin motor, Timken axles and roller bearings, three-speed transmission, and choice of solid or pneumatic 34 x 3½ tires.

Detroit—The Detroit Weatherproof Body Co., which was organized last year with a capital of $10,000, has taken over the business of the C. R. Wilson Body Co. and has reorganized. Its capital stock is now $750,000. The company will specialize on the Detroit Top, which is a detachable, convertible, all-season limousine top of medium price. A new factory will be erected. The company intends to make between 50,000 and 100,000 tops the coming year.

Chicago—The Perfection heater, made by the Perfection Spring Service Co., Cleveland, has been adopted as standard equipment on all Shaw and Yellow taxicabs in this city.

Louisville, Ky.—The personal property of the Hercules Motor Car Co. has been sold at auction for taxes amounting to $5,582.42. It was bid in by the H. & P. Machine Tool Co., New York City, for $6,100. The property comprised a large quantity of machinery and office fixtures, but not the real estate.

Peoria, Ill.—The Avery Co. is completing an order for 1000 military tractors, placed by the Government of France.

Philadelphia—The Edward G. Budd Mfg. Co. is having a factory addition built at Twenty-fifth Street and Hunting Park Avenue for the making of bodies.

Bridgeport—The gross value of the domestic business of the Locomobile Co. of America for the quarter ending June 30 exceeded that of the corresponding period in 1915 by about $1,000,000.

Sacramento, Cal.—The Golden West Motors Co. has been reorganized and arrangements are under way for the resumption of the manufacture of motor trucks.

Columbus, Ohio, is to be the home of a new automobile tire factory, that of The J. P. Gordon Co., makers of seat covers, tire covers and one-man tops and other automobile specialties.

Jamestown, N. Y.—The Salisbury Wheel & Mfg. Co. has increased its capital from $500,000 to $1,000,000.

Detroit—Since March 20, when the first war department order was received, the Packard Motor Car Co. has built 517 trucks for the United States Army and has shipped them, with 747 drivers and mechanics, to the Mexican border. There are 200 additional trucks on order.

Pontiac, Mich.—Effective Aug. 1, the garage owners here advanced repair charges from 60 cents per hour to 75 cents per hour, necessitated by the high cost of labor and overhead expenses.

Philadelphia—The Tay-Miller Mfg. Co. has increased its capital stock to $100,000 to provide facilities for an increased business in the company's patented Hand-I-Wash combination of water, soap and towel in a compact case.

Santa Fe, N. M.—For the 6 months ending July 1, 1916, there were issued a total of 6302 automobile licenses in New Mexico. This was nearly a 40 per cent increase in the number of licenses over last year. It is expected that not less than 1800 additional licenses will be issued during the next 6 months of the year.

Coming Events

General Events

Aug. 15..... New York. Metropolitan Section S. A. E. meeting at Automobile Club of America. Subject: "South America."

September .....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12..... Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Races, Contests and Tours

Aug. 11-12.....Pikes Peak, Col.; hill climb, Pikes Peak Auto Highway Co.*

Aug. 12.....Portland, Ore., track race, Hiller-Riegel Co.

Aug. 17.....Boise, Idaho; track race, North West Auto Assn.

Aug. 26.....Kalamazoo, Mich.; 100-mile track race.

Aug. 28-Sept. 1...Milwaukee, Wis. Booster Tour of Milwaukee Automobile Dealers.

Sept. 1-2.....New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. L., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha. Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago: speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica: Vanderbilt Cup and Grand Prix races.

Nov. 30 .....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

Aug. 7-11.....Fremont, Neb.
Aug. 14-18.....Cedar Rapids, Iowa.
Aug. 21-25.....Bloomington, Ill.
Aug. 28-Sept. 1...Indianapolis.
Sept. 4-8.....Madison, Wis.

Shows

Aug. 7-19.....Atlantic City, N. J. First Show, Young's Pier.

Aug. 23-Sept. 1...Des Moines, Iowa, show, State Fair.

Sept. 2-9.....Cleveland, Ohio. Show, Industrial Exposition and Fair, Edgewater Park.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 4-8.....Hartford, Conn., annual automobile and truck show, under the auspices of the Connecticut Fair Assn.

Sept. 4-11.....Indianapolis, Ind., show, Indiana State Fair, Indianapolis Automobile Trade Assn.

Sept. 10-16.....Milwaukee, Wis. Show, Wisconsin State Fair, Machinery Bldg.

Sept. 11-16.....Milwaukee, Wis., second annual Fall show, Milwaukee Automobile Dealers, Inc.

Oct. 14-31.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 13-20.....Montreal, Can. Montreal Automobile Trade Assn.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb .....St. Louis, Mo. Show, Automobile Manufacturers & Dealers Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Motor Car Securities Quotations

	Aug. 5, 1915 Bid	Asked	Aug. 5, 1916 Bid	Asked
Ajax Rubber Co. (new)	..	..	63	65
J. I. Case T. M. Co., pfd	70	78	85	90
Chalmers Motor Co., com	90	93	170	180
Chalmers Motor Co., pfd	96	97	98	101
*Chandler Motor Car Co	..	..	161	163
Chevrolet Motor Co	..	..	188	192
Fisk Rubber Co., com	..	..	130	160
Fisk Rubber Co., 1st pfd	..	..	112	120
Fisk Rubber Co., 2nd pfd	..	..	120	..
Firestone Tire & Rubber Co., com	506	510	915	930
Firestone Tire & Rubber Co., pfd	109	111	112	114
*General Motors Co., com	203	205	500	530
*General Motors Co., pfd	105	107	113	115
*B. F. Goodrich Co., com	50¾	51¾	69⅝	70
*B. F. Goodrich Co., pfd	104	105	113½	114
Goodyear Tire & Rubber Co., com	258	270	235	240
Goodyear Tire & Rubber Co., pfd	105	106½	106½	107½
Grant Motor Car Co	2	..	8	9
Hupp Motor Car Co., com	..	..	6½	7
Hupp Motor Car Co., pfd	..	..	80	100
International Motor Co., com	19	20	5	6
International Motor Co., pfd	43	45	18	23
*Kelly-Springfield Tire Co., com	170	175	70	77½
*Kelly-Springfield Tire Co., 1st pfd	85¾	86½	96	97½
*Lee Rubber & Tire Corp	..	..	43	45
*Maxwell Motor Co., com	35	36	77½	78
*Maxwell Motor Co., 1st pfd	84	85	85½	86
*Maxwell Motor Co., 2nd pfd	32¾	33¾	54½	55
Miller Rubber Co., com	196	199	230	235
Miller Rubber Co., pfd	104	106	104	106
Packard Motor Car Co., com	..	120	170	180
Packard Motor Car Co., pfd	..	101	100	104
Paige-Detroit Motor Car Co	..	..	45	50
Peerless Truck & Motor Corp	..	..	20½	22
Portage Rubber Co., com	36	38½	113	116
Portage Rubber Co., pfd	92	95	115	117
Regal Motor Car Co., pfd	..	..	17	21
†Reo Motor Truck Co	17¼	18	36¾	37½
†Reo Motor Car Co	33¾	34½	63½	64½
Saxon Motor Car Co	..	..	67	72
Standard Motor Co	..	..	5	7
Stewart-Warner Speed. Corp., com	61½	63	102	103
Stewart-Warner Speed. Corp., pfd	105	107	..	..
*Studebaker Corp., com	83¾	84¼	125¼	125½
*Studebaker Corp., pfd	103	104½	109	111
Swinehart Tire & Rubber Co	85	90	105	110
United Motor Corp	..	..	62½	65½
*U. S. Rubber Co., com	47	48	53	54
*U. S. Rubber Co., pfd	104	105	108¼	109
White Motor Co. (new)	103	108	51	51½
*Willys-Overland Co., com	146	147	52⅝	53⅛
*Willys-Overland Co., pfd	103	105	104½	104⅝

*At close Aug. 5, 1916—Listed N. Y. Stock Exchange.
†Par value $10; others $100.

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What is "Complete Equipment?"

That is the question!

In view of the number and the standing of the manufacturers who use the Waltham Automobile Clock as regular equipment, it is difficult to see how any manufacturer can consider his car fully equipped unless it includes an automobile clock.

The Waltham Automobile Clock

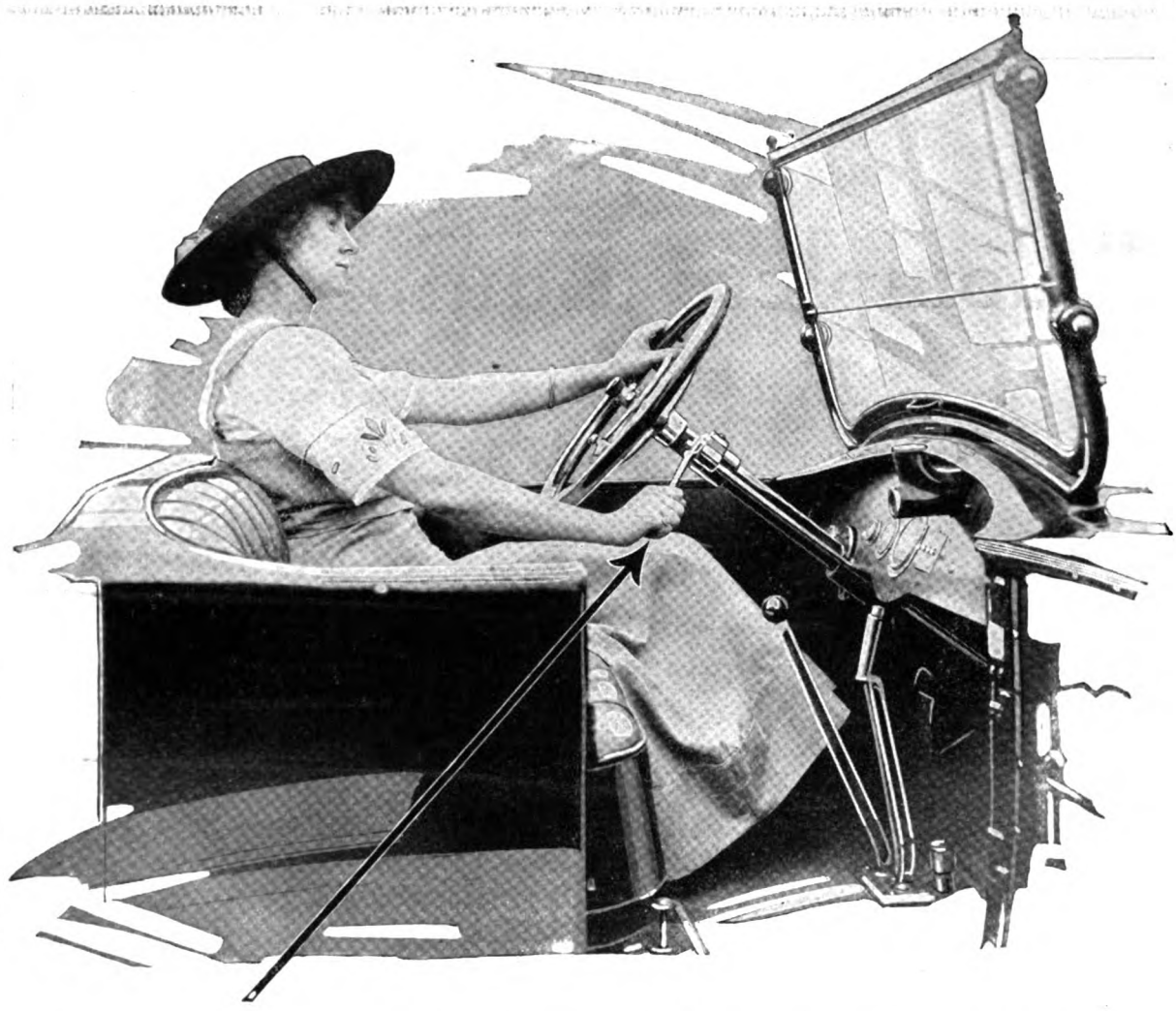
is standard equipment on:

Brewster	Marmon
Cadillac	Owen Magnetic
Cole	Packard
Crane	Pierce-Arrow
Detroit Electric	Rauch & Lang
Franklin	Rolls-Royce
Haynes	Simplex
Locomobile	Stearns
Lozier	Winton



WALTHAM WATCH COMPANY, WALTHAM, MASS.

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The Little Economy Lever Makes Your Car a Twelve or a Six

The Enger Twin-Unit Twelve

Here is the season's biggest sensation—a Twelve and Six in one. It is the utmost in luxury, and the extreme in economy, combined.

This new Enger invention gives you twelve cylinders for starting for for quick acceleration, for slow driving, for rough roads and hills.

But for all normal driving simply pull the little Economy Lever on the steering column and instantly your Twelve is the most economical Six the world has ever seen—a Six that will take you **35 miles on a gallon of gasoline.**

You have simply cut out six of your cylinders which are now idling—but ready instantly for any emergency.

And you've cut your fuel bill in half.

Nothing could be more luxurious than this Enger Twin-Unit Twelve. Nothing even approaches it for economy.

Twelve and Six Both in One

$1295

f. o. b. Cincinnati

Emergency power in other cars eats up fuel constantly—extravagantly—needlessly.

In the Enger Twin-Unit Twelve you have emergency power in abundance—**but it uses fuel for surplus power only when called upon.**

No wonder this car has created such a sensation—has stirred up such enthusiasm.

For it combines all the luxury of twelve cylinders with the greatest economy feature known to motordom.

No other car at anywhere near the price ever has approached such attainments—none at any price combines them.

The Chance of a Lifetime for Dealers

Dealers, here is the chance of a lifetime. The Enger Twin-Unit Twelve has created new motor car ideals—and it has created an enormous demand.

Foresighted dealers are already cashing in on it.

Prospective dealers are writing in constantly—and good territory is being rapidly snapped up.

We can still use a few more men of the right type in our selling organization.

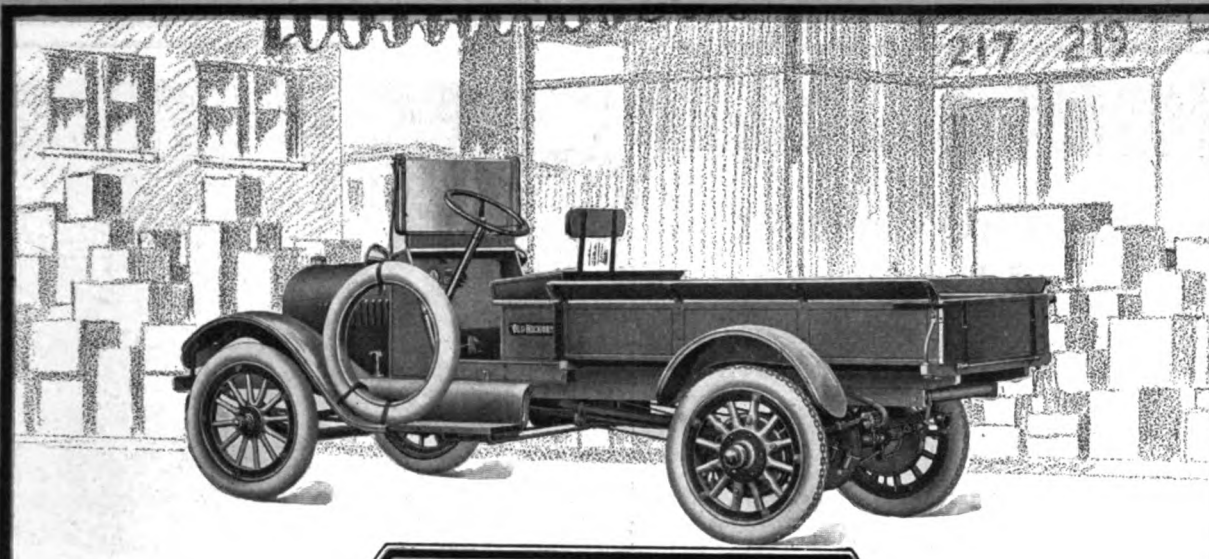
Write or wire us at once.

If you are the right man and your territory is not already taken we can make you an attractive proposition.

Write for Booklet "The Story of a Gallon of Gasoline."

THE ENGER MOTOR CAR COMPANY, Cincinnati, Ohio

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"OLD HICKORY"

LIGHT MODEL DELIVERY TRUCKS

"The Truck that sells faster than pleasure cars."

A structure especially designed and built in strict accord with the most modern engineering practice, with an unusually wide margin of reserve power and strength in the motor and frame. Built to stay at work on the job, and out of the repair shop—and it does it.

Pronounced the "ideal general purpose delivery," because in both capacity and price it fits into *every man's* business, however limited or extensive.

Whether you are a truck dealer or truck user, handling heavy or light units, or both, it will pay you to investigate the "OLD HICKORY."

Built and backed by an organization with a half century's record of successful vehicle construction and square dealing in a plant covering 30 acres of modern manufacturing facilities.

CONDENSED SPECIFICATIONS

Lycoming enbloc motor four cylinder 3¼ x 5. Removable water cooled head. Grant Lees transmission, single flexible universal straight line drive, Dyneto electric starting and lighting, Connecticut ignition, Carter Carburetor, irreversible steering gear. Main frame of *rolled* steel channels. Semi-Elliptic front and double scroll full elliptic rear springs. Radiator mounted on coil springs. Semi-floating rear axle. Hyatt roller bearings. Bevel drive geared six to one. Tires 33 x 4". Weight of chassis 2100 lbs. Rated capacity 1250 lbs.

Progressive dealers can command the cream of the motor truck trade with OLD HICKORY. Its many desirable features and our liberal selling arrangements make the line a substantial business asset. Choice territory still open. Write or wire today, stating territory desired.



Chassis $825 F.O.B. Louisville

Furnished also with standard Express Body, with or without top and windshield.

LOUISVILLE **KENTUCKY WAGON MFG. CO.** KENTUCKY.
INCORPORATED

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Just One Grade of Material

Throughout the entire U. S. Ball Bearing plant, there is only one grade of raw material to be found—the very finest that money can buy.

Quality bearings therefore are assured in the U. S. Ball Bearing plant because materials to make inferior bearings are never to be found.

All U. S. Bearings are made of a chrome carbon alloy steel, produced from our own prescription, which we have found best suited to this special work. Obviously each individual bar of steel is tested both chemically and physically, before it is allowed to be made into bearings.

The highest type of balls obtainable are used and these balls are held accurate to the one-ten-thousandth of an inch both as to size and spherity.

The retainer or cage, is made of two corrugated steel members solidly riveted together. This gives a flexible and sturdy cage, which directs the balls at the axis of rotation with the least possible friction.

U. S. Ball Bearing Manufacturing Co.
(Conrad Patent Licensee)
Palmer St. and Kolmar Avenue, Chicago

Bottom insert shows view of the new U. S. Ball Bearing Company factory.
Interior view shows a portion of the lathe department.

U. S.
BALL BEARINGS

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TRADE MARK
NIGRUM
REG.- U.S. PAT. OFFICE

NIGRUM (Impregnated Wood) OIL-LESS BEARINGS

Any bearing, you know, must be kept perfectly and constantly lubricated to allow the shaft to work freely within it. Otherwise, *friction* and *undue heating* will quickly result, causing the ruin of both bearing and shaft.

NIGRUM Oil-less bearings do not require oiling. They remain perfectly lubricated, without any attention whatever, almost indefinitely.

NIGRUM Bearings are used by the majority of the most prominent Motor Car manufacturers in places about a car where it is difficult or impossible to keep an ordinary bearing properly lubricated.

NIGRUM Bearings are made of tough hard wood, specially treated and impregnated with a lubricating compound. Although lighter in weight than metal, NIGRUM Bearings are eminently superior for certain uses. They remain cool and efficient in service, never squeak and, once installed, can be forgotten. They can be used with equal satisfaction for light or heavy service, of almost any speed.

Used by the majority of Motor Car manufacturers, by many hundreds of machinery manufacturers.

We also manufacture the famous BOUND BROOK Graphite and Bronze Oil-less Bearings.

All genuine graphited Oil-less Bearings have always been made at Bound Brook, U.S.A.

BOUND BROOK OIL-LESS BEARING CO.

"Specialists in the manufacture of Oil-less bearings for more than a quarter of a century"

Bound Brook **New Jersey**



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Specifications

AXLE—Heat treated, 2¼ x 1¾ in. section.
Bearings—Roller, 4 on rear axle; rated for 7,000 lb. load.
Brakes—2½ x 12 in. internal expanding on rear wheels.
Capacity—2,000 lbs. in addition to body.
Chains—Baldwin, ⅝ in. roller, ⅝ in. wide, 1 in. pitch; guaranteed for 4,000 lb. load.
FRAME—4 in. steel channel, heavily reinforced in four places.
Gear Ratio—7.1 to 1 on high speed; 18.1 to 1 on low speed.
Loading Space—9 to 11 feet back of driver's seat. 4 to 6 feet wide, according to body.
RADIUS RODS—Special analysis, heavy steel, adjustable.
Springs—Side springs, 42 in. half elliptic, 10 leaves; relief spring 32 in. special, 6 leaves.
SPROCKETS—Baldwin special analysis steel, heat treated.
TIRES—32x3½ in. solid, standard equipment. 32x4 in., special equipment. Goodrich or Goodyear.
Tread—Standard, 56 in., front and rear.
Weight—Chassis, including Ford Car, 2,100 lbs.
WHEELBASE—125 in.
WHEELS—Artillery type, 2 in. spokes, second growth hickory, guaranteed.



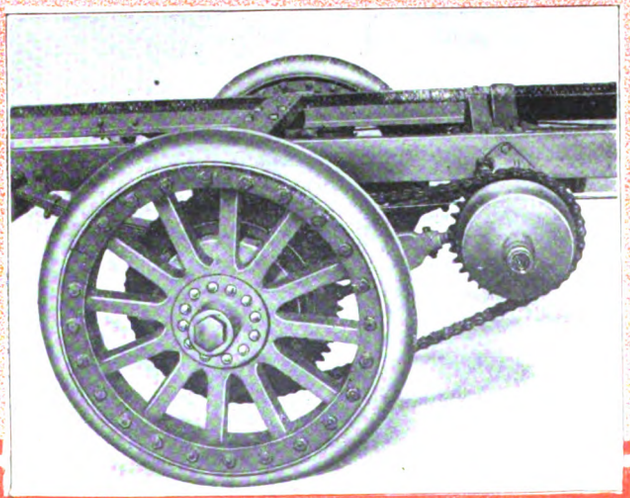
Ton-Truck
WE MAKE

WE are in position to make immediate deliveries. Our manufacturing facilities are large enough to enable us to keep our dealers supplied up to their full requirements at all times.

It is our established policy to accept no more orders than our production capacity will enable us to fill. We make no promises we cannot keep.

The advantage of dealing with such a concern is obvious to dealers who realize that late deliveries frequently mean lost sales.

Right now thousands of prospects are in the market for Ford truck units. The MAXFER, with its exclusive constructional features, with a firm of established financial integrity behind it and with a positive guarantee of prompt delivery, should command the attention of every dealer figuring on entering this wonderfully growing truck unit business.



Points of Superiority

1. Ford axle used without change or alteration,
Saves Time

2. Engine turns over less in carrying one ton one mile,
Saves Gasoline

3. Frames reinforced with four cross members,
Adds Strength

4. Sprockets of Baldwin special analysis steel, not malleable iron,
Adds Durability

5. Shipped set up ready to attach to Ford Chassis,
Saves Labor in Assembly

6. Shipped day order is rec'd,
Saves Delay

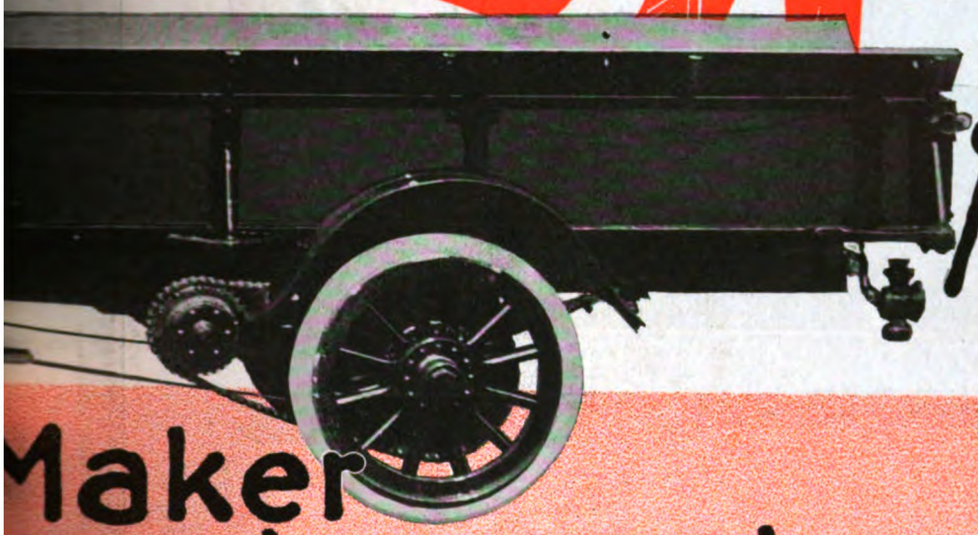
7. Liberal proposition to dealers,
Makes Money for You

MAXFER TRUCK & TRACTO

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FER

Converts Any FORD CAR Into a Guaranteed 1-Ton Truck for $350



Maker DELIVERIES

THE MAXFER Truck Company invites the most thorough investigation of its resources, manufacturing facilities and organization. For references as to our fair, square dealer policy, our co-operation and liberal selling plan, we can direct you to anyone of a hundred of the most prudent and thoroughly high-grade dealers in the country—everyone of them making a record-breaking success with the MAXFER.

Today the opportunities in this remarkably prosperous truck unit field are greater than ever. Make no mistake. Start right. Handle the MAXFER with the assurance that you have the best Ford truck unit on the market and a company of unquestionable soundness backing you.

We agree to deliver all MAXFER Trucks on the dates specified and to help you in your local advertising appropriation on the MAXFER.

We Require No Deposits On Axles

The MAXFER salvage system is as liberal as it is simple. There is nothing complicated about it. Dealers have no capital tied up in it at any time.

Another noteworthy MAXFER feature is ease of attachment. The MAXFER dealers save considerable time and labor on every installation due to the fact that the

Maxfer Is Shipped Assembled

There is no time lost trying to figure out how MAXFER installations are to be made. It is impossible to go wrong. Attachment is simple as A B C. If you want exclusive territory rights, show us you mean business. Wire or write today for the most liberal selling contract ever offered. Territory going fast. Immediate action necessary.

Use the Coupon for Dealers' Proposition and Full Information

COMPANY, 5045 South Wabash Ave. Chicago, Ill.

(COUPON)

MAXFER TRUCK AND TRACTOR COMPANY,
5045 S. Wabash Ave., Chicago.

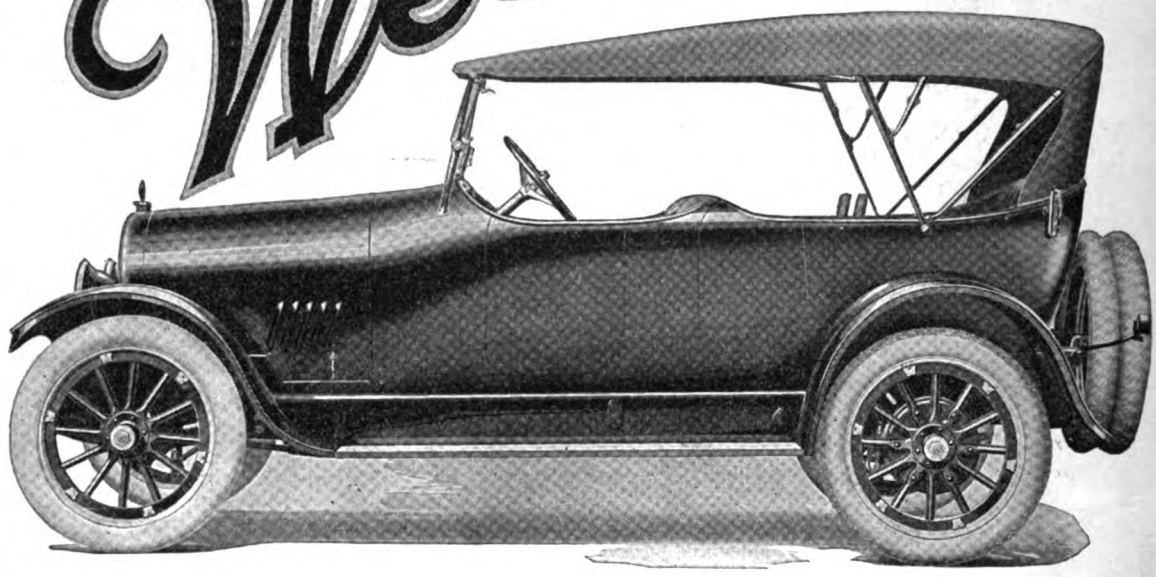
Send full particulars about MAXFER Ton Truck Makers and exclusive proposition to one dealer in each town.

Name .....

Address .....

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Announcing the New Westcott SIX SERIES 17



Four Passenger Cloverleaf Roadster.....$1590
Five Passenger Touring Car..... 1590
Seven Passenger Touring Car..... 1690
Complete line of closed cars to be announced soon.

Plenty of leg room and real comfort for all passengers.
Adjustable Gemmer steering gear and foot pedals.
Unusual steadiness on road.
Cool even ventilation in front and rear compartments.
Large Stewart-Warner Vacuum Gasoline system with fuel supply on rear of car.
Upholstery of best grade No. 1 long grain dull leather without buttons. Very comfortable, clean, sanitary.
Unusual attention to finish of both painting and trimming.
Very short turning radius.
Jiffy curtains on all open cars.
Water-tight wind-shield. Top glass overlaps lower 1¼". Sides water-tight with rubber strippings. Lower glass ventilates, upper glass rain visioned.
Antique mahogany instrument board, with large compartment under lock and key for small personal effects. Handsome instruments and within easy reach.
Warner electric clock and speedometer.
Automatic Thermostatic control of engine temperature.
Westcott Continental Motor, 3½" x 5¼".
Delco two unit lighting, starting and ignition system.
Timken axles with Timken bearings throughout.
Worm bevel differentials
Heavy Brown-Lipe transmission with Timken bearings.
Vanadium Springs. Dry Plate Multiple Disc Clutch.
Tubular Drive Shaft with two Spicer Universal Joints.
Pantasote one-man top. Flush Tonneau Lamps. Boyce Motometer. Power Driven Tire Pump. 125" Wheel Base. Rayfield Carburetor. Single or Double Tire carrier. Improved Auxiliary seats.

FOR THE past eight years the demand for Westcott Motor Cars has exceeded the production, although the Westcott price has advanced year by year.

Seventy per cent of all Westcott Cars have been purchased by persons who have previously owned automobiles and who presumably knew values. During recent years an ever-increasing proportion of our output has been claimed by owners of Westcotts of earlier models.

This discriminating recognition of basic motor car values has been our inspiration in creating the new Westcott of the Seventeen Series—a car of light-weight tendencies that embodies every essential of efficiency and refinement without the costly non-essentials and superfluous embellishments that increase first cost and impose a constant overload of operating expense.

Although the new Westcott does, as a matter of course, every "stunt" that any "sensational" car is advertised to do, it is not a freakish car but a practical, serviceable, road-worthy automobile of superb proportions and with endurance built into every part. In beauty, in refinement, in luxury, in spaciousness, comfort, convenience, safety and distinctive personality, the new Westcott leaves nothing to be desired.

Quantity of output has never been the ambition of this company. In these cars not one little detail has been sacrificed on the altar of frenzied manufacturing. We have put into them far more than we have saved by overhead economies resulting from a great natural increase in production.

It is for these reasons that we are able confidently to invite the prospective purchaser to compare the new Westcott, point by point, not only with cars similarly priced, but more particularly with automobiles that are universally accepted as standards of design, engineering and construction.

Catalog, containing complete specifications in detail, sent on request.

THE WESTCOTT MOTOR CAR COMPANY
SPRINGFIELD, OHIO, - - - - U. S. A.

THE WESTCOTT MOTOR CAR CO. SPRINGFIELD, O. U.S.A.

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From the Northeast—
Showing New Addition.

Views of the Enlarged Factory of the

BROWN-LIPE-CHAPIN COMPANY

Syracuse **New York**

Manufacturers of

Differentials and Bevel Drive Gears for Automobiles

Picture Below
From the Southwest—
Showing Heat Treating Department in the Foreground



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It Paves To Solid Comfort to You Mr. Car Owner



What It Is

Dann Insert is a thin, perforated strip of soft, shock deadening anti-friction metal inserted between the leaves of all the springs. It is packed with a special graphite compound which will not flow liquid and which insures maximum efficiency at all times. Springs are perfectly, continuously, permanently lubricated; will not become stiff, inactive or squeak. Your car will ride as easily as though it were floating on air Try Dann Insert on our money-back guaranty.

Easy Riding—or Your Money Back

This is our guarantee—you are the judge and you have 30 days in which to prove to yourself that Dann Insert gives you the easiest riding car in the world, and, in addition, perfect spring lubrication, increased tire mileage, reduced car depreciation, no squeaks, and freedom from dry springs.

Dann Insert is the only real and permanent relief from spring troubles. Thousands of owners of all makes of cars are using Dann Insert now. They are convinced that it is giving them the easiest riding car in the world. Their own records have shown that Dann Insert has saved them money in reduced depreciation on their cars and in greatly reduced tire troubles. Dann Insert gives them the full benefit of perfect spring action and prevents and absolutely eliminates all other spring trouble that automobile engineers admit in their instruction books.

Get It Now

DANN INSERT

"The Inter-leaf Shock Absorber"

Get It Now

Every User of a Dann Insert Is an Enthusiast. Read What They Say

Our Riding a Comfort Never Known Before

Our Hudson car is equipped with Dann Insert. It rides smoothly over all roads and the maximum of riding pleasure is obtained. My wife and I are over sixty years of age and the fact that our car has the extra equipment of Dann Insert makes our riding a comfort never known before. I heartily recommend Dann Inserts.—A. S. Eichner, Chicago.

Mo.e Than Satisfactory In Every Way

Last June I bought a Cadillac 8 Car and had it equipped throughout with your spring inserts by the Carolina Cadillac Co., of Winston, N. C. They have been more than satisfactory in every way. I have never had a spring squeak, and have remarked on the noiseless and easy riding qualities of my car.—Chas. B. Wagoner, Concord, N. C.

The Results Were Absolutely Perfect

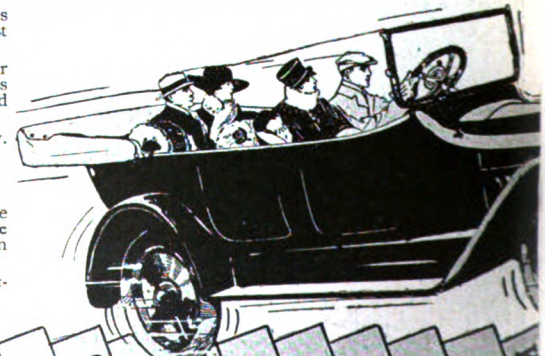
The writer used a "Little Six" Hudson 1914, 16,000 miles after you had placed your Inserts in the springs. The results were absolutely perfect.— E. L. Cox, German-American Portland Cement Works.

WHY DELAY ANOTHER MINUTE? We take all the risk. You know you need Dann Insert—SEND FOR BOOK NOW

Dann Insert prices have been greatly reduced. At the new prices there is no longer any excuse for your not enjoying the greatest comfort an automobile can produce.

Send for our price list, and booklet giving full information. Remember that we sell Dann Insert on thirty days trial, and if after thirty days you decide that you can do without it, you simply send it back and we refund every penny of your deposit.

Don't let Dann Insert get away from you. Send for the book today. Fill out the coupon: mail it now.



Big National Advertising Campaign

Dann Insert is now being advertised by a big campaign of pages in the **Saturday Evening Post, Collier's, Literary Digest, Leslie's, Scientific American, Life, Popular Mechanics, Popular Science Monthly,** and in the big automobile trade papers.

This campaign will be the biggest put out by any accessory manufacturer this year, and is now well on the way.

Interstate
Allen
Renault
Locomobile
Hudson
Jeffery
Imperial
Saxon
Detroit Electric
Apperson
National
Grant
Marmon
Pierce Arrow
Mercer
Chandler
Oakland
Pathfinder
Cadillac
Premier
Paige Detroit
Detroiter

National
Locomobile
Baker
Buick
Mitchell
King
Haynes
Velie
White
Chalmers
Stearns
Overland
Scripps-Booth
Baker
Reo
Cole
Winton
Willys-Knight
Chevrolet
Stanley Steamer

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the Way To Solid Business for You Mr. Dealer

What It Does

Dann Insert keeps springs continuously lubricated—stops drying out—rusting—squeaking—breaks up road shocks—reduces vibration—gives wonderful smooth riding—cuts down tire and upkeep expense—retards depreciation. This sounds too good to be true. But we back every claim with our guaranty—proved satisfaction or your money back.

Thousands of Orders Every Day

Dan Insert sells like wildfire to every automobile owner. Dealers are specifying as high as $6,000 in monthly shipments. Desirable territory closing fast for the easiest selling, biggest money making accessory on the market.

Everybody wants Dann Insert now at the new low price—sales have quadrupled.

Big dealers and distributors all over the country are taking on money making contracts for big quantities—are cashing in on our big advertising and sales campaign.

Every well known make of car is represented by thousands of enthusiastic users of Dann Insert. Every owner of an automobile in your territory is a propsect—is more than a prospect—he is a sure buyer.

If YOU Are a Live Dealer—Use the Coupon Today

Dann Insert sales are jumping by leaps and bounds. A quarter of a million dollars worth will be sold in the next sixty days. Are you going to get your share of the profits?

Don't Fail to Read Our Book on Spring Lubrication!

It tells the wonderful saving Dann Insert effects on tires, depreciation, mileage and repairs.

Write, Wire—But Send the Coupon Today

We don't have to tell you how enthusiastic every Dann Insert dealer is over the wonderful business he is doing. You all know that from the success of the dealers around you.

The attached coupon will bring you our complete proposition — simply say you are a dealer. Right now is the big selling season, when accessories are in tremendous demand. It is the time for you to get started — to be known as the leader in your territory in handling equipment that will save the owner money, that will increase every owner's satisfaction and pleasure. Every day you delay means loss of good profit. Act now — cut the coupon out and mail it — then wire to us that it is coming.

NOW IS THE TIME TO BUY

Get It Now

DANN INSERT

"The Inter-Leaf Shock Absorber"

Get It Now

Read What Prominent Engineers Say About Lubricated Springs

Hudson:—Springs need lubricating on an average of every 500 miles; if used in the winter, or when the roads are in poor condition, and the springs are constantly covered with mud, they will have to be lubricated more frequently. This is also true of heavy closed cars, especially limousines, which are washed more frequently than the average touring car.

Marmon:—The importance of proper lubrication cannot be too strongly impressed. Owners who show remarkable records for economical operation are those who watch this point carefully.

Cadillac:—When the leaves are not lubricated water works its way in between the leaves and causes them to rust, often to such an extent that they become like solid pieces. This causes them to loose much of their spring action. It is a good plan to jack up the frame of the car occasionally, so as to take up the weight off the springs, and insert oil and graphite between the leaves. It is also a good plan, about once a year, to have all the springs taken apart, surface thoroughly cleaned and coated with a thick mixture of oil and graphite.

A Quick, Easy Seller

Dann Insert is furnished in individual boxes for every make of car—packed ready for immediate distribution. It is also furnished in the attractive Dann Insert counter display case, seven widths over long rolls.

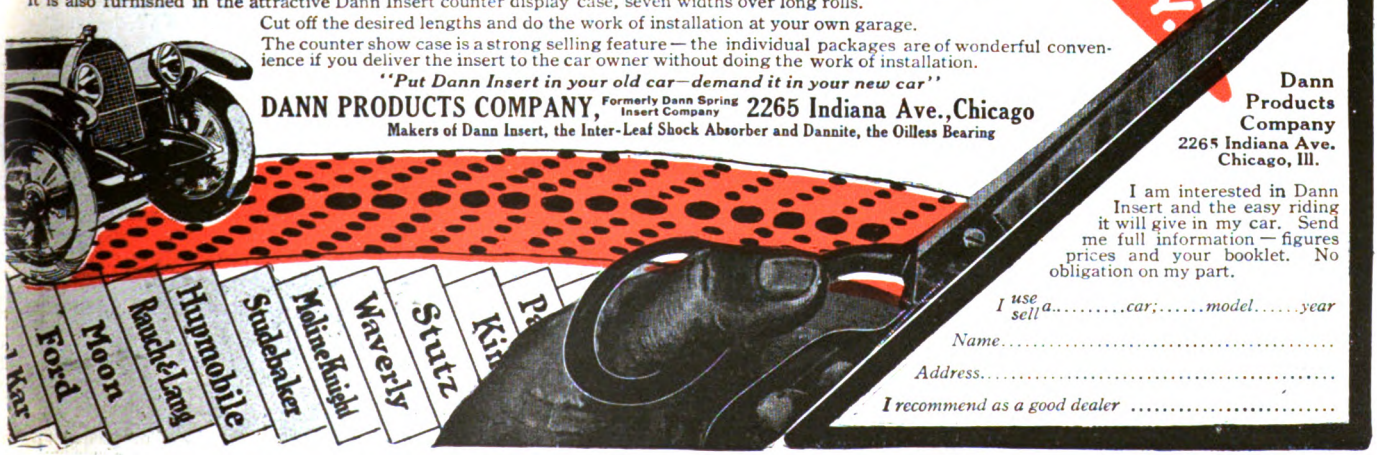
Cut off the desired lengths and do the work of installation at your own garage.

The counter show case is a strong selling feature—the individual packages are of wonderful convenience if you deliver the insert to the car owner without doing the work of installation.

"Put Dann Insert in your old car—demand it in your new car"

DANN PRODUCTS COMPANY, Formerly Dann Spring Insert Company **2265 Indiana Ave., Chicago**

Makers of Dann Insert, the Inter-Leaf Shock Absorber and Dannite, the Oilless Bearing



Dann Products Company
2265 Indiana Ave.
Chicago, Ill.

I am interested in Dann Insert and the easy riding it will give in my car. Send me full information—figures prices and your booklet. No obligation on my part.

I use / sell a.....car;.....model.....year

Name.....

Address.....

I recommend as a good dealer .....

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FOSTER
OWL LIGHT
The Quality Searchlight



Illustration Shows
Cadillac Victoria Model A
Equipped with OWL-LIGHT.

Dealers Write For Full Details



NOW ONLY

$5

Better Than Ever

OWNERS of the highest grade American and foreign cars equip with Owl-Lights almost exclusively.

In New York, Chicago, Buenos Aires, London and Paris Owl-Lights are all the vogue.

The Owl-Light has become a badge of distinction—as well as an indispensable motoring safeguard. It adds the finishing touch to a fine car's equipment. Its lines are artistic, simple, clean-cut and unobtrusive. Nor must the fact be overlooked that it is the most powerful, most beautiful searchlight constructed.

Furnished for all makes and models of cars.

In ordering state make, model and battery voltage of car.

Booklet illustrating many uses for the Owl-Light sent on request.

Thoroughly High Grade Dealers Wanted

C. H. FOSTER ACCESSORIES CO.

2303 Michigan Blvd., Chicago

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

Some Smart Cars

We have some very able men in this organization to keep Mitchell cars up-to-date.

They watch for new ideas and touches, and see that Mitchell cars get them quick.

Just now they are bringing out some particularly smart cars, each the last word in its type. A Limousine; a Sedan; a Coupe; a Town Car; a Cabriolet.

If you are interested in such types, we have something fine to show you.

All-Season Cars

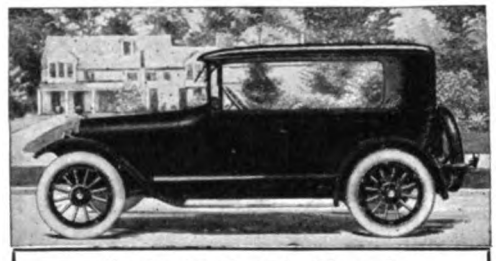
There is a growing demand for all-season models, like the Sedan and the Cabriolet.

One is a fixed-top touring car which changes in a moment to an elegant Sedan. The other a three-passenger Roadster which becomes a Coupe. These types which serve for winter and summer, for rain or shine, have attained a remarkable vogue.

The new Mitchell models—just brought out—show these types in perfection.

New Mitchell Class

These artistic models—luxury cars—are winning the Mitchell a new class of buyers.



$1325 F. o. b. Racine

For 5-Passenger Touring Car or 3-Passenger Roadster

7-Passenger Touring Body $35 Extra

High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features. Also five types of closed bodies.

Under John W. Bate, the efficiency expert, the Mitchell became known as "The Engineers' Car." It has stood for mechanical perfection. Its chief appeal has been to men schooled in engineering.

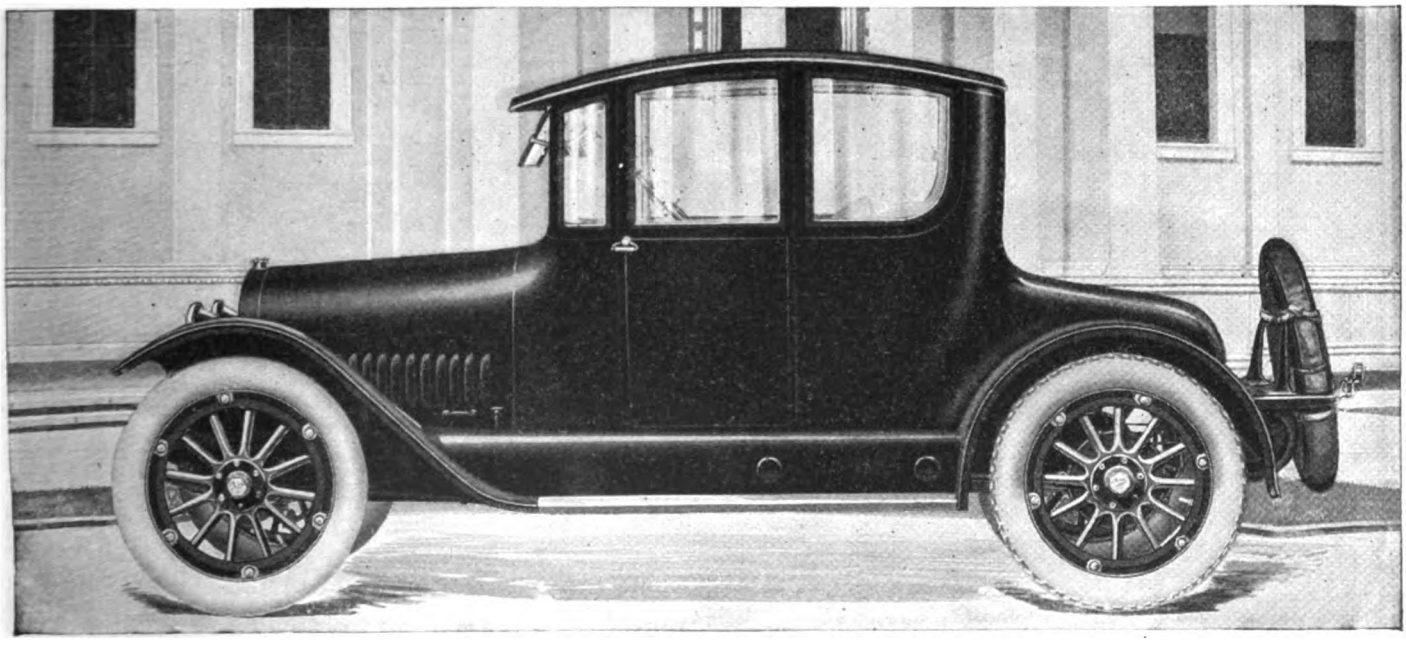
In the past two years we have given equal attention to the showier side of the car. This year we brought out a Mid-Year Mitchell with 73 new conceptions. In that one car we embodied all the best new ideas extant.

We included 26 extra features which other cars omit. And that made it by far the most complete car.

We adopted a 22-coat finish, deep cushions, French-finished leather. We put a light in the tonneau, added a locked compartment. For comfort's sake we adopted 52-inch Bate cantilever springs.

Now these new bodies will make the Mitchell the aristocrat of cars. Every dealer knows how much that means in deciding the choice of a car.

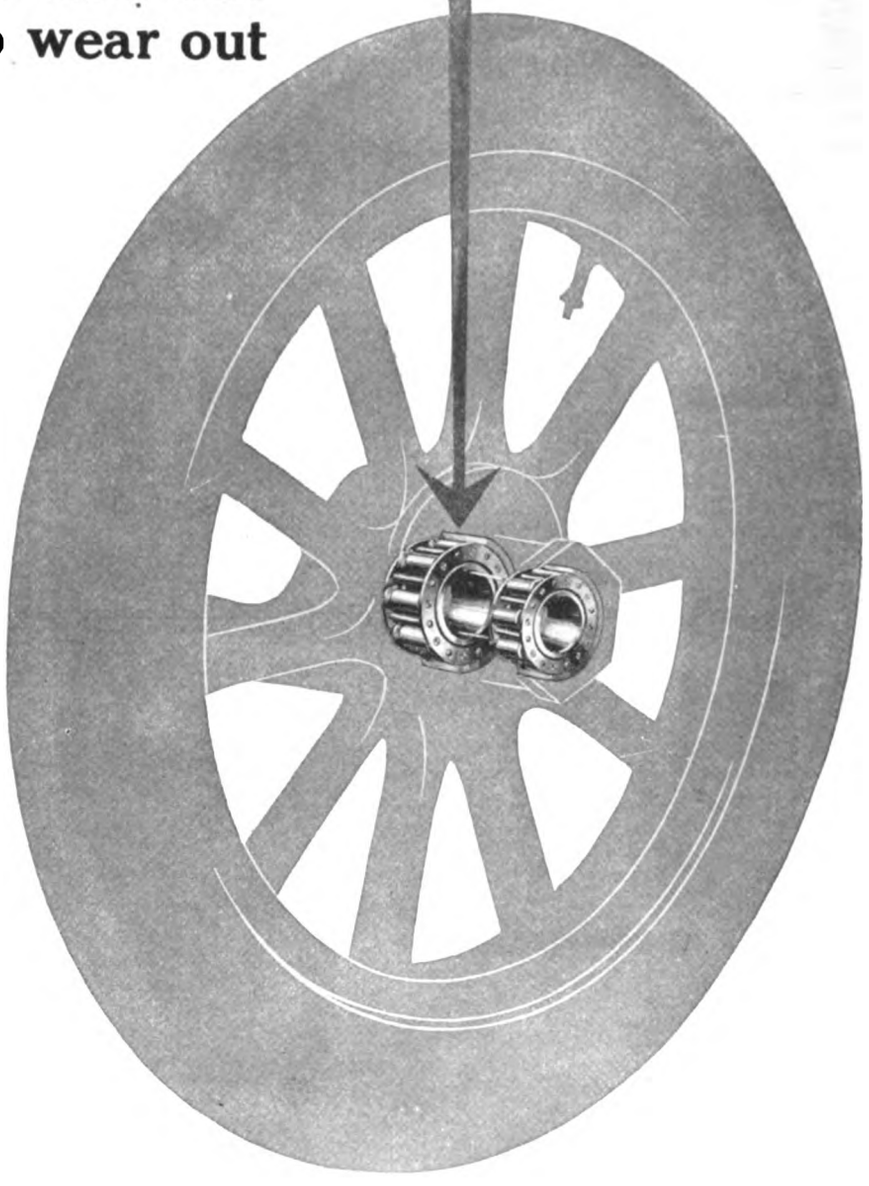
Mitchell Motors Company, Inc.
Successor to Mitchell-Lewis Motor Co.
Racine, Wis., U. S. A. (109)



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The Last Part

of the car to wear out

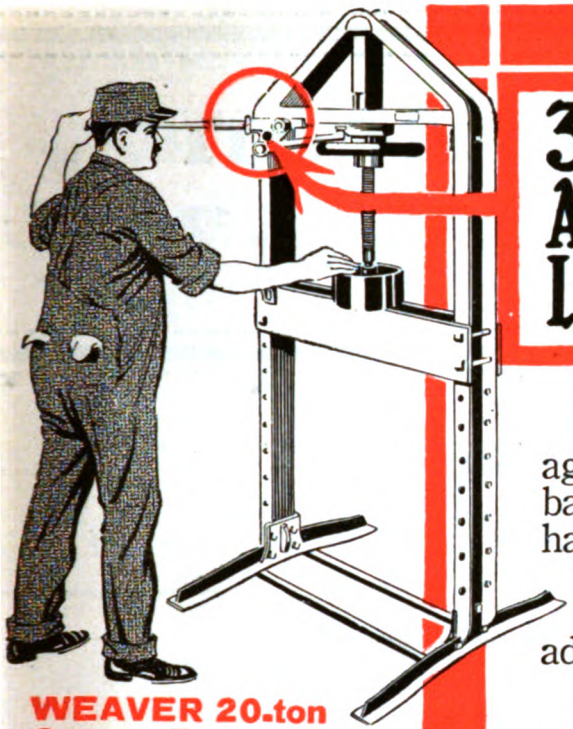


Bower
Roller Bearing Co.
DETROIT, MICHIGAN

BOWER SAVES POWER

BOWER SAVES POWER

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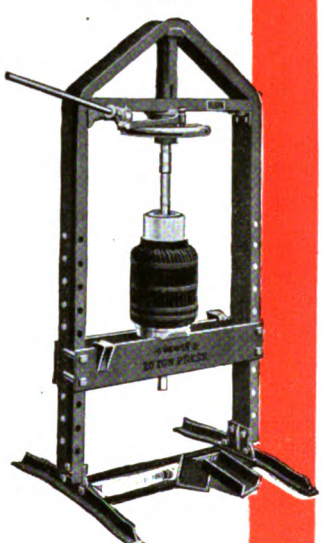


WEAVER 20-ton Garage Press List Price $56

3000 to 1—This Quick Adjustment Doubles Your Leverage for Heavy Work

One man can do work on a Weaver Garage Press that two men would break their backs over on most presses — and yet you have a quick leverage with the 1500 to 1 adjustment for all ordinary jobs (increased to 3000 to 1 by simply changing the lever adjustment to the other hole).

Excess power (50% more than the 20 ton capacity if you need it in a pinch) — open, strong construction that stands strain and permits you to press all kinds of articles (big, little, wide or long) — surprisingly low price — these are the practical features which appeal to any wide-awake garage man.



You will see by the cut that the bolster can be set at any point on the frame — extreme perpendicular capacity of 48 in. Quick acting — the wheel and screw are supported on ball bearings. The screw can be spun its full length in a few seconds.



WEAVER Auto Ambulance List Price $30

WEAVER Bucket Pump $12

Don't let press of business make you put off sending for our full catalog of the Weaver line of jacks, ambulances, towing poles, presses, etc., another day. You need them in your business because every one is self supporting and shows a profit.

Send now for Booklet 731 NOW— while you think of it.

Weaver Manufacturing Company

Only Exclusive Manufacturers of Garage Equipment

2173-79 South Ninth Street, Springfield, Ill.

WEAVER Garage Equipment

send for

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Does $50.00 Mean anything to You?

It does to most people, especially when it's a difference in price.
That is **one** reason for the big business already piling up on us.
But another and even bigger reason exists in the splendid attributes of the

Internal-Geared RAYFORD

A FORD + $300

The internal-gear drive is attained by using the Ford axle simply to turn the wheels and letting the Rayford I-Beam axle carry the load.

This drive combines the strength and lightness of the chain drive with the silent smoothness of the worm drive.

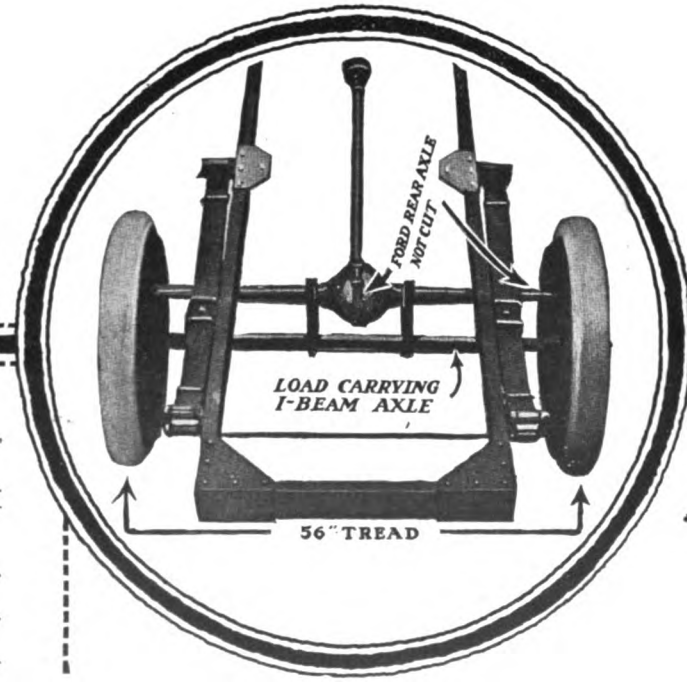
Your customers know it—and they know the Ford compactness and strength, which we leave untouched.

DEALERS

are writing in for territory and it is going fast. Get YOURS while it is still to be had!

We give it to you exclusively with a wide-open, profit-making proposition that will appeal strongly. Mail us this coupon *NOW!*

RAYFORD COMPANY
Palethorp and Indiana Avenues
Philadelphia, Pa.



Rayford Co.,
Palethorp and Indiana Aves.,
Philadelphia, Pa.

Dear Sirs:
Please send particulars regarding agency for the Internal-Geared Rayford.

Name .....

Address .....

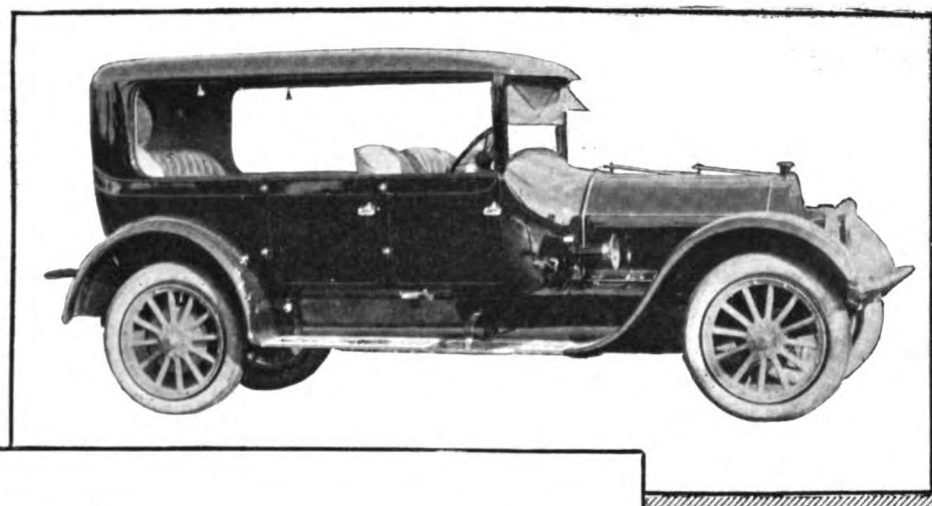
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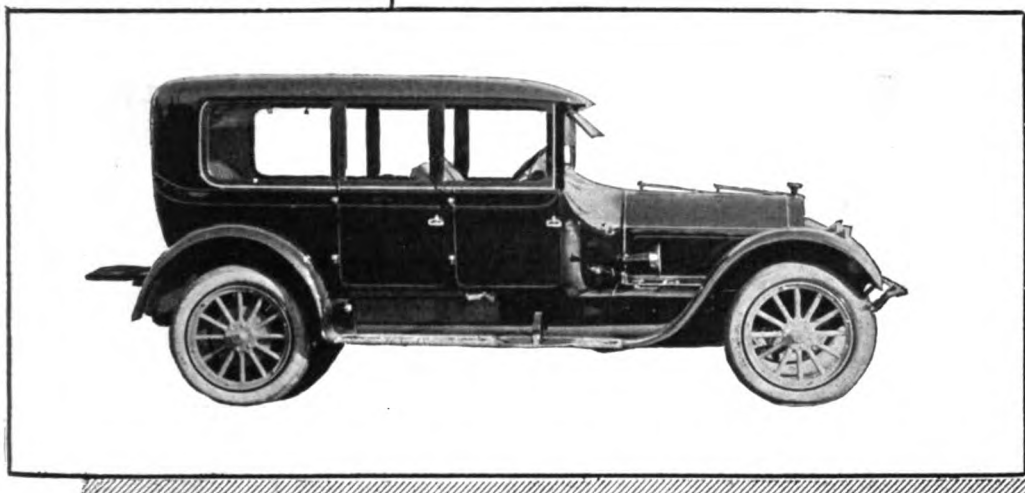
USE THE COUPON

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Springfield Type Convertible Body

7 Distinctive Models





Can be instantly converted into any of these four types of bodies.

BERLINE
LIMOUSINE
SUBURBAN
DEMI-LIMOUSINE

For several years there has been an increasing demand from motorists for a custom-made body of the Springfield type.

We take pleasure in announcing that we can supply custom-made bodies of this type for individual motorists.

This opens the way to car dealers to supply their patrons with luxurious, custom-made Springfield bodies of the most advanced type in which are incorporated the preferences of each individual purchaser.

Our bodies will contain only the best material throughout, and the craftsmanship will equal that of any foreign or domestic production.

These bodies can be fitted to practically all cars now on the market, either new or old. We supply many to go on used cars.

Correspondence with dealers is solicited.

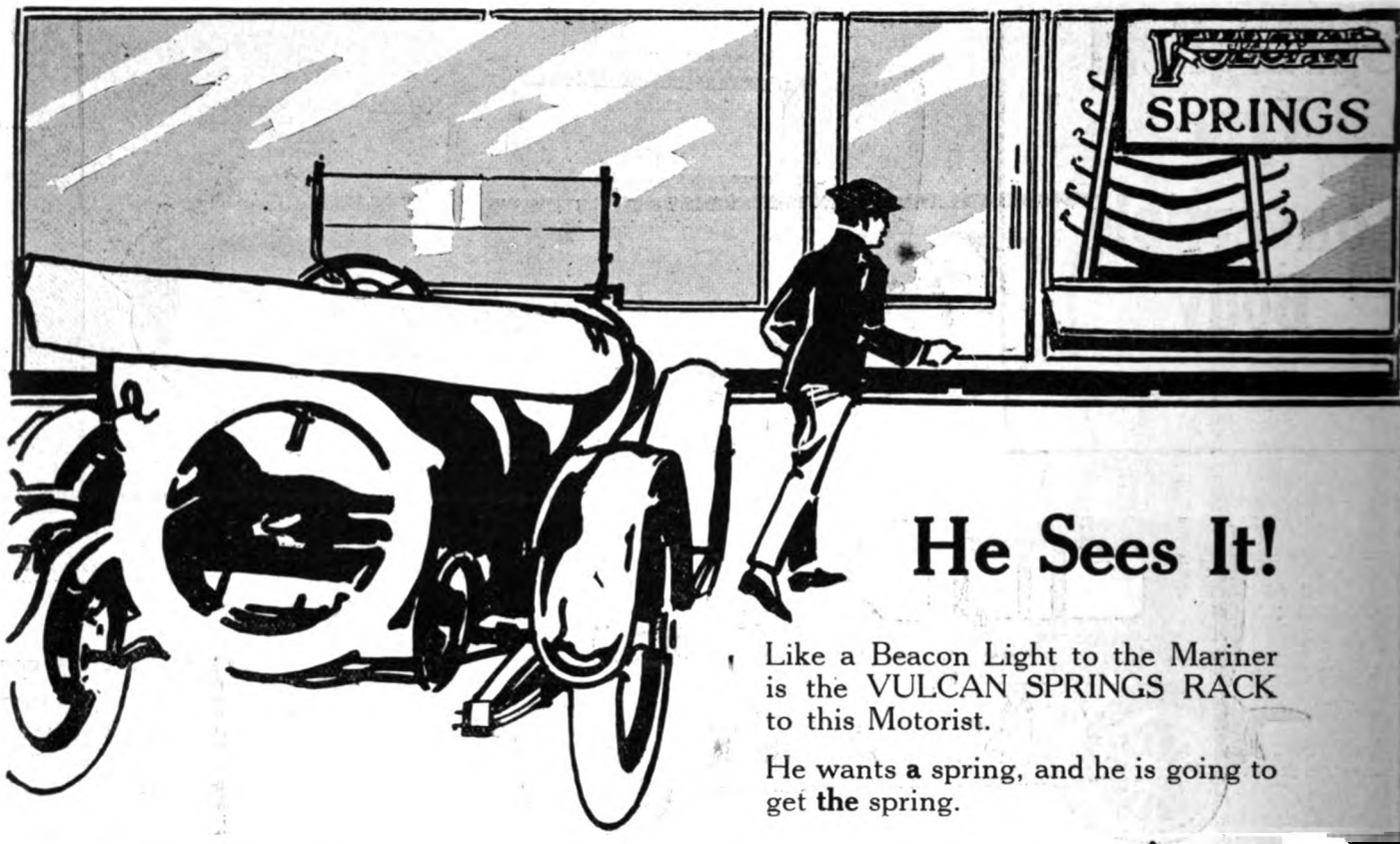
Write for illustrated catalogue

GOODMAN AUTO BODY CO., INC.

1737 Broadway, corner 55th Street **New York City**

When writing advertisers please mention Motor World

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He Sees It!

Like a Beacon Light to the Mariner is the VULCAN SPRINGS RACK to this Motorist.

He wants a spring, and he is going to get the spring.

VULCAN QUALITY

DEALERS know this, and they keep these racks prominently displayed.

They know, too, and their customers rely upon it, that at all times at any of our branches they can get VULCAN SPRINGS to fit 90% of all makes of American cars; that we keep them always IN STOCK READY FOR IMMEDIATE SHIPMENT.

VULCAN Springs are the product of well-directed efforts devoted for years to this one line, with sole intent to produce the most perfect fitting and acting springs that honest material and competent workmanship could make.

A perfect fit is guaranteed in each case, and, as the Dealer in this picture is saying, "The name VULCAN on a spring is a guarantee of Efficiency."

If YOU are not already a VULCAN Dealer, be sure to write us for particulars.

JENKINS VULCAN SPRING COMPANY

708 Commerce St., Fort Worth, Tex.

1402 Chestnut Street, ST. LOUIS, MO.

29 Caldwell St., Sumter, S. C.



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The WISE DEALER'S CHOICE

Specifications

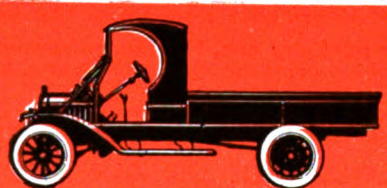
Carrying Capacity—2000 lbs. **Frame**—160″ long, 4″ channel section 3-16″ thick, with gusset plates and cross members. Forged running board hangers. **Axle**—Worm drive. **Propeller Shaft**—Tubular with Universal joint. **Springs**—Semi-elliptic, 8 leaves of special alloy steel, heavy duty truck type. **Tires**—Solid rubber, 32x3 1-2″, quick demountable. **Brakes**—3″ internal expanding. **Wheelbase**—120″ when attached to Ford engine and transmission. Ford frame is used as subframe. **Tread**—56″. Loading space back of driver's seat, 9′. Scientific distribution of load. **Weight**—About 1100 lbs. attached to Ford engine, and transmission about 2050 lbs. Complete with all fittings, bolts, etc., to make change within a few hours. Price,

$395 F.O.B. Owensboro Ky.

For big sales, quick profits, meeting and beating competition in the great and growing demand for 1-ton truck, the wise dealer chooses the

Ames-ton

Worm Drive Truck Unit For Fords



Can be quickly attached to Ford chassis, making a 1-ton truck unequalled for service, durability and low operating cost. Combines the splendid efficiency of the worm drive with the simplicity of the ever reliable Ford chassis—and at a price every man who has need for a motor truck, can easily pay.

Fastest selling unit ever offered in connection with Ford chassis. Write for territory and attractive dealer proposition.

AMES MOTOR CAR CO., Inc.
OWENSBORO KY.

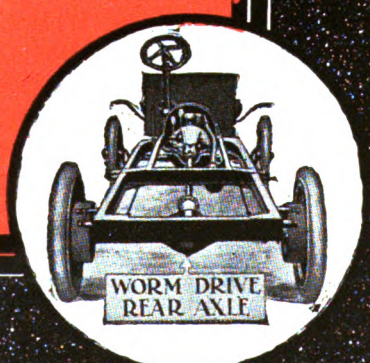


FOR PROMPT ACTION
MAIL TO-DAY
IS THE FOLLOWING TERRITORY OPEN FOR THE AMES-TON?

ALSO GIVE ME YOUR DEALER'S PROPOSITION AT ONCE

NAME _____

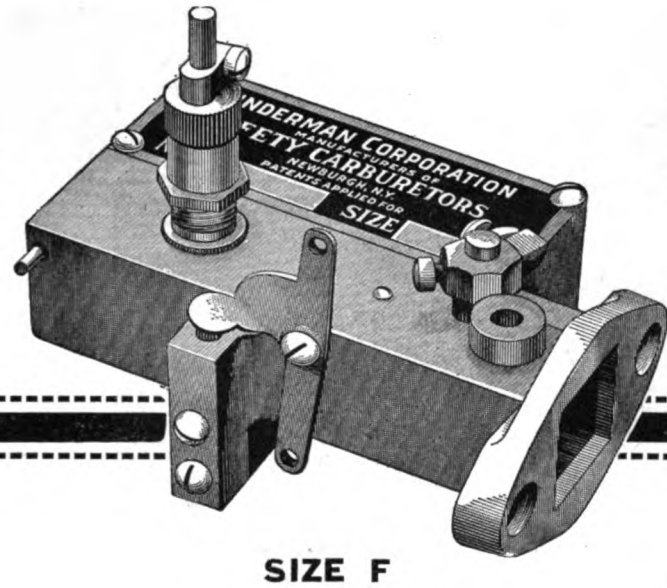
ADDRESS _____



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$5.00 f.o.b. Newburgh

With Elbow, $6.50



$5.00 f.o.b. Newburgh

With Elbow, $6.50

UNIVERSAL LUBRICANT COMPANY
PENNSYLVANIA PETROLEUM PRODUCTS EXCLUSIVELY

Binghamton, N. Y., July 17, 1916.

Sunderman Safety Carburetor Corporation,
Newburgh, New York.

Gentlemen:

We have two cars equipped with the Sunderman Safety Carburetor as demonstrators, and the writer drove one of them, a Ford, carrying 750 pounds, or more, from Binghamton to Oneonta, including a bad detour, approximately seventy miles, consuming only about two gallons of gas, which has convinced me more than ever of the merits of the carburetor when properly adjusted.

Very truly yours,
(Signed) UNIVERSAL LUBRICANT CO.

SIZE F

Dimensions 4½"x2½"x1⅞".
Suitable for any engine up to 45 H. P.
Subject to different size nozzle according to bore and stroke of motor.
Weight: 1¾ lbs.

A Sunderman Safety Carburetor properly installed and adjusted increases the mileage of any car, of any make, of any number of cylinders.

Can be installed within an hour.

"Ford" installation can be made within 30 minutes.

Will decrease your gasoline bill from one-third to one-half.

Has no wearing part, thereby saving all troubles of replacements.

Simplicity itself. Composed only of 24 parts, while all other carburetors have from 50 to 140 parts.

Produces a pure dry gas, leaving no carbon deposit, eliminating valve grinding, gas pound and foul spark plugs.

THIS IS A CARBURETOR, NOT AN ATTACHABLE GAS OR AIR RECTIFIER

H. F. PARKER & CO.
AUTOMOBILE ACCESSORIES

623 W. North Ave., Baltimore, Md.

July 10, 1916.

Sunderman Safety Carburetor Corporation,
Newburgh, New York.

Gentlemen:

The Sunderman Safety Carburetor left with us is being used on a Ford delivery that makes the same measured course each day, and has been getting 12 miles to the gallon. It is now getting 29½ miles to the gallon, and this is on a baker's delivery in the city, with a great number of stops; or when they do not stop the engine it is kept running while the driver is in the store transacting business.

Very respectfully,
(Signed) H. F. PARKER & CO.

SUNDERMAN
SAFETY CARBURETOR

FEATURES:

Enormous Gasoline Saving
Greatly Increased Mileage
More Power
Great Flexibility
Fast Get Away
Quick Pick-up
Easy Starting
Positively no Backfiring
Absolute Simplicity
Adjusted to all Climatic Conditions.
SPEED
A wonder for Fords—Does great work on big cars

SUNDERMAN CORPORATION
MANUFACTURERS OF SAFETY CARBURETORS
NEWBURGH, N. Y.

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I AM a gasoline motor.

I serve the interests of man. I contribute to his pleasure. I aid him in his business.

My services extend to the far corners of the earth. I am depended upon by armies and by peaceful tillers of the soil. On city streets and country roads are the countless vehicles I drive.

I serve in all climates and in all weather. I am driven often by hard masters. Yet always I serve.

My needs are few. Yet what I need I cannot forego. Gasoline I need to feed me, oil to ease my efforts, an electric spark to give me life.

I ask only a proper mixture of gasoline and air, a proper quality and quantity of oil and a spark that is hot, timely and unvaryingly strong.

Give me an EISEMANN MAGNETO.

EISEMANN MAGNETOS

are Dependable—Durable—Efficient. The spark they give is hot and sure at any speed, low as well as high. Using an Eisemann, you will find the pick-up quicker, the flexibility greater, the gas consumption at its minimum.

EISEMANN MAGNETOS are made in a range of types and sizes to meet every requirement of gas or gasoline engines.

THE EISEMANN MAGNETO CO.

Sales and General Offices:

32-33rd Street Brooklyn, N. Y.

415-417 N. Capitol Ave. Indianapolis, Ind.

802 Woodward Ave. Detroit, Mich.

When writing advertisers please mention Motor World

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When The KING Came In

after its recent run of nearly 11,000 miles in two weeks, without once stopping the motor (approximating two years' use by an average owner), the

GURNEY
BALL BEARINGS

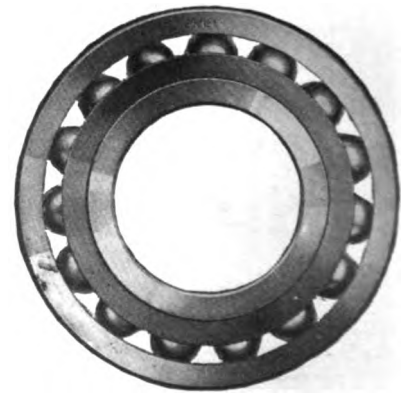
with which it was equipped were in perfect condition, ready to start at once upon another such journey.

We are not surprised at this. We know the qualities of staunchness and perfection of design that years of constructive work have built into these bearings.

Such a severe test merely demonstrates the great reserve of safety and service that lies within the bearings of a Gurney-equipped car.



Gurney Ball Bearing Co.
(Conrad Patent Licensee
Jamestown, N. Y.
Chicago, Ill. N. Y. City



When writing advertisers please mention Motor World

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"CARSPRING" TIRES HAVE BEHIND THEM OVER A HALF CENTURY EXPERIENCE IN RUBBER-MAKING—AND THE ENTHUSIASTIC SUPPORT OF THOUSANDS OF MOTORISTS.

"CARSPRING" SELLING METHODS HAVE BEHIND THEM A FIRM BELIEF IN THE PERSONAL RESPONSIBILITY AND TRUSTWORTHINESS OF OUR DEALERS—WE GIVE THEM EXCLUSIVE TERRITORY "FOR GOOD", THE WIDEST LATITUDE IN MAKING ADJUSTMENTS AND EVERY OPPORTUNITY TO BUILD A BIG BUSINESS AND TO RETAIN IT YEAR AFTER YEAR



¶ A "CARSPRING" agency means independence to the dealer and prompt, satisfactory service to his customers.

¶ It means more customers and a bigger business every year for our dealers—more mileage and less tire trouble to the user.

¶ "CARSPRING" methods guarantee fair play to the dealer—the widest latitude in making adjustments—an exclusive territory becoming more valuable each year—and the right to hold and gather profits from that territory indefinitely.

¶ In so far as it is possible to make a perpetual contract, every "CARSPRING" dealer is protected in his territory and his customers are protected in their understandings and agreements with him. They can **depend** upon the tires and also upon those who sell them.

¶ "CARSPRING" Tires exemplify Service to the Customer and Safety to the Dealer—as well as Satisfaction to both.

We have been allotting territory very fast but some is still vacant. If you are the right man for your district, write us at once—we want you. And when you understand the liberality and fairness of our offer you will want us. Do not delay—your territory once allotted is lost to you for all time.

NEW JERSEY CARSPRING & RUBBER COMPANY

JERSEY CITY, N. J.

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AJAX TIRES





Guaranteed In Writing 5,000 Miles

"While Others Are Claiming Quality We Are Guaranteeing It."

FOR 11 YEARS the circle of Ajax appreciation has grown wider and wider. The demand always exceeds the supply. The protection and security of this 11-year-old time-tried and tested Ajax *written* guarantee of 5,000 miles have proven our sincerity and ability to build tires of higher quality.

Interest Chauffeurs in entering the **Fourth Annual Ajax Tire Mileage Contest for Employed Drivers.** It Costs the *Owner* Nothing and Saves *Him* Much. Write for Particulars or Inquire of Our Nearest Branch.

Ajax Rubber Company, Inc.
1796-1798 Broadway New York

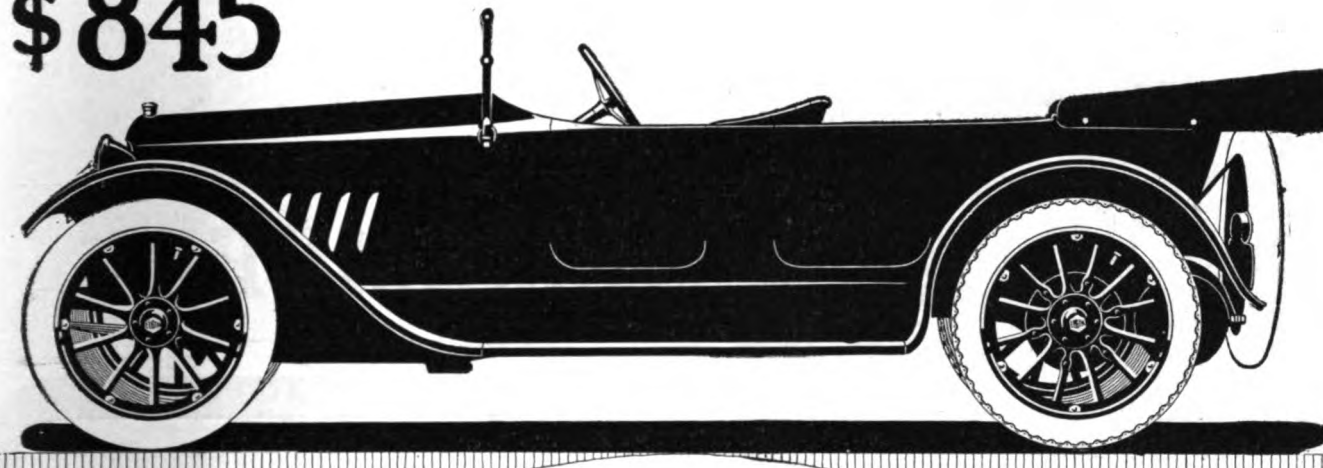
AJAX Branches

Brooklyn	Indianapolis	Des Moines	Denver
Boston	Detroit	Kansas City	Seattle
Philadelphia	Cleveland	Minneapolis	Portland, Ore.
Atlanta	Chicago	Dallas	San Francisco
			Los Angeles

Factories: TRENTON, N. J.

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$845



Elgin Endurance

Again the **Elgin Six** leads: This time in the Fifth Annual Tour under the auspices of the Western Michigan Pike Association—from Chicago to Mackinaw City, a long drive of 626 miles, in heavy, dry sand, over rough roads and many steep hills—a true test of endurance and reliability, without a mechanical adjustment.

The **Elgin Six** was the only low-priced car in the tour, which included many high-priced cars of much prestige and renown, but in the contest not one surpassed the Elgin.

This Telegram Tells the Story

Five-Passenger Touring Car $845

Three-Passenger Clover Leaf Roadster $845

Form 1201

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT

RECEIVED AT GORNER JACKSON BOULEVARD AND LA SALLE STREET CHICAGO

LA 50 DEDAX 43 NL 5EXA

MACKINAWCITY MICH JULY 13-16

ELGIN MOTOR CAR CO

2427 MICHIGAN AVE CHICAGO ILL

OFFICIAL PILOT CAR ELGIN SIX FINISHED FIFTH ANNUAL TOUR HERE TODAY CONGRATULATIONS YOUR COMPANY ON ITS GREAT PERFORMANCE ALL YOUR CARS IN TOUR MADE EQUAL SHOWING AND FINISHED ON SCHEDULE TIME MAKING RECORDS YOU SHOULD BE PROUD OF

W H LOUTIT PREST WEST MICH PIKE ASSN

230A 14

—*These Special Features Help the Demand for "More Elgins"*—

- Six-Cylinder Valve-in-head 35 Horsepower High-Speed Motor.
- Unit Power Plant, Three-Point Suspension.
- V-Type Radiator, Thermo-Syphon Cooling.
- Combination Force Feed and Splash Lubrication.
- Two-Unit Dyneto Electric Starting and Lighting System.
- Delco Ignition System.
- Stewart Vacuum Feed, Rayfield Carburetor.
- Springs, Semi-Elliptic Front, Self-Oiling Cantilever Rear.
- Multiple Disc, Dry Plate Clutch—Steel on Raybestos.
- One Man Top—Jiffy Curtains.
- Quick Detachable and Demountable Rims.
- 114-inch Wheel Base.

BUILT LIKE A WATCH ELGIN

Some desirable territory still open for dependable dealers

Elgin Motor Car Corporation

Chicago, U. S. A.

BUILT LIKE A WATCH ELGIN

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REMEMBER!

OpcO Is a Harmless Oil A Perfect Lubricator

And is backed by our positive GUARANTEE to refund your money if it fails to make good our claims.

TRY IT

Send for a can **today.** Use it as per simple directions and if your engine doesn't show a distinct gain in power at once return the can with what is left, and **get your money back.** Glenn H. Curtiss, the noted aviator, writes: "We have just completed a test of your OpcO Carbon Remover, and we are glad to report that the solution seems to accomplish the purpose for which it is intended quickly and thoroughly, and without the accompanying risk of damage and inconvenience common to ordinary methods of carbon removal. Kindly send me ten cans."

OPCO

It is the simplest, quickest, and most effective way ever to rid a gasoline engine of carbon trouble—to abolish overheating, knocking and loss of power.

Merely introduce a little OpcO Carbon Remover in the cylinders, start the engine, and the carbon goes out the exhaust.

Takes about 10 minutes—Costs but 6c per cylinder.

Could it be easier—quicker?

Leaves all parts of the engine perfectly lubricated.

If your dealer is out of it, send us his name and address and $1.00, and we will see that you are promptly supplied.

DEALERS Genuinely a remarkable repeater. Liberal profits for you. Write at once for particulars.

AMERICAN OIL PRODUCTS CO., Buffalo, N.Y., U.S.A.

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MOON
REG. U.S. PAT. OFF.
MOON MOTOR CAR CO.
ST. LOUIS, MO. U.S.A.

Power and Beauty

are perfectly combined in this car—pre-eminent among seven-passenger sixes at anything like the price—the new 1917 Moon

Six-66

(Actual Brake Horsepower)

Its new Continental-Moon high-speed efficiency type motor develops 66 horsepower—actual brake test—tremendous power in proportion to its weight and more than the maximum requirement. It is under perfect control—you can throttle it down to a walking gait, or drive at greater speed than most men care to try. A quick pressure on the throttle and the car picks up like a flash. Its standard equipment is headed by new Delco-Moon two-unit starting, lighting and ignition system, with Bendix automatic drive in connection with starting motor; Timken front and rear axles; over-size tires, 35 x 4½; and many other new features.

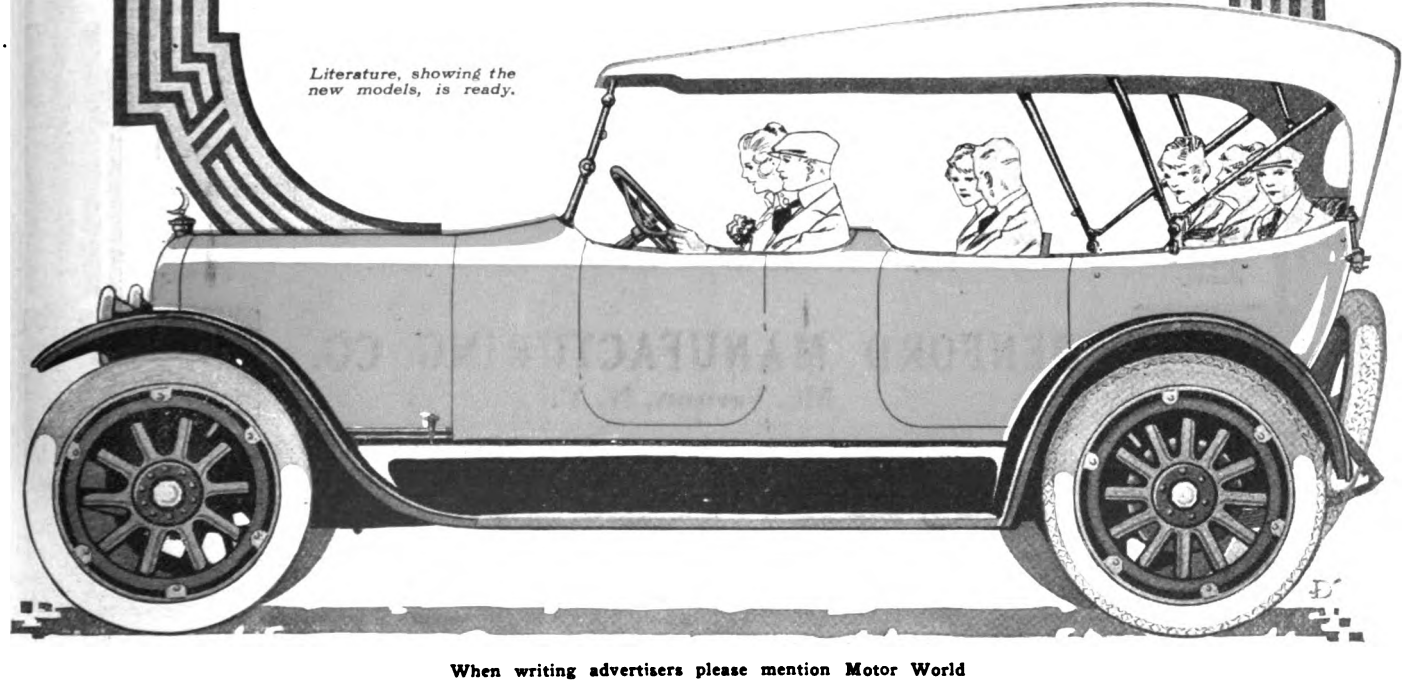
The new double-cowled body, with long, sweeping lines (Delaunay-Belleville type) is the design used on many of the most expensive European cars. The smart, slanting windshield and the genuine tan Spanish leather upholstery add further to its many attractions. The seats are specially designed to fit and rest the body—and there is more than ample leg-room in both front and rear compartments (Moon cars have always been noted for their comfortable roominess). It is a car that commands attention anywhere—no matter what its surroundings. It has an individuality and style all its own.

Seven passenger, fully equipped, $1650

The new Moon Six-43 (43 horse-power, actual brake test), five passenger, fully equipped, $1295.

MOON MOTOR CAR COMPANY St. Louis, U. S. A.

Literature, showing the new models, is ready.



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"The Wise Driver from Bayside"

"I've got a good electrical system—works on storage battery, with dry cells for auxiliary ignition. I never bother with it. I'm willing to let good enough alone. But one night both went out on me and I needed the car badly. Sore and disgusted, I went for some dry cells and told the supply man my troubles. Says he, 'Use these, they'll fix you up.' He showed me two little tools—

BENFORD'S INDESTRUCTIBLE BATTERY TESTERS

"One tests storage batteries and the other dry cells. You simply hold the tool *upright* on one terminal, put the wire on the other and up jumps a little tongue that tells you the exact condition of your electrical system.

"I bought them quick—I had sense enough to know that by testing my batteries regularly, they'll never double cross me again. Using a Benford Battery Tester is different from the ordinary way of testing. It's not nearly so messy and dirty. You can test in white gloves, patent leather shoes and dress trousers and never take a chance of soiling your clothes.

"You can't break 'em—the dealer threw them against the wall, and they tested just as accurately as before. They're guaranteed for five years, too."

Storage Battery Tester....$1.50
Dry Battery Tester.....$1.00

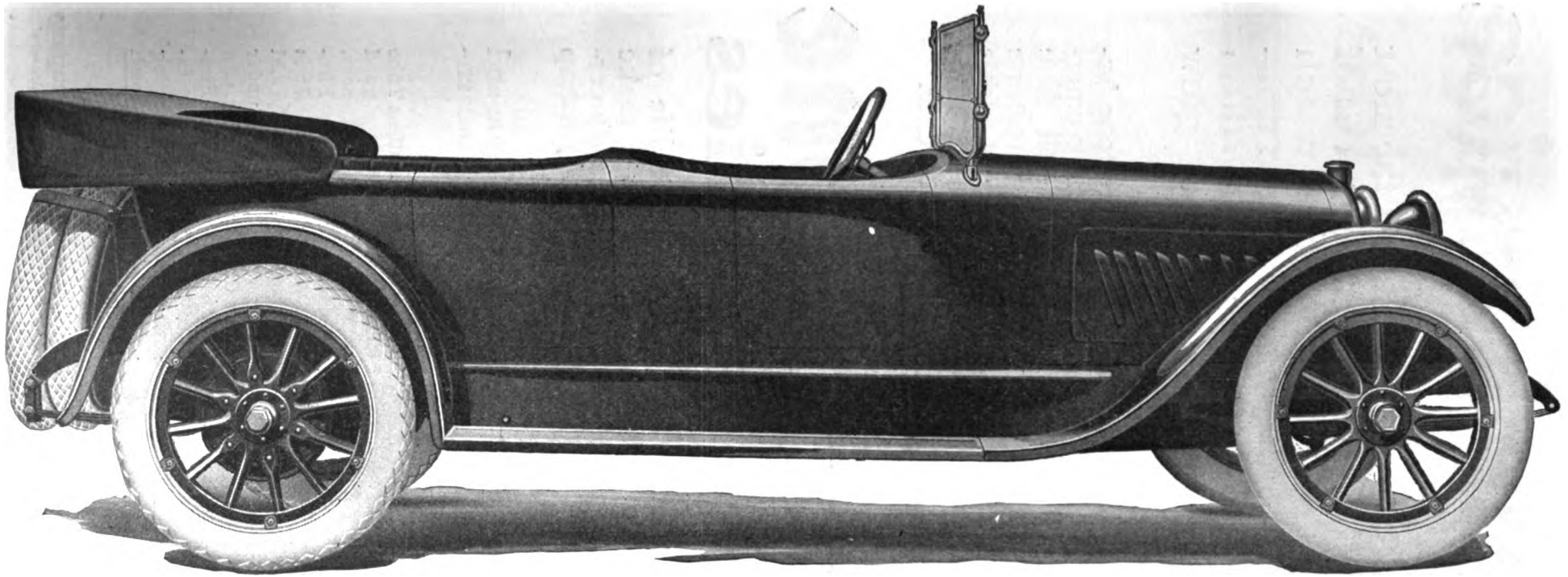
DEALERS: Nearly three million drivers will buy these. Figure the profits that are waiting for you!





BENFORD MANUFACTURING CO.
Mt. Vernon, N. Y.

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ROSS EIGHT

80 H. P., Eight Cylinder, Herschell-Spillman Motor, 130 inch Wheelbase; Weight, 3250 pounds; Price

$1350

Manufactured by

ROSS AUTOMOBILE COMPANY

DETROIT, MICHIGAN

YOUR appreciation of what has been accomplished by the Ross organization will be intensified when you have had the opportunity to see the Ross Eight in action.

Until then you can gain no true conception of the really extraordinary value in this car.

Let us add this: The Ross Eight is today commanding the interest of many of the finest and most experienced dealers in the industry, because of one thing only, its amazing quality for its price—$1350. We invite you to come to the factory and see for yourself.

When writing advertisers please mention Motor World

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The Hub of Tire Service



TO get the most mileage out of your tires watch for the little troubles and stop them before they grow big.

There is a Firestone Accessory for every emergency—the full line carries the Firestone manufacturing ideals that have made Firestone Tires supreme.

Firestone Accessories

lengthen the life of your tires and make the quick getaway certain when a mishap does occur.

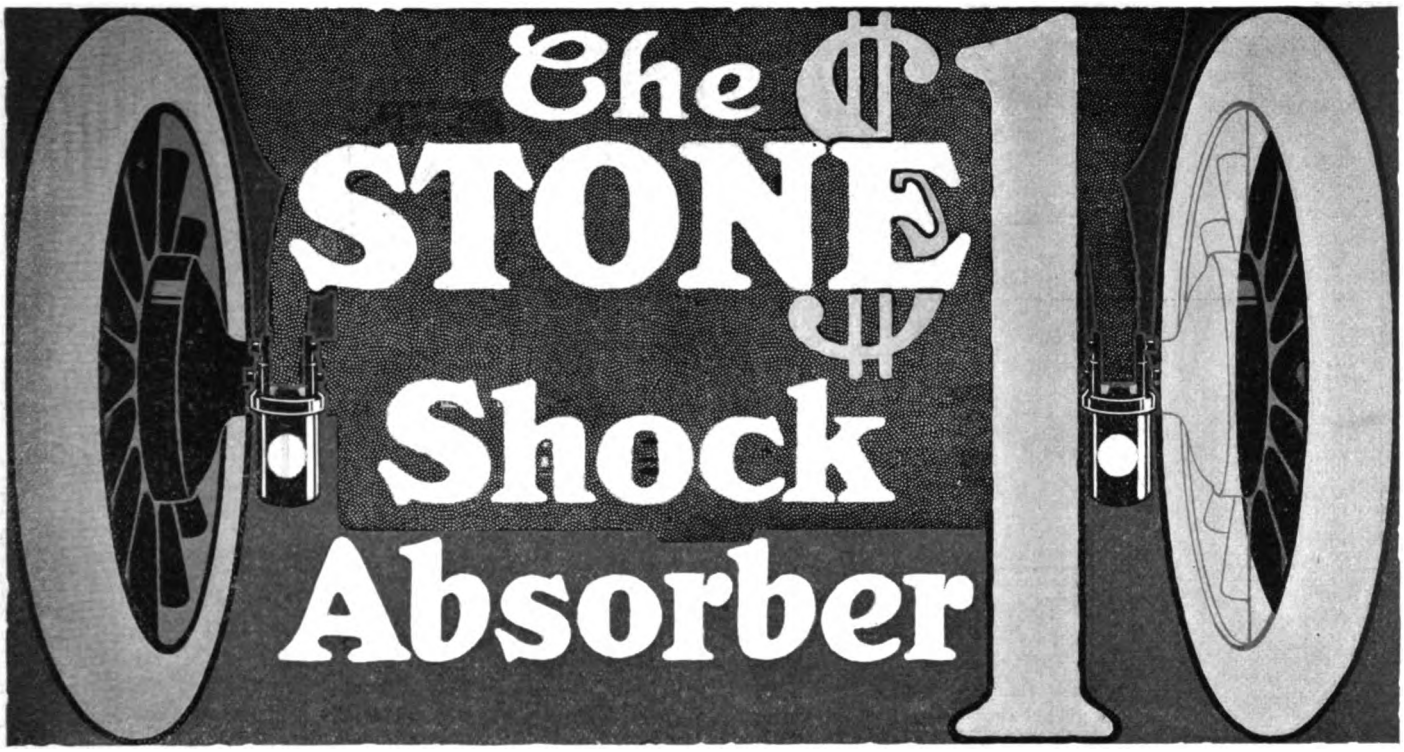
Send for catalogue and description of the entire line.

The Firestone Cementless Tube Patch shown here is a good example of the completeness, the detailed efficiency of Firestone accessory service. It is convenient, easy to apply and strong enough to hold under the strain of heavy touring. An exclusive feature is the Firestone TAB which permits instant removal of the protecting muslin. Write for free patch and test it yourself.

Firestone Tire and Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere

When writing advertisers please mention Motor World

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People have learned that Shock Absorbers have been costing too much.

They have learned that $10.00 is enough to pay to get everything that any shock absorber can offer.

And they know that the safest way to spend $10.00 for Shock Absorbers is to spend it for the Shock Absorber that first broke down the high prices.

A Triumph of Quality and Price

The Stone Shock Absorber improves the riding quality of any car. It has a two-inch throw of springs that are strong enough to stand the work and quick enough to keep off road-blows. Double bearing surfaces on the moving parts, and Stone's ingenious device for keeping the Shock Absorber in perfect alignment, gives this absorber great length of life. We have never yet seen one that shows wear.

The Stone Shock Absorber is bringing in trade to dealers everywhere. This is a live wire which a live dealer cannot afford to overlook. You'll get new trade with the Stone Shock Absorber. And every pair you sell makes friends. There is a good profit for dealers in Stone.

Write your jobber today. If he cannot supply you, write us.

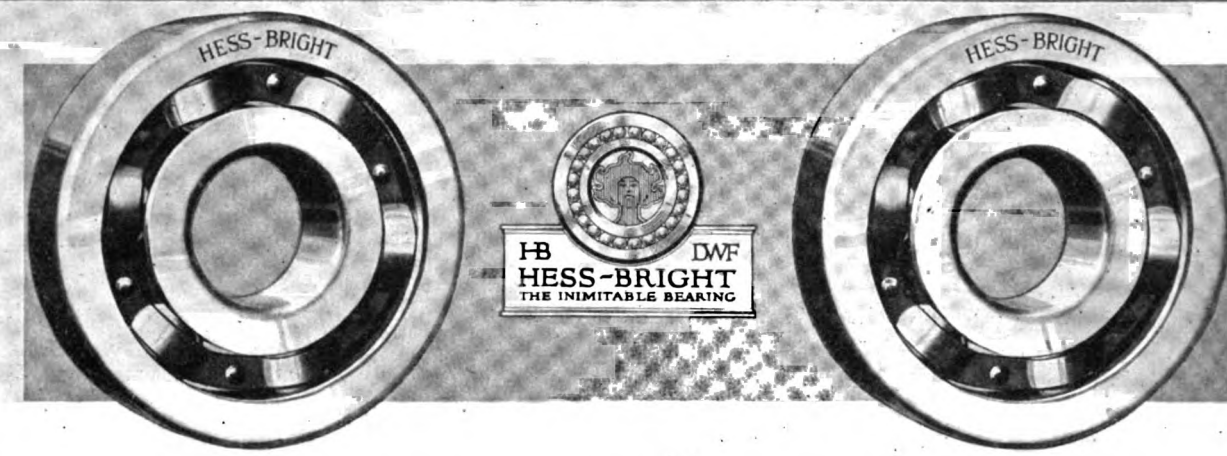
Note These Points

Two-inch thrust of springs. Adjustment range of 1500 pounds. Thorough lubrication that never fails. Increases capacity of leaf springs 10 to 30 vibrations per second. Reduces elastic duty of leaf spring 90%. Keeps the tires and car on the road. Guaranteed for one year. Any part that fails will be replaced free.

Made and Guaranteed by Universal Rim Co., Makers of Baker Rims
Dept. 48, 1502 Michigan Ave., Chicago

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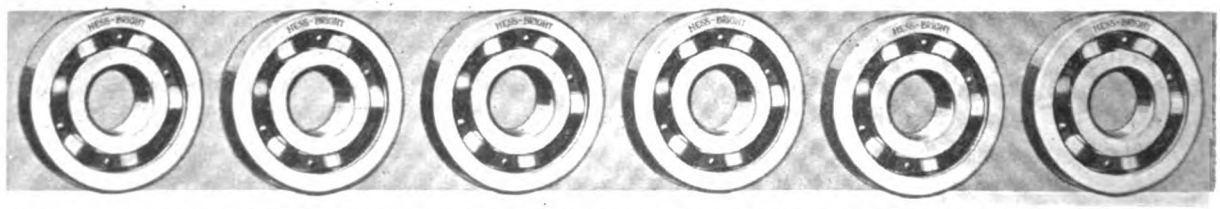


HESS-BRIGHT BALL BEARINGS

The efficiency of Hess-Bright Ball Bearings has been proved by their continued use in America's best automobiles for over ten years.

No care or expense is spared in their manufacture.

THE HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA



HESS-BRIGHT'S CONRAD PATENTS ARE THOROUGHLY ADJUDICATED

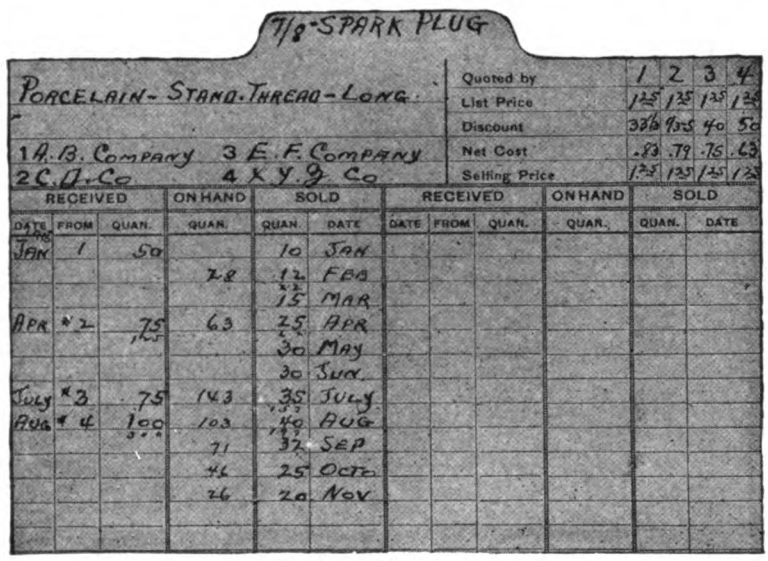
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Start Now!

The spring rush is over. You've had a big season; sold a large volume of accessories and supplies. NOW is the time you should install the "Motor World Inventory and Cost System."

ONE GLANCE

at your records will then show you—what each article cost, how many you have sold, the selling price, and just how many you should have on hand. Every business man wants to know these facts.



Motor World's Inventory Card

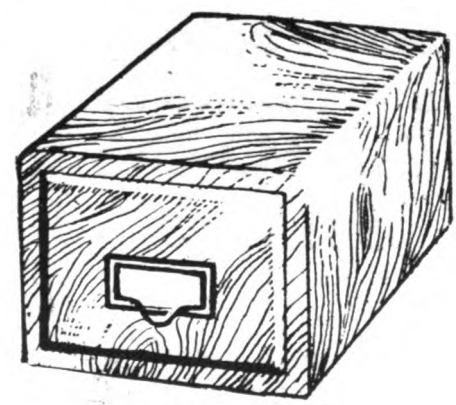
Recognized as the standard for garage and supply men. Absolute assurance against leaks of any kind. Keeps you posted at all times. Essential to good business methods. Fill out the coupon below, and mail with your check or money order today.

These cards are carried in stock for immediate delivery. Size 4 x 6—$1.00 per 100. Per 1,000—$9.00. Size 5 x 8—$1.25 per 100. Per 1000—$12.00.

We also offer **special combination outfits,** consisting of:

500—4 x 6 Motor World Inventory Cards
1—Oak Filing Cabinet
1—Set Alphabetical Guides
COMPLETE—(Outfit A-46) $8.50

The same outfit for 5 x 8 Cards
COMPLETE—(Outfit A-58) $10.50



For Easy Reference

These articles are fully guaranteed. If not as represented, or if defective, we will either refund your money or replace the goods.
Special forms made up to fit your particular needs. Tell us your requirements for accurate and quick service.

A. BOBBE & COMPANY

Exclusive Authorized Manufacturers of Motor World's Card Systems

Card Supplies and Systems a Specialty

320 Broadway New York City

A. BOBBE & CO.,
320 Broadway, New York.

Enclosed please find $..... for which send me Outfit No. ..... or .....
Cards ....x.... $.....
(Size) (Price)

Name .....

Address .....

.....

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Prest-O-Lite Storage Battery



Not only a better battery but backed by Prest-O-Lite Service

Even the BEST of Batteries Need the Best of Service

After years of experiment and tests on storage batteries—

After employing some of the best brains in the battery business—

After buying other storage battery factories, besides building and equipping a great factory of our own—

After producing thousands of batteries on a large scale and watching and studying them in actual use—

Neither we, nor any other battery manufacturer, can offer a battery which does not require first-class service.

Every Prest-O-Lite Storage Battery is backed by Prest-O-Lite Service.

The Prest-O-Lite Co., Inc., maintains more Direct Factory Branches than all other battery makers combined. They form the nucleus for the largest amount of actual service obtainable in the storage battery field.

There is a Prest-O-Lite Battery of correct shape, size, voltage and capacity for every make and model of car, and for every starting and lighting system which is or ever has been in general use.

It will pay every dealer (whether he can repair and charge batteries or not) to know the excellent business proposition afforded by the Prest-O-Lite Battery. Ask us for information.

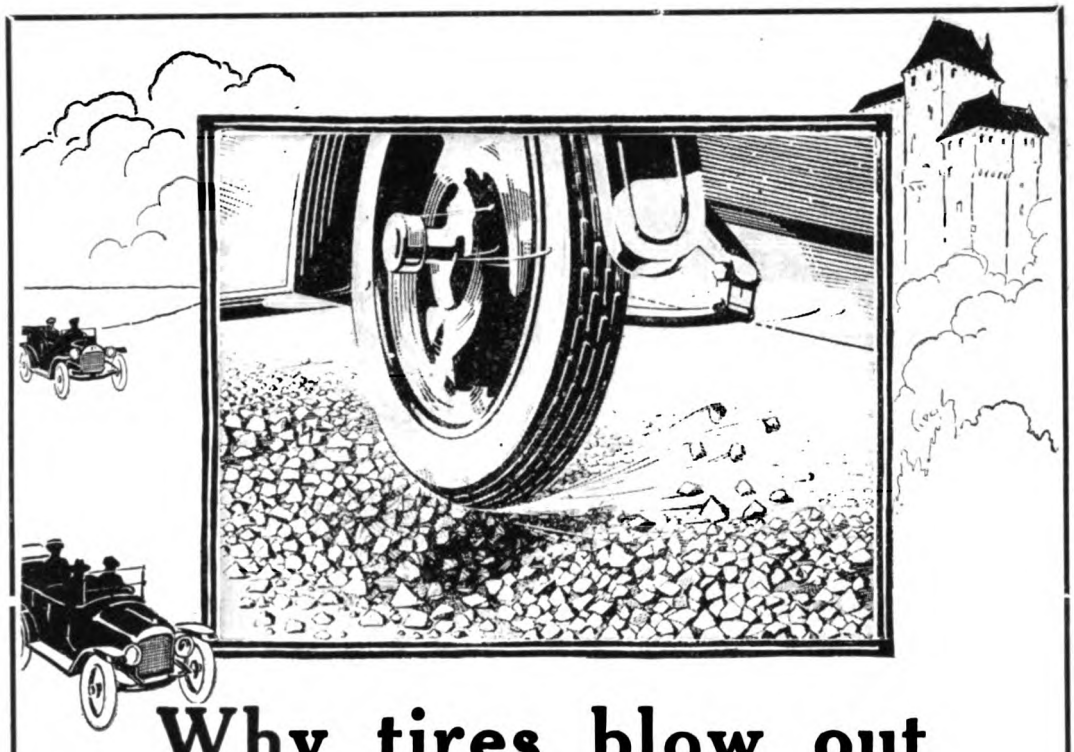
The Prest-O-Lite Co. Inc.

902 Speedway
Indianapolis, Ind.

FACTORY BRANCHES—Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Davenport, Denver, Des Moines, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, St. Louis, St. Paul, San Antonio, San Francisco, Seattle, Syracuse.

Each of these Factory Branches is fully equipped for Battery Repairs and Service.

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Why tires blow out prematurely

How Prodium Process Rubber eliminates the principal cause of this chief of tire-troubles

In good tires most blow-outs are caused by rotted fabric, and fabric rots because cuts in the tire tread expose it to water, oil, mud, etc.

Republic Tire builders have overcome this difficulty by making a tread stock so tough that even sharp stones and fresh-crushed rock do not gash or cut it.

This tread stock is Prodium Process Rubber, a new compound discovered and controlled exclusively by The Republic Rubber Company. It wears down as evenly as fine steel, is heat-proof, oil-proof, almost wear-proof.

Stylish STAGGARD Black Tread

Trade Mark Reg. U. S. Pat. Off.

Republic Prodium Process Tires can now be had in the stylish black tread, so much in vogue among motorists. In the Staggard Tread or "WM" Tread non-skid styles, this new rubber furnishes immunity from skidding possessed by no other tire. And even the plain tread style has remarkable anti-skid qualities.

Write for sample strips of this wonderful rubber, and test its great strength yourself.

The Republic Rubber Company, Youngstown, Ohio

Branches and Agencies in the principal cities

REPUBLIC PRŌDIUM PROCESS TIRES

Republic Black-Line Red Inner Tubes give greatest service and satisfaction.

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A Quick Start Saves Your Battery

That long continued Whr-r-r-Whr-r-r-Whr-r-r-when you start your motor will soon kill any battery. It's a strain, a drain—on your battery, your purse and your patience which can be stopped with a

PFANSTIEHL Starter Coil

Gives a Shower of Sparks instead of one for Starting

When your motor starts with difficulty there are just two things to blame; the mixture or the spark. With a low grade fuel, or a cold or lean mixture, starting is always difficult—even with a good hot spark.

The reason is that the *spark* has to supply the *heat* to fire the mixture—some job for a tiny spark. Naturally the mixture has to be *just right* before your motor fires. In the meantime you wait for the mixture to "get right"—and wear out your battery at a fearful rate.

The way to save your battery, your purse and your patience is to put a Pfanstiehl Starter coil in your ignition system. It delivers to the spark plug a *continuous shower* of sparks while each cylinder is at the firing point. This intense heat will fire practically any mixture that a motor will run on.

The Pfanstiehl Starter Coil is easily applied to *any battery or magneto ignition system,* either with or without electric starter. It will save its cost in saving your battery. It will save gasoline because you can have your carburetor adjusted for a *running* mixture instead of a starting mixture.



Model F
Pfanstiehl Starter Coil

Made without switch, for mounting under hood, price $9.

Model D with removable lock switch mounted in dash. Price $12

Our complete catalog sent free on request, showing wiring diagrams for every ignition system. See how the Pfanstiehl Starter Coil applies to your system. Fill out and mail blank below now while you think about it. Dealers write your jobbers or direct to us.

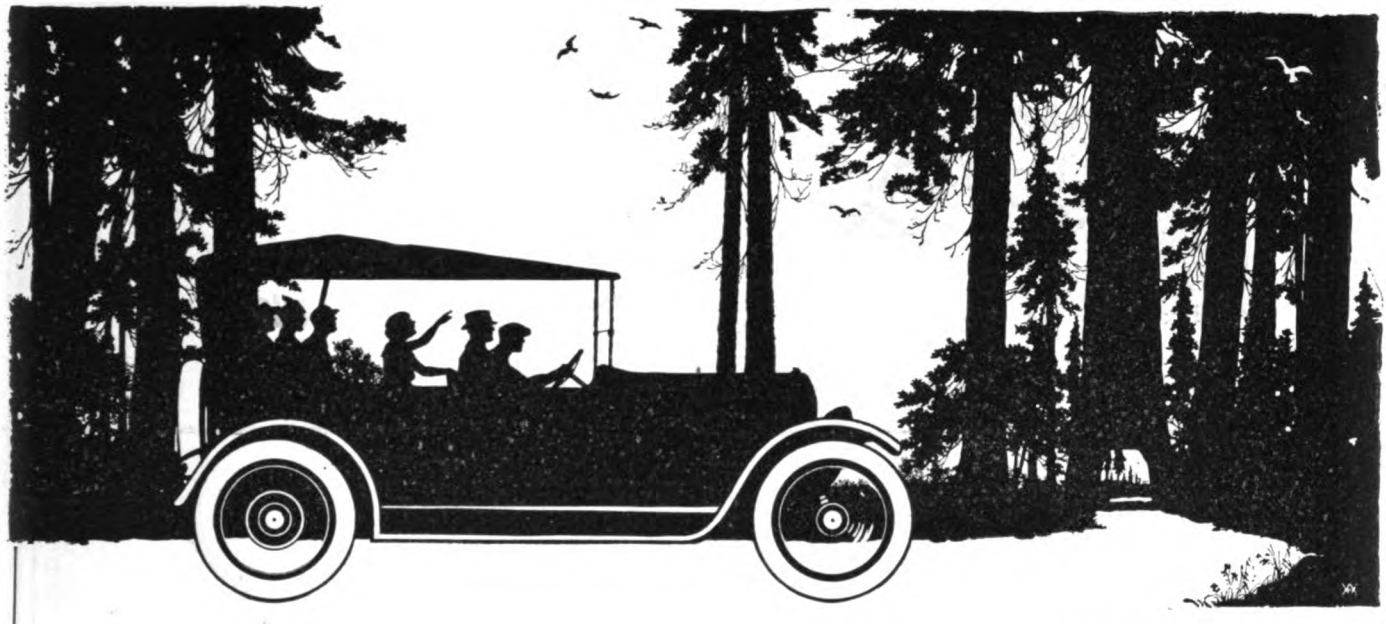
PFANSTIEHL COMPANY, NORTH CHICAGO, ILLINOIS

There is good money for Garages, Repair Shops, Supply Dealers

handling this much needed coil. Our advertising in the automobile papers is educating your customers to want the Pfanstiehl Starter Coil. Write for our trade proposition.

When writing advertisers please mention Motor World

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IN THE REDWOODS
WITH A JEFFERY

BOSCH

IS THE NAME YOU MUST LOOK FOR

AFTER you have faced the pain of ignition breakdown—after you have "forked up" for a magneto so as to have dependable ignition, you will have learned forcefully the necessity for looking for the name "Bosch" on the ignition system of the motor car you buy.

No item of your motor car is as important as is the ignition system.

No item is quite as puzzling or so seemingly mysterious as ignition.

No other individual accessory costs the car maker as much.

None can make or mar your motor car so readily.

For these reasons look—look for the name "Bosch" and insist on getting Bosch Magneto Ignition, for then you will have the ignition system recommended by the men who know—the highest priced system, to be sure, but the very best system, the system without a "Big Bogey Man" within itself.

BE SATISFIED

The Motor Car you buy or sell can be Bosch-Equipt—Insist

SPECIFY BOSCH

BOSCH MAGNETO COMPANY

224 WEST 46th STREET NEW YORK CITY

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WOODWORTH TROUBLE-PROOF // TIRES //

Woodworth Inner Tubes are highest quality through and through, good strong rubber, full of life and service.



There is no Mystery

—about this tire. We have not waved a wand over it or performed any Abracadabra. We have merely built it in an obviously sensible way and have put all the cards on the table, so that you may know and understand exactly what we have.

The Woodworth Tire is, first of all, built for wear—for good service.

It is **not a** Freak tire. It is built along the lines experience has shown to be the best—the lines on which are built all tires of high quality—of Sea Island Cotton, Pure Gum, very strong Breaker Strip, and Tread Compound.

THEN—IN ADDITION TO AND ENTIRELY APART FROM THE MAKE-UP OF THE TIRE ITSELF—WE **ADD** A STRIP OF PUNCTURE-PROOF NON-HEATING CHROME LEATHER ON THE INNER SIDE OF THE CASING.

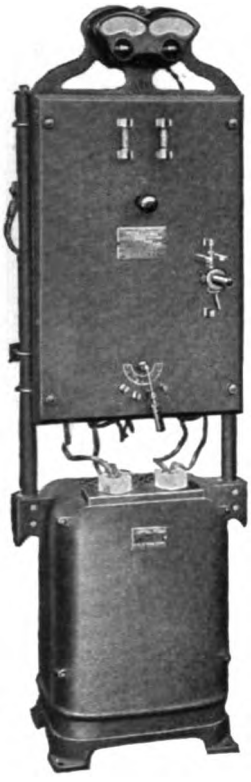
WE GUARANTEE THE WOODWORTH TROUBLE-PROOF TIRE FOR 5,000 MILES AGAINST PUNCTURES AND BLOW-OUTS, IN ADDITION TO ORDINARY WEAR.

DEALERS: All over the country dealers are now reaping a harvest from this tire, which is selling faster and over a larger territory each day. If **you** are not getting your share of this, write us at once for terms.

THE LEATHER TIRE GOODS COMPANY

NIAGARA FALLS, NEW YORK

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Mercury Arc Rectifier for charging electric pleasure vehicles, at home

Dealers' Profits in Electric Accessories

The automobile of today never could have attained its high standard of efficiency without electricity.

The battery is the heart of the electrical system on the car but its maximum usefulness can only be obtained when it is kept fully charged.

"Keep the Battery Fully Charged"

is the slogan of our advertising in Motor, Motor Age, etc., to car owners; dealers can reap the benefit of this advertising by selling Mercury Arc Rectifiers.

The most effective device for charging batteries from alternating current lighting circuits is the G-E Mercury Arc Rectifier. It is made in various sizes; the small portable, shown here, which can be plugged into any lamp socket; another type, also illustrated, for charging electric pleasure vehicle batteries; and other rectifiers for those who make battery charging their business.

These home charging rectifiers add profits to sales for those dealers who have arranged with us for an agency. Many good territories are still open and waiting for a live representative.

We also make MAZDA lamps, sockets, switches, wire, cable, trouble lamps, insulations, etc., all for the car owner's use.

Write us for full particulars of dealer discounts and prices on all G-E Automobile accessories.



Form K Mercury Arc Rectifier which can be plugged into any light socket

This trade-mark the guarantee of excellence on Goods Electrical

ADDRESS NEAREST OFFICE

Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Butte, Mont.
Charleston, W. Va.
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Dayton, Ohio
Denver, Colo.
Des Moines, Ia.
Duluth, Minn.
Elmira, N. Y.
Erie, Pa.
Fort Wayne, Ind.
Hartford, Conn.
Indianapolis, Ind.
Jacksonville, Fla.
Joplin, Mo.
Kansas City, Mo.
Knoxville, Tenn.
Los Angeles, Cal.
Louisville, Ky.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.
Nashville, Tenn.
New Haven, Conn.
New Orleans, La.
New York, N. Y.
Niagara Falls, N. Y.
Omaha, Neb.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Ore.
Providence, R. I.
Richmond, Va.
Rochester, N. Y.
St. Louis, Mo.
Salt Lake City, Utah
San Francisco, Cal.
Schenectady, N. Y.
Seattle, Wash.
Spokane, Wash.
Springfield, Mass.
Syracuse, N. Y.
Toledo, Ohio
Washington, D. C.
Youngstown, Ohio

For Michigan business refer to General Electric Company of Michigan, Detroit, Mich.

For Texas, Oklahoma and Arizona business refer to Southwest General Electric Company (formerly Hobson Electric Co.), Dallas, El Paso, Houston and Oklahoma City.

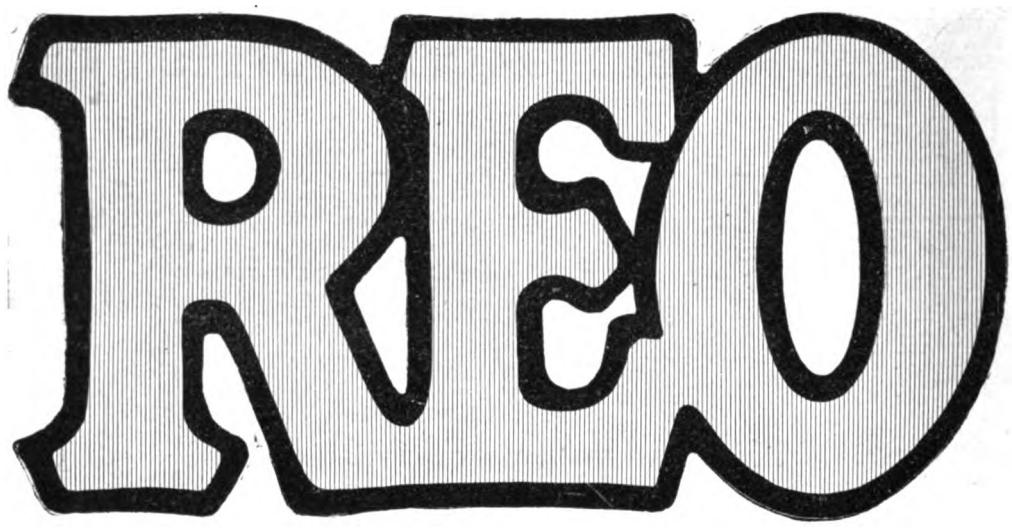
For Canadian business refer to Canadian General Electric Company, Ltd., Toronto, Ont.

5978

General Electric Company

General Office: Schenectady, N. Y.

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¶ If you'll go over in your mind the list of those automobile dealers throughout the country who have made money consistently, you will find that a very large percentage of them are those who have handled the Reo line of automobiles and motor trucks for several years.

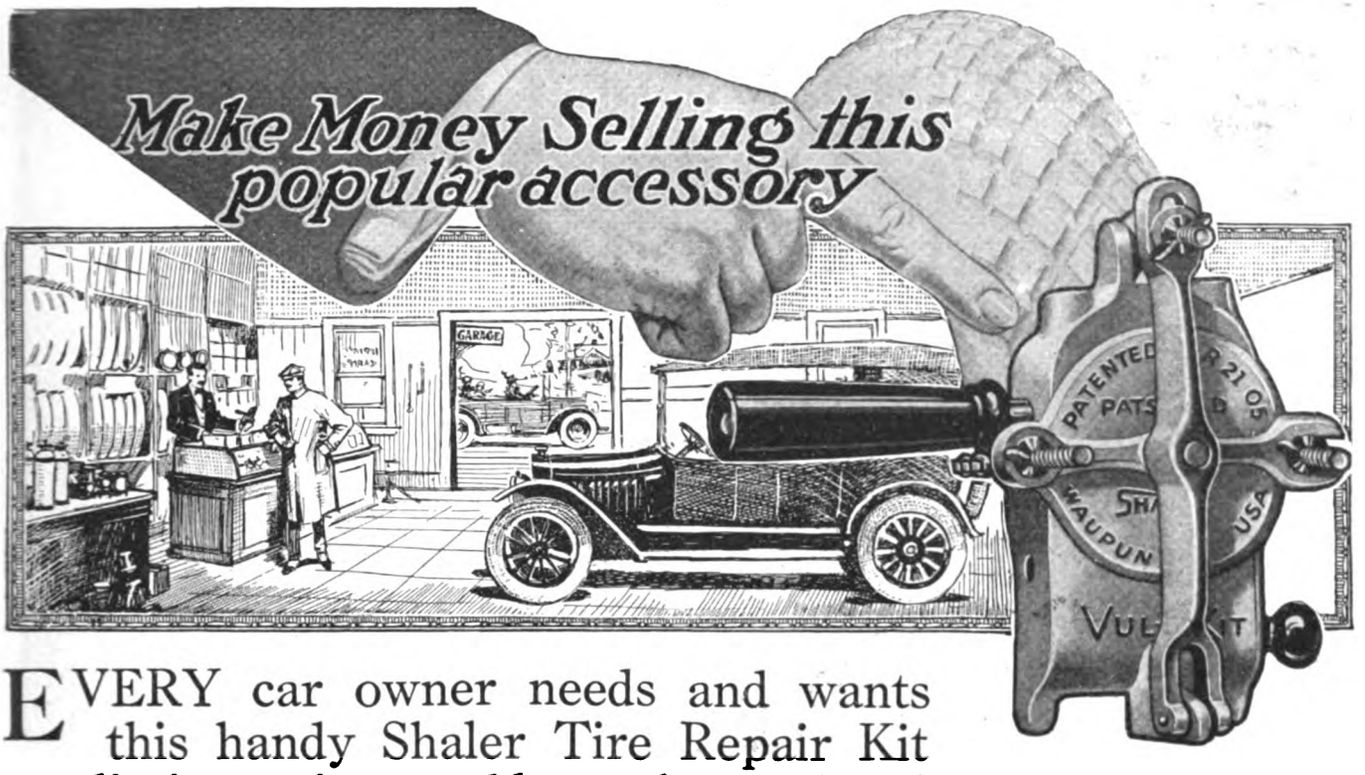
¶ And those among them who have prospered most, and who today as business men stand for most in their respective communities, have handled Reo cars exclusively.

¶ The inference is, an exclusive representation of the Reo line spells financial success as well as reputation for the distributor.

REO MOTOR CAR COMPANY
LANSING, MICHIGAN

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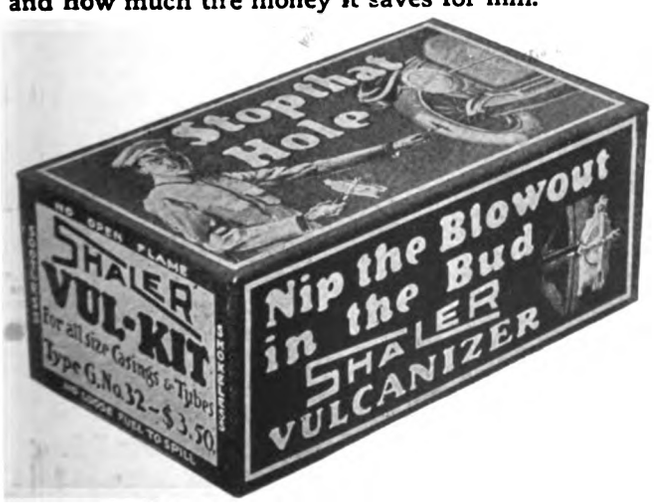


EVERY car owner needs and wants this handy Shaler Tire Repair Kit to eliminate tire trouble on the road and double his mileage. It means many additional accessory sales and profits because the motorist is compelled to buy one from his dealer, as no car comes equipped with a tire-saving device. Every one of your customers is a likely prospect.

SHALER

Each sale gives you a liberal profit on the kit itself and besides gives you a continuous permanent profit on the sale of repair material and supplies that the motorist must buy from time to time, for use on the road.

Every Shaler user praises this handy Shaler outfit when he discovers how easily and safely it works and how much tire money it saves for him.



Tire Repair Kits

For motorists to carry in their tool boxes

He will praise it to his friends, which will result in more sales for you.

Because the Shaler Tire Repair Kit is such a practical, necessary accessory—especially in view of the increasing tire prices—every motorist is eventually going to buy one. And some dealer is going to make the sale. You might as well get the profit as let the next fellow have it.

The Shaler is advertised regularly throughout the season in the Saturday Evening Post and more than fifty other magazines. Motor car owners know the Shaler and call for it by name.

Write on Your Letter Head for Catalog and Dealers' Prices

Write today for complete catalog of Shaler Tire Repair Kits—dealers' discounts and full information about Dealers' Helps we furnish, including Counter Stands—Posters, Wall Hangers—Window Displays—Booklets, Circulars, Signs and Window Cards.

C. A. SHALER COMPANY

426 Fourth Street, Waupun, Wisconsin

Oldest and Largest Manufacturers of Vulcanizers

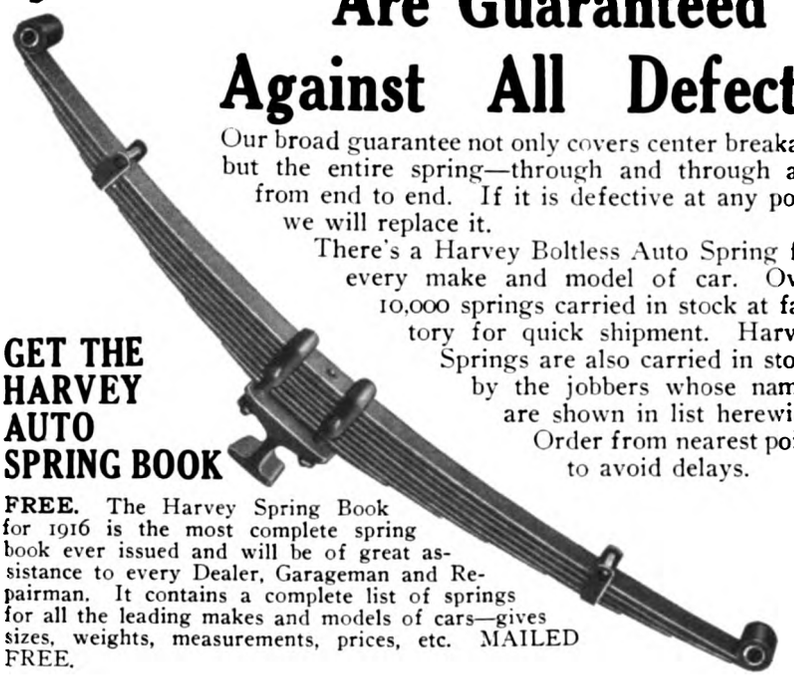
Canadian Distributors: John Millen & Son, Limited, Toronto, Winnipeg, Montreal, Vancouver

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Harvey RACINE Boltless Auto Springs Are Guaranteed Against All Defects

Our broad guarantee not only covers center breakage but the entire spring—through and through and from end to end. If it is defective at any point we will replace it.

There's a Harvey Boltless Auto Spring for every make and model of car. Over 10,000 springs carried in stock at factory for quick shipment. Harvey Springs are also carried in stock by the jobbers whose names are shown in list herewith. Order from nearest point to avoid delays.



GET THE HARVEY AUTO SPRING BOOK

FREE. The Harvey Spring Book for 1916 is the most complete spring book ever issued and will be of great assistance to every Dealer, Garageman and Repairman. It contains a complete list of springs for all the leading makes and models of cars—gives sizes, weights, measurements, prices, etc. MAILED FREE.

The Harvey Spring Co., 848 17th St., Racine, Wis.

OUR JOBBERS

Abilene, Tex.....Ed. S. Hughes & Co.
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Clinton, Okla.....Welch Wholesale Hdw. Co.
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Danville, Va.....Piedmont Hdw. Co.
Denver.....M. L. Foss
Duluth.....Kelley Hdw. Co.
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Ft. Wayne, Ind.....Mossman, Yarnelle & Co.
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Kansas City...The Bonniwell-Calvin Iron Co.
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Milwaukee.....Shadbolt & Boyd Iron Co.
Minneapolis.....Williams Hdw. Co.
Monroe, La.....Monroe Hdw. Co.
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Portland, Ore.....J. E. Haseltine & Co.
Richmond, Va.....Talman Auto Sup. Co.
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San Francisco.....Waterhouse & Lester Co.
Seattle.....Polson Implement Co.
Shreveport .....W. K. Henderson, Jr.
Sioux Falls.....The L. & L. Motor Sup. Co.
Tacoma, Wash.....The Automobile Sup. Co.
Tampa.....C. W. Greene Co.
Toledo.....The Roberts-Toledo Auto Co.
Washington, N. C.....Harris Hdw. Co.

This Is the Plug



Have You This Plug On Your Car?

These Are the Manufacturers Who Equip With AC Spark Plugs

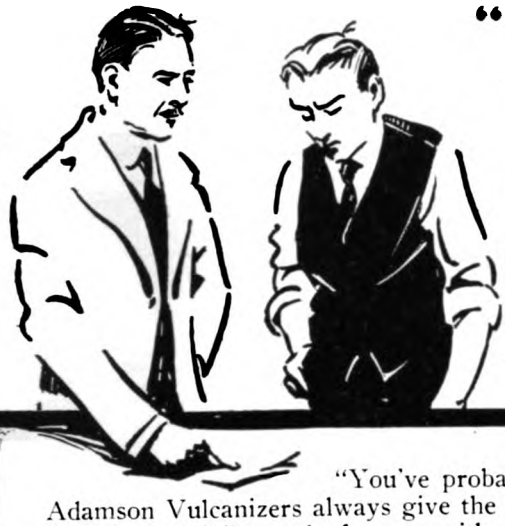
Packard	Buick	Lexington-Howard	Pilot
Pierce-Arrow	Oakland	Brockway Truck	Sayers-Scovill
Cadillac	Oldsmobile	Chase Truck	Crane-Simplex
Marmon	Stearns-Knight	Daniels	Singer
Hudson	Saxon	Empire	Stephens
Chalmers	Stutz	Federal	United Truck
Hupmobile	National	G. M. C.	Wilcox Trux
Chandler	Velie	Gramm Trucks	Palmer-Moore
Haynes	Jackson	Jeffery	Bour-Davis
Chevrolet	Apperson	Kissel Kar	Murray
Dort	Davis	Knox	Jordan
Cole	Detroiter	McLaughlin (Canada)	Liberty
Dodge Brothers	Paterson	Mercer	Netco Trucks
Reo	McFarlan	Monroe	Moreland Trucks
Paige	Westcott		Premier
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No Greater Recommendation Can Be Given a Spark Plug

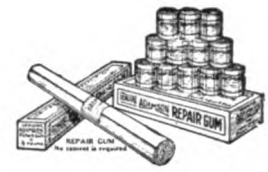
Sold Everywhere

Champion Ignition Co., Flint, Mich.

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"Did you order ADAMSON Repair Gum, Tom?"



"You've probably noticed," said an "Adamson" Dealer to his chief clerk, "that Adamson Vulcanizers always give the best results when Adamson Repair Gum is used with them. This gum is especially made for use with portable vulcanizers of all kinds; no cement is required, and its use is a guarantee of a perfect tire repair.

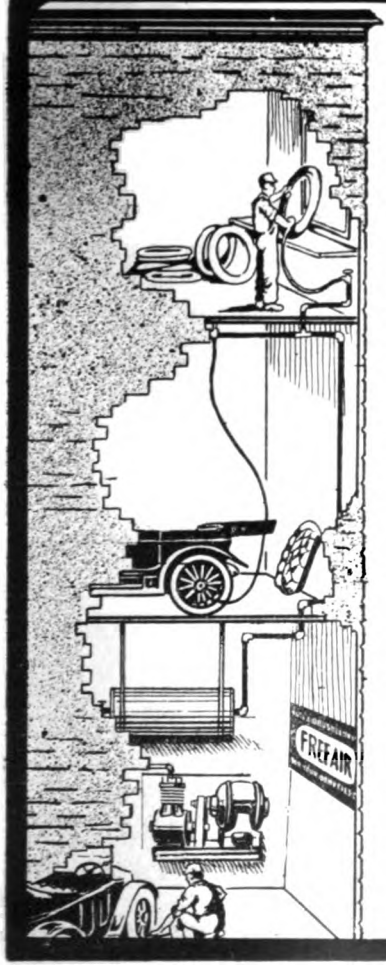
"Let's push the gum when we sell a Vulcanizer. We'll not only make more sales but we will assure ourselves of another satisfied customer as well. So be sure and order Adamson Repair Gum. Look over our stock of Adamson Vulcanizers, too, and stock up on all sizes. They sell at from $1.50 up, so we can't miss a sale, no matter what size is wanted."

Your copy of the new Adamson Catalog is ready and waiting. "Repair and Care of Tires" is a free booklet that you will need every day. Write for it now.





ADAMSON MFG. CO. East Palestine, O.



BRUNNER AIR COMPRESSORS

A Brunner Air Compressor in Your Garage and a Brunner Air Sign on Your Garage Will Bring "Brunner Wise Motorists" to Your Door

The systematic distribution of the Brunner Air Sign among thousands of garages using Brunner Air Compressors has been going on uninterrupted for the past three years, and thousands of motorists have come to know that the Brunner Sign means Brunner Service, which is the last word in "free air service"; they know that prompt and highly efficient service awaits them under the Brunner Air Sign and we have accomplished just what we started out to accomplish three years ago—the creation of the "Brunner wise motorist" for you, Mr. Garageman.

SECURE THE TRADE OF THE BRUNNER WISE MOTORIST

You can secure it by installing a Brunner in your garage and displaying the Brunner Sign on your garage; the Brunner Sign is another original Brunner idea; it is a proven success and is now at your disposal; there will be imitators, of course, but remember the Brunner Sign has a three year start; watch the progress of the Brunner Sign, watch the growth of the standing army of "Brunner wise motorists"—get in on the ground floor, Mr. Garageman; we are going to bring trade to the door under the Brunner Sign.

Brunner Air Compressors Have Consistently Demonstrated their Sterling Value in the Garage Ever Since the Garage Business Has Been a Business

The Brunner Line was designed and built to meet the garageman's special requirements, it has always been honestly made and honestly advertised, and the Brunner Mfg. Co. and the Brunner Jobber stand squarely back of it from start to finish—you cannot go wrong with a Brunner.

Write for Catalogue and Garageman's Handbook on Compressed Air, also name of the Brunner Jobber covering your town.

BRUNNER MANUFACTURING COMPANY

Main Office and Plant, Dept. E., Utica, N. Y. Cincinnati Branch, 419 First Nat'l Bank Bldg., Cincinnati, O.

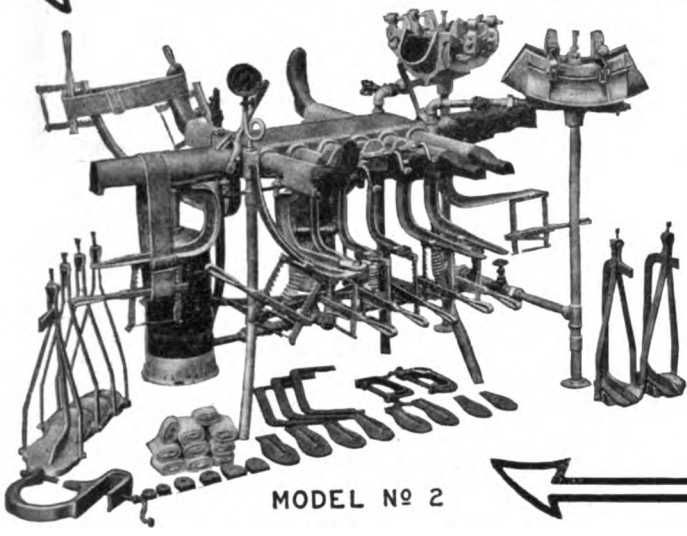
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The ARTHUR VULCANIZER has advanced vulcanizing from a mere one-season business to an ALL YEAR BUSINESS.

It secures repair work during even the months that were formerly the dull season.

No repair man can afford to close his shop part of the year.



THE ARTHUR MODEL No. 2 FOOTWEAR & TIRE VULCANIZER is the outfit that has opened the way to success. It handles all kinds of repairs to rubber foot wear and repairs to inner tubes and casings.

Write for full information and catalogue.

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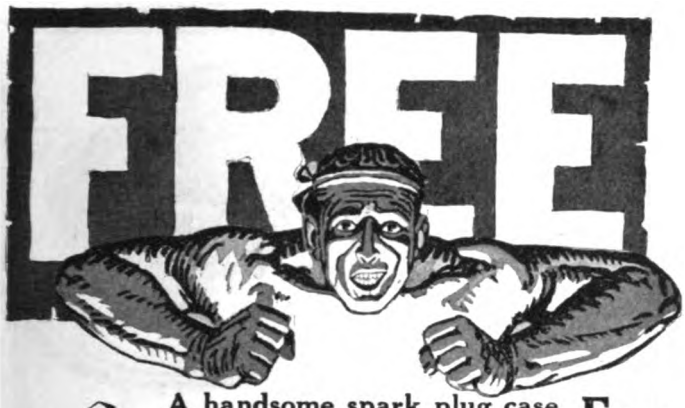
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Chicago, Ill. New York, N. Y.

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FREE



A handsome spark plug case and a spark plug wrench . . **Free**

With four spark plugs that will outlast your engine . . **$4**



Mail us a $4 check or money order for four Splitdorf Spark Plugs (the plug with the Green Hex Jacket). We will forward you the plugs, carriage prepaid, and with them we will send you, free, a highly polished spark plug case and a spark plug wrench, complete with detachable handle. The case is handsomely finished, and fitted with recesses for four plugs. Keeps your "extras" handy and compact. The wrench is one of the most convenient tools you can have.



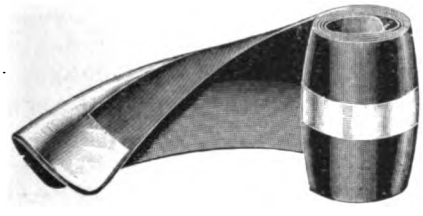
These plugs are practically indestructible. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned.

Made in all sizes and in types to suit every car, motor cycle, motor truck, motor boat, aeroplane, tractor and stationary gasoline engine.

When ordering, be sure to state size desired or name of engine.

SPLITDORF ELECTRICAL CO., Newark, N.J.

K-C "Red-Coat"
Self-Vulcanizing Reliner



K-C Tire Accessories have the kind of live features which make them ready-sellers—the self-vulcanizing "Red-Coat" Reliner is a good example. This reliner makes a hit because it overcomes all of the old prejudice against reliners. Your customers will like the fine, finished appearance of this article—and more than that, they will like the ease with which it slips into a casing—and takes hold!

Strip off the Holland cloth—moisten the surface of the entire reliner with gasoline, and K-C special Red Cement, and the strips of quick curing gum make the rest of the job easy.

Record mileage from weakened casings is obtained with the "Red-Coat"—Record profits for the dealer, too.

The General Tire & Rubber Co.

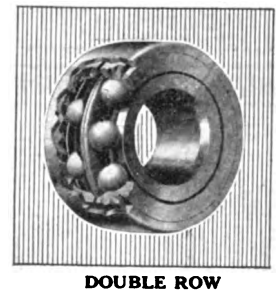
Makers of the General Tire **AKRON, OHIO**

The cost and Increased of fuel lubricant can be practically offset by



NEW DEPARTURE BALL BEARINGS

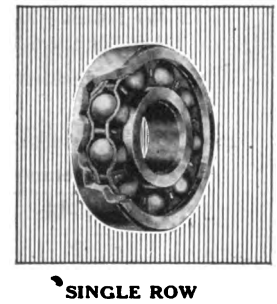
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The use of these bearings insures maximum power at the driving wheels and in proportion as the installation of New Departures throughout the working units of the chassis is complete, you will find the efficiency of your car increased.

How it is possible for New Departures to accomplish this result is most interestingly told by picture and text in our book entitled



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With light steel superstructure and heavy cast iron base, its center of gravity is near the floor, preventing top-heaviness and giving it the high lift and deep overhang required in Garages and Shops. The only crane possessing these features, it is lighter, easier to handle and stronger than other cranes. Its trussed Cantilever (bridge type) construction is the strongest known. It is a necessity and a big labor saver in every garage.

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76	1-ton	7 ft. 0 in.	33 in.	6 in.	30 in.	445	$66.00
80	2-ton	7 ft. 6 in.	36 in.	7½ in.	36 in.	575	$82.00

($14.00 less without lifting device)

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"Pioneers in Garage Equipment"

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WARM HAND WHEEL

The new Condensite heated steering wheel. Write for details and open territory.

***Model H*—Tilting Warm Hand Wheel $30**

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Lever controlling Tilting feature

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The established reputation of SWINEHART TIRES is responsible for their demand which will not be affected by the pleas or promises made for other tires.

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A precision instrument giving permanently, exact carburetion for your car.

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JUMBO "MOLITE"
Price, $1.25

Guaranteed for the Life of the Car. Other types for Fords and other cars. $0.75 and $1.00. Ask your dealer.

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THE UNIVERSAL CAR

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CHASSIS	$325.00
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TOURING CAR	360.00
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Saves Gasoline
Increases Power
Gives Greater Speed



This valve is the best selling accessory of the season. Every dealer should get in touch with our proposition for selling the well-advertised

BRUGAN $4
Economy Valve

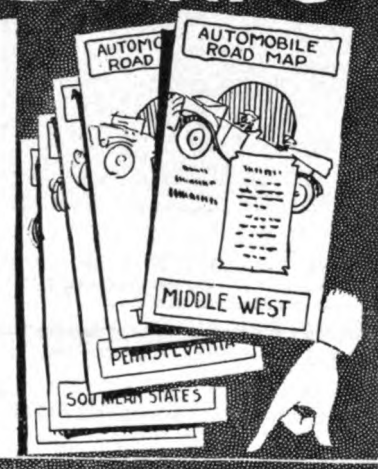
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Also Oakes Krankleck 50c. and $1.00

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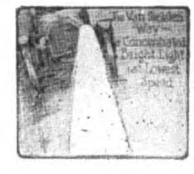
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FOR FORD CARS

The CONCENTRATOR automatically short-circuits the right headlamp, supplying **double current** to hte left lamp at all speeds below 15 m.p.h. At 10 m.p.h. the left lamp is burning as brightly as it would at 20 m.p.h. The CONCENTRATOR has no effect of operation of lighting system at speeds above 15 m.p.h.
Attaches on dash under the hood.
Easily installed by anyone.
Comes with complete instructions.
Price, complete, $2.00. Order through your dealer, or direct, if he cannot supply you. Send for free booklet.
DEALERS: Here is the fastest-selling Ford accessory of the year. One dealer sold 200 the first month. Good territory open. Write.



ONLY $2

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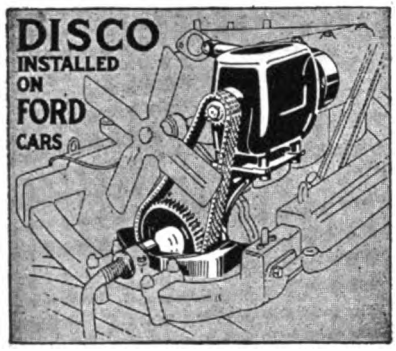
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Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
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New schedule of trade prices.

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The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system, simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

$75 Complete

Dealers Write for Agency
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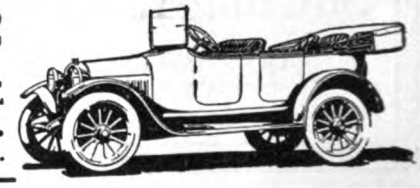
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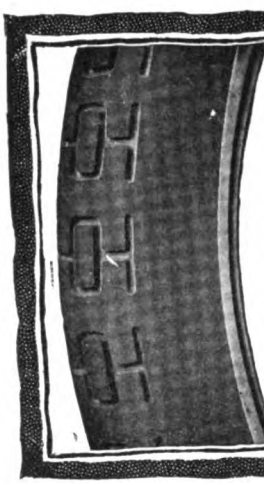
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Because we made it for our own use, after trying others with disappointing results.
Prove its efficiency—you can do it at our risk.
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The "Hold-On" Tread

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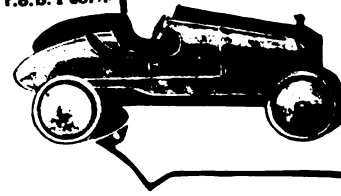
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Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch.

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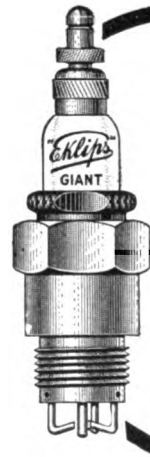
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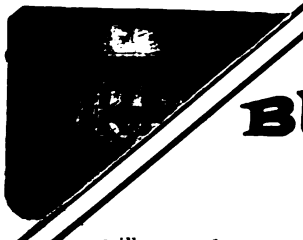
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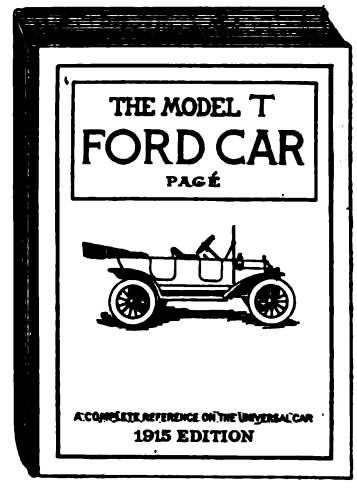
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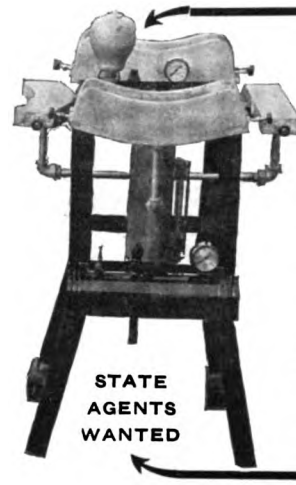
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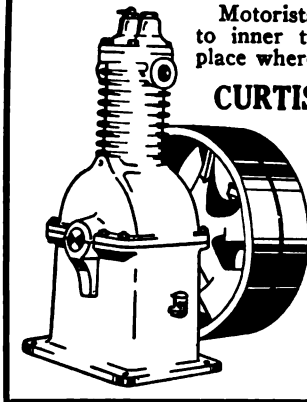
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We have all sizes. Write for measurement chart .....$3.00 and up
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Fenders to fit most any make of car ..... 3.00 each

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Radial, Magneto, Thrust
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New 1916 Roadster bodies with top and windshield for Ford	$28.00
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NEW 1916 BODIES COMPLETE
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New 1¼ inch Stromberg A-2,B-4.....$5.00
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If you do, we are able to supply you with whatever parts you desire. We have purchased over 100 complete stocks of orphan cars during the last ten years, together with all their plans, jigs, etc., so that we are able to ship promptly any parts that you may need. We carry practically everything to put your car in perfect running condition from the smallest screw to the complete car. Here are some of the "orphan" cars for which we supply service:

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Service Department has been entirely reorganized. Owners will get real service from now on. All repair parts shipments made the same day orders are received.
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Immediate shipment of repair parts orders. Parts guaranteed to be absolutely correct and made from the original patterns which are in our sole possession.
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It is a distinct satisfaction to every Imperial Owner to know that he has a service organization back of his car that is really interested in seeing that he gets the utmost in service and satisfaction from it.

It is pleasing to know that in ordering any repair part from this company you will not only be sure of shipment in a few hours' time, but also that only the very best of workmanship and material have gone into the making of the part.

Order direct from the factory. We carry no stock of repair parts elsewhere.

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We furnish quick service on all engine, clutch, transmission, differential, front and rear axle, steering gear, wheels, steering knuckles and cones, fenders, frames, and body parts, from original Krit Stock. For all models from 1909-1915 inclusive.

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Lowest "Parts" Prices in the Country
Packard 30, '08 to '12 Pierce 6-48, '10, '11 and '12 Speedwell, '10, '11 and '12. Peerless, '09 to '12 Cadillac, '09 to '13 Pope-Hartford, '10, '11
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MARION and AMERICAN Parts
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Service Department entirely reorganized. Prompt and accurate shipment now given on all repair parts for Mason, Maytag, and Mason-Maytag automobiles.
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Special Offer No. 4

A TROUBLE PROOF CLUTCH

We are offering a specially designed clutch which we positively know will forever eliminate all clutch troubles. It has extra strength discs and a clutch spring that will positively hold the clutch under all conditions.

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Krit Motor Car Company
DETROIT, MICHIGAN

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We are going to make it possible for every owner of Michigan models of R. S. and J. to eliminate all trouble with their rear axles and flange assemblies and hub bearings. For immediate shipment we offer a special combination price on our new guaranteed type axle and flange assembly, and special roller bearings for rear wheel hub.

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Two rear hubs roller bearings—regular price	42.00
Total	$57.00
Our price to this combination is	**$38.50**

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Parts for all models of Pope-Hartford pleasure cars, Trucks and Public Service cars — made from the original drawings and patterns, with the original tools, fixtures, etc.—complete stock always on hand. Prompt and satisfactory service.

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Most Durable and Efficient. Makes New Radiator, allow for old one. PRICES RIGHT.
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Get a Square Tube Radiator. 25% greater water capacity. Made for any car. New, guaranteed cores placed in old radiators. We also manufacture hoods, fenders, tanks and pans, and do guaranteed repair work. Prompt and satisfactory service.

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All Makes and Kinds
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SAVE 50% TO 75% ON REPAIR PARTS

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parts are carried by us in great quantity and to garage men we offer an unsurpassed service. When you have SPEEDWELL cars to repair write or wire
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SAMPSON-"35" MOTOR CARS and
ALDEN-SAMPSON TRUCKS

We have taken over all of the parts and service business on the cars listed above.

We pledge ourselves to the owners of these cars that so long as their cars remain on the road, we will guarantee them the very best of service; the most prompt deliveries, the finest of materials and workmanship, and at the lowest possible prices.

Remember, however, that in order to get this superior service it is necessary to order all parts directly from the main office, as we carry no stock of parts elsewhere.

STANDARD MOTOR PARTS CO.
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Transmission Gears for over 100 makes of cars
NO SECOND HAND PARTS OR JUNK
OUR PARTS ABSOLUTELY NEW
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USED PARTS 50% DISCOUNT

Following Cars: Chalmers, K-F-M, Flanders 20, two and three speed. Buick 10-16-17-19-21 & F. M. M. F. 30; Maxwell AA-E-K-HD-GA. Overland 38 to 59. Transmissions, axles, wheels, bearings, crank cases, connecting rods, in fact, almost any part for any make car.
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We can fill any order for **AUTO PARTS**
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Fenders, Tanks, Lamps
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All Work Guaranteed
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AAA SCORED CYLINDERS

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Largest Because Best
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CYLINDERS REGROUND OR REBORED including New Pistons and Rings, $4.75 to $16.75 per cylinder. We are manufacturers of Vulcan Welding and carbon cleaning apparatus.
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By experts on Heald Grinder. All pistons, rings and wrist pins ground mechanically perfect. All patterns and sizes in stock. Write for quotations.
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Special light alloy Pistons
Our special facilities enable us to do highest grade work
Over 225 Piston Patterns
Auto Engine Works, St. Paul, Minn.

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We make new pistons, rings and pins. Regrind crankshafts. Fully equipped Machine Shop with Hydraulic Press. Expert workmen. All work guaranteed. H. S. Anderson Auto Repair
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Rebored AND Reground
Including NEW PISTONS and rings
$4.00 to $13.00 per cylinder

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We rebore Cylinders and equip with our ECLIPSE Rings and extra high quality Pistons, assuring a correct fit and giving extra efficiency to your motor. Give us a trial. Prices interesting.

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FORD CYLINDERS REGROUND
FOUR NEW LIGHT PISTONS $12.00 .030 in. OVERSIZE ONLY
Write for full particulars.
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FORD OWNERS GET MORE POWER
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WE REGRIND CYLINDERS
and furnish our heat treated piston rings and pistons. First class equipment, 15 years' experience. Write for our prices.
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Quick and Expert Service. At Low Rates.
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Ford "T" Rear Axle Trouble
Gardner Patent Loop Truss puts an end to rear axle trouble. Put in place in 3 minutes. Bolts will not work loose. Differential will not open up. No grease lost. Shaft tube cannot break. Stops that upward twist when starting and the downward twist when stopping. Same road clearance. Cannot be struck by obstructions on the road. Weight 6 lbs.
1913-14-15-16 Cars, $1.50 1911 Cars, $2.00
Include Parcel Postage when Ordering.
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Special Announcement
"KARBONOID"
DEMAND *HAS BEEN* AND *IS BEING* CREATED BROADCAST

If you can reduce your customers' Gasoline Bill 10 cents per gallon, will they thank you? Will they support the product that will make such a condition possible?

ARE YOU GOING TO SHARE THE PROFITS?

OUR LIBERAL OFFER UNTIL AUG. 15th ONLY
Exclusive selling rights contracts.
Cities under 20M. Pop..$38. Retails for.. $84
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Write or wire for available territory. Avoid substitutes and imitations, sell the genuine.

NEW ENGLAND KARBONOID CO.
46 W. Tennyson St., Boston, Mass.

HAND-I-WASH
COMBINATION
WATER—SOAP—TOWEL
INDISPENSABLE TO THE
AUTOMOBILIST
Washing liquid and full roll of best quality, absorbent paper towels contained in handy receptacle. Instantly removes dirt, grease and oil without injury to the most delicate skin. Compact—can be stowed in tool kit.

AT YOUR DEALER'S OR DIRECT **$1.00** Prepaid

Refiller complete, Towel, Roll and Tube of Liquid—price 50c. Antiseptic and Sanitary.

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Special terms to dealers and agents.
Write or wire for territory.

HANDY POCKET KITTY-KIT Prevents Tire Troubles. Use the wonderful "Kitty-Kit" tire repair kit and your troubles will be solved. Repairs punctured tires in 1 minute. This is a kit of real merit and a help to all automobile owners. Price $3 by mail. Agents wanted. **Andrew B. Smith,** S. W. Cor. Park Ave. & Cambria St., Phila., Pa.

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Presto Tanks
STYLE B
FILLED $7.00 Each
EMPTY $6.00 Each

Fifty cents discount on each tank in lots of 10 or more.

Every tank guaranteed in A No. 1 condition.

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RAGS FOR CLEANING AUTOMOBILES
All clean stock. Let us supply your garage or repair shop. A trial package, 10 pounds, $1.00, by express, C. O. D. or money order. **Edward Corner,** 1080 Beach St., Philadelphia, Pa.

RECTIFIERS
to charge from A-C circuit 1 to 8 ignition, lighting or starting batteries at one time; $12 and upwards. AMERICAN BATTERY CO., 1128 Fulton St., Chicago.

SPECIALS THIS WEEK
100 Ford Shock Absorbers (per set)...$5.00
25 E. Prestolite Tanks, filled..... 7.50
100 Ford Wheels, 30 x 3½..... 1.25
10,000 feet Duplex Lighting Cable (per 1000 ft.).....20.00

Orders filled in rotation as received.

Automobile Material Co. Cleveland, Ohio

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A BIG SAVING IN
TIRES—TUBES
Fresh Selected Stock—Standard Makes Guaranteed

	New Tires	New Tubes		New Tires	New Tubes
28x3	$ 6.00	$1.25	34x4	$13.25	$3.35
30x3	6.50	2.00	35x4	13.50	3.45
30x3½	8.00	2.25	36x4	14.00	3.50
31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
31x4	11.75	2.90	35x5	17.50	5.00
32x4	12.50	3.20	36x5	18.50	5.00
33x4	12.75	3.25	37x5	20.00	5.20

For Non-Skid add 10% to All prices.
Special Bargains in Slightly Used Tires.

	Used Tires	Used Tubes		Used Tires	Used Tubes
30x3	$3.50	$1.35	35x4	$7.50	$1.75
30x3½	4.25	1.45	36x4	7.50	1.75
31x3½	4.50	1.50	34x4½	8.00	1.75
32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
32x4	7.00	1.60	35x5	8.50	2.00
33x4	7.25	1.70	36x5	9.50	2.00
34x4	7.75	1.70	37x5	9.75	2.20

All goods shipped C. O. D. subject to examination, on receipt of 10 per cent of order.

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1461 Michigan Ave., Chicago, Ill.

A GREAT TIRE AND TUBE SALE
100 Makes—15,000 Tubes and Shoes. New and A1 Stock
AT RIDICULOUSLY LOW PRICES
Saving from 40% to 70% "Cheapest House in the City"
Jandorf Automobile Co., 1764 B'way, New York City

BEAD BLOWOUTS
can be successfully repaired at a very low cost

COWANS BROS.
150 West 55th Street, New York City

DEALERS
SHARE OUR PROFITS
BIG BARGAINS IN
REGULAR STANDARD GUARANTEED
3500 MILES TIRES & TUBES
5% Discount to Dealers

Size	Plain	Non-Skid	Tube
28x3	$ 6.85	$ 7.00	$1.75
30x3	6.95	7.45	1.85
30x3½	8.95	9.50	2.00
32x3½	10.20	10.85	2.30
34x3½	11.50	12.15	2.35
32x4	14.10	14.85	2.75
33x4	14.65	15.45	2.85
34x4	14.95	15.75	2.90
35x4	15.55	16.50	2.90
36x4	15.80	16.60	3.10
35x4½	20.80	21.85	3.75
36x4½	21.10	22.15	3.85
37x4½	21.85	22.95	3.95
37x5	24.90	26.25	4.30

Tires shipped C. O. D., subject to examination, on receipt of $1.00 Deposit on each tire. If goods are unsatisfactory deposit is refunded.

ARMSTRONG TIRE & VUL. CO.
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Advertise in the Clearing House for Results

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I Establish Cut Rate Tire Agencies

Various Brands at Following Prices:

30x3 Non-Skid $5.28
30x3½ " " 6.80

If you care to devote your time to a money-making proposition, address

E. JANES

1789 Broadway
NEW YORK CITY

GUARANTEED HEAVY RED OR GRAY TUBES

Size	Price	Size	Price
30 x 3	$1.50	36 x 4	$2.80
30 x 3½	1.65	35 x 4½	3.40
31 x 3½	1.75	36 x 4½	3.50
34 x 3½	1.80	37 x 4½	3.60
33 x 4	2.50	36 x 5	3.90
34 x 4	2.60	37 x 5	4.00

The above prices are net to dealers. These tubes are fresh stock. Not blemished. Terms: Cash, including postage.

Tough Tread Tire Co., 25 William St., Newark, N. J.

New Double Tread Tires
Sent To You C. O. D.

No money in advance. Made from 2 of your old tires. **Guaranteed for 100 days.** We will furnish one or both tires if desired. Also buy, sell and exchange firsts, seconds, second-hand and double tread tires, and tubes.
World's largest exclusive tire dealers.

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Write nearest branch for price list.
225 Halsey St. ..... Newark, N. J.
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58-60 Temperance St. ..... Toronto, Can.
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UNIVERSAL TIRES

CARRY STANDARD GUARANTEE OF 3500 MILES

	Plain	Non-Skid		Plain	Non-Skid
30x3	$6.15	$6.75	35x4	$13.85	$14.85
30x3½	7.95	8.65	36x4	14.10	15.30
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Makers of K. P. Foot Rest Heater, K. P. Universal Rim Tool and other specialties soon to be announced

Advertisers' Index

A

Adamson Mfg. Co.	89
Ahlberg Bearing Co.	105
Ajax Rubber Company	70
American Electric Co.	107
American Oil Products Co.	72
Ames Co., F. A.	65
Anderson Steam Vulcanizer Co.	98
Arthur Vulcanizing Machine Co.	90
Auto Pedal Pad Co.	105

B

Bales Distributing Co.	95
Benford Mfg. Co.	74
Blake Signal & Mfg. Co.	105
Bobbie & Co.	79
Bosch Magneto Co.	83
Boston Blacking Co.	106
Bound Brook Oil-Less Bearing Co.	51
Bower Roller Bearing Co.	60
Brown-Lipe-Chapin Co.	55
Brugan Co.	93
Brunley Battery & Mfg. Co.	97
Brunner Mfg. Co.	89

C

Cassidy, E. A.	95
Champion Ignition Co.	88
Champion Spark Plug Co.	Front Cover
Chicago Auto Supply House	105
Chicago Fuse Co.	96
Chicago Solder Co.	107
Combination Rubber Mfg. Co.	94
Connecticut Tel. & Elec. Co.	95
Corbin-Brown Speedometer Co.	3
Craven Co., E. T.	94
Curtis Pneumatic Mchy Co.	98

D

Dann Products Co.	56-57
Disco Electric Starter Co.	94

E

Eisemann Magneto Co.	67
Elgin Motor Corp.	71
Enger Motor Car Co.	48

F

Fedders Mfg. Co.	96
Ferro Electric Air Pump Co.	98
Firestone Tire & Rubber Co.	76
Fisk Rubber Co.	2
Ford Motor Co.	92
Foster Accessories Co., C. H.	58
Fried & Stonier Co.	94
Fulton Company	96

G

Gardner Governor Co.	96
General Electric Co.	85
General Tire & Rubber Co.	91
Gibson-Hollister Mfg. Co.	92
Goodman Auto Body Co.	63
Gould Storage Battery Co.	95
Grossman Co., Emil	95
Gulf Refining Co.	93
Gurney Ball Bearing Co.	68

H

Hartford, E. V., Inc.	1
Harvey Spring Co.	88
Hess-Bright Mfg. Co.	78
Hotel Marie Antoinette	90
Houk Mfg. Co.	3rd Cover
Hyatt Roller Bearing Co.	95

I

Inter-State Motor Co.	94

J

Jenkins Vulcan Spring Co.	64
Johns-Manville Co.	98

Digitized by Google

Advertisers' Index

K

Kentucky Wagon Mfg. Co. 49
Kissel Motor Car Co. 98
Koehler S. G. Co., H. J., The 97
K. P. Manufacturing Co. 106

L

Laird & Lee 94
Leather Tire Goods Co. 84
Lewis Electric Welding Mfg. Co. 105

M

Maxfer Truck & Tractor Co. 52-53
Michigan Auto Trailer Co. 105
Mitchell Motor Co. 59
Moline Automobile Co. 92
Moon Motor Car Co. 73
Mosler & Co., A. R. 93

N

National Rubber Co. 94
New Departure Mfg. Co. 91
New Era Spring & Specialty Co. 105
New Process Gear Corp. 96
N. J. Caraspring & Rubber Co. 69

O

Oakes Co. 93
O-So-Ezy Products Co. 95

P

Pfanstiehl Company 92
Pouvaillsmith Corp. 92
Prest-O-Lite Co. 80-94

Q

Quaker City Rubber Co. 96

R

Rayford Co. 63
Reo Motor Car Co. 86
Republic Rubber Co. 81
Ross Automobile Co. 75
Russell Motor Axle Co. 96

S

Scripps-Booth Co. 97
Shaler Co., C. A. 87
Sheldon Axle & Spring Co. 98
Silvex Co. 105
Sparks-Withington Co. 97
Splitdorf Electrical Co. 91
Standard Thermometer Co. 96
Stewart-Warner Speedometer Corp. ..... 2nd Cover
Studebaker Corp. 108
Sundermann Corp. 66
Swinehart Tire & Rubber Co. 92

U

United Engine & Mfg. Co. 92
U. S. Ball Bearing Co. 50
U. S. Light & Heat Corp. ..... Back Cover
Universal Rim Co. 77

V

Vanderpool Co. 95
Van Sickien Co. 93

W

Waltham Watch Co. 47
Warner Auto Top Co. 92
Weaver Mfg. Co. 61
Westcott Motor Car Co. 54
Willys-Overland Co. 4

Z

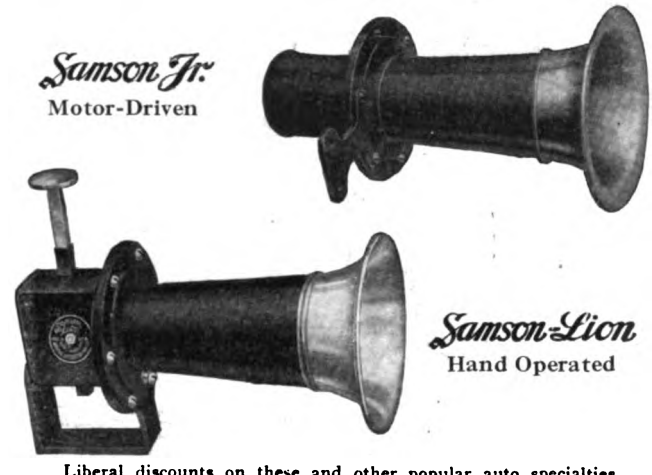
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ARE ASSURED YOU BY STOCKING

Samson Horns

Any calls for automobile, motorcycle, or motorboat horns can be filled from our large assortment of models—motor driven and vibrator in electrically operated and several styles of hand operated types, many sizes, finishes and mountings.



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Samson-Lion Hand Operated

Liberal discounts on these and other popular auto specialties. Arrange now for stock and get your share of the business.

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Cleaner, Neater, Quicker Results

Use it in your garage for battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use. Sold in coils of 1 pound, and on spools of 1, 5 or 10 pounds.



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Manufactured by

CHICAGO SOLDER CO.

18 N. Union Ave., Chicago

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Studebaker Opportunities



Who wants this one in Maine?

STUDEBAKER has an opening for dealer representation in Maine's capital. Being a live, throbbing center of 15,000 and more population, this opportunity will go to the man who can prove his ability to cultivate the excellent market for Studebaker cars that we know exists there.

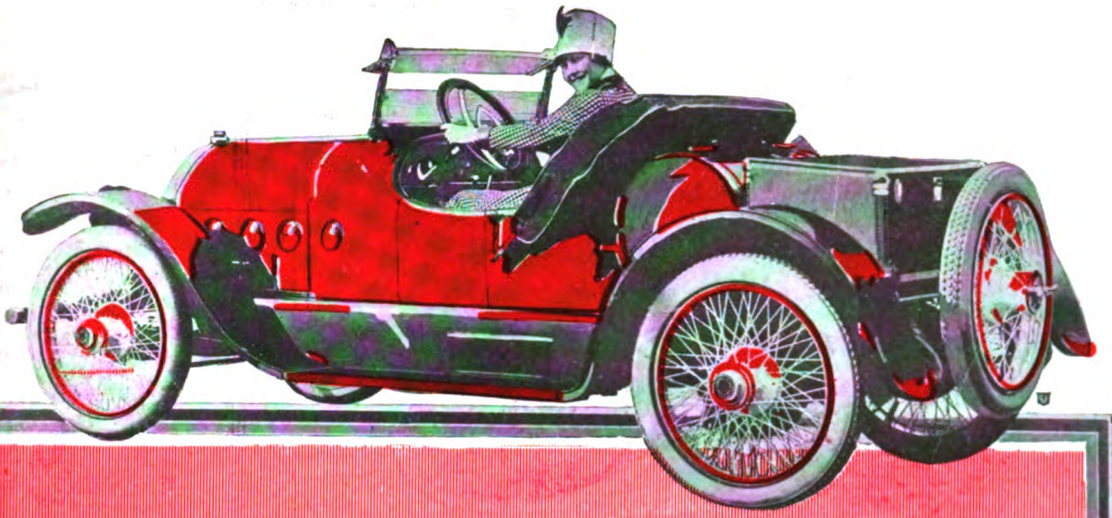
The city is the head of steam navigation on one of the state's largest rivers, and is a big terminal point on the Maine Central Railroad. Its leading industries are the production of cotton goods and shoes, while a variety of smaller business enterprises round out the well-developed industrial activity of this progressive city

This is a splendid opportunity for some one. Who'll be the first to write for details?

STUDEBAKER

Detroit, Michigan
South Bend, Indiana **Walkerville, Ontario**
Address all Correspondence to Detroit

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WIRE WHEELS



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U.S.L.

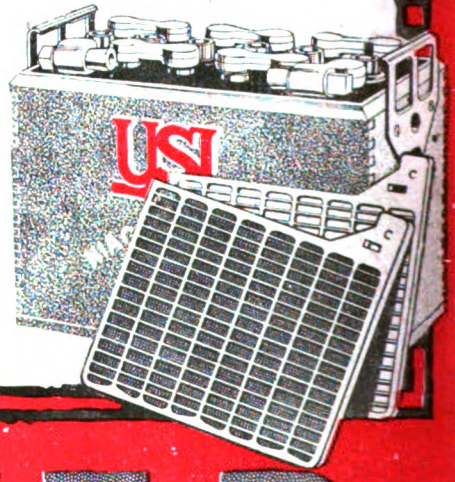
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You Can "Be Battery Happy"

Your USL machine-pasted plate Battery won't fail in a crisis. It's ready to crank when you're ready to start. Ready to light your path when darkness comes.

"Be Battery Happy" with a U S L

Sold under a 15 months' guaranteed adjustment plan. Built to fit all cars and all starting and lighting systems. Free inspection. Liberal "trade-in" arrangements.



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Niagara Falls, N. Y.

Branches at Cleveland, Detroit, Chicago, Kansas City, San Francisco, Washington, D. C.

Service Stations in all Principal Cities of United States

STARTER BATTERIES

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 7

New York, August 16, 1916

Ten cents a copy
Two dollars a year

35,000 More Hudson Super-Sixes

An Announcement of Hudson Policy

We have to-day to announce:

Detroit, Mich., July 1, 1916

That more than ten thousand Hudson Super-Sixes have now been delivered to owners.

That we have in four months, by tremendous exertion, quadrupled our daily output.

That we have parts and materials, on hand and in process, for 20,000 more of the present Super-Six. Constantly increasing demand has just forced us to place contracts on materials for an additional 15,000.

That at least 35,000 more of the Hudson Super-Six will be built like the present model. Our production is now 3,500 monthly.

After eight months of experience, with 10,000 cars, not one important improvement in design suggests itself to our engineering corps. So the Super-Six will remain as it is. And, because of our patents, it will maintain its supremacy.

HUDSON MOTOR CAR COMPANY
DETROIT, MICHIGAN

HUDSON SUPER SIX

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Stewart

Speedometers for Fords

The Market Grows Bigger Every Day

Run through the pages of this book.
Note the preponderance of Ford accessory advertisements.
They point out a tremendous market—and one that is growing bigger every day.
Think it over and remember—
No Ford accessory is needed, demanded, or advertised like the Stewart Speedometer for Fords.

"No car is better than its accessories"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

$10



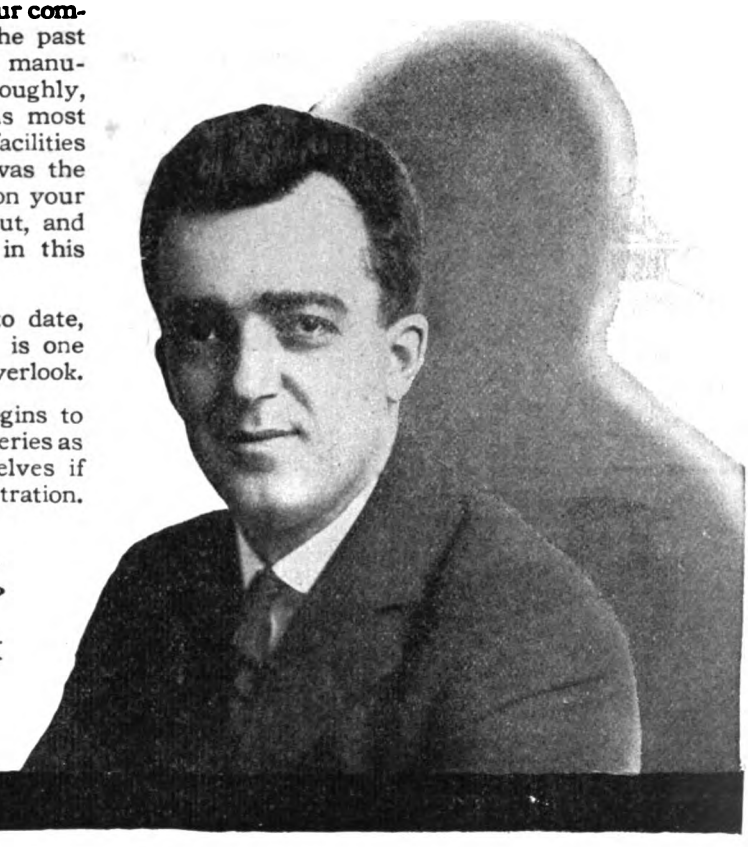
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Why I am a Studebaker Dealer

After selling out my interest here in one of your competitive lines which I have been handling for the past seven years, I went to Detroit and the other manufacturing centers and looked the field over thoroughly, going through the different factories, and was most impressed with the wonderful manufacturing facilities that you incorporate in your car. Not only was the mechanical end the best I saw, but the finish on your cars, and all the little details were worked out, and the car itself was much ahead of anything in this priced class.

Your business methods seem to be more up to date, but above all, the name "STUDEBAKER" is one selling asset that no dealer could afford to overlook.

Our sales have been most flattering and it begins to look now as though it is only a matter of deliveries as the new Series 17 cars practically sell themselves if you can once get the customer to take a demonstration.



Pres. Kirkland-Dailey Motor Co.
Kansas City, Mo.

Studebaker

IT takes a mighty good proposition now-a-days to induce a dealer to change over from one make of motor cars to another. The margin of profit allowed on each sale is secondary to the subject of value that a car gives, its reputation for performance, and the things said about it by people who have used it.

The entry of Mr. Kirkland and his company into the ranks of Studebaker dealers is therefore significant. It adds one more to the large number of dealers who were formerly interested in the sale of other makes, and who substituted the Studebaker line because of superior selling qualities and reputation—which, of course, mean repeat orders, greater profits, and the building of real and lasting business.

We have some interesting facts to send—if you'll write for them.

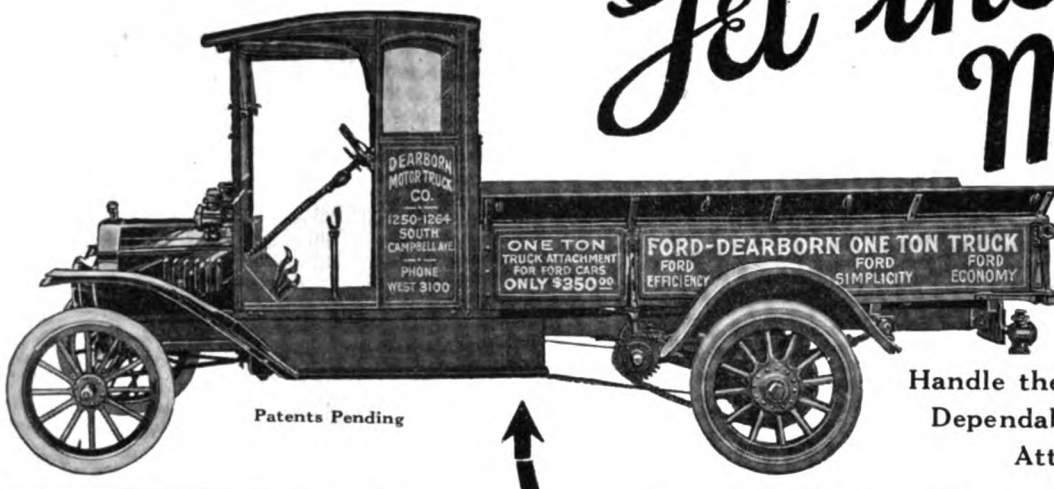
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DEALERS: Get the Money



Patents Pending

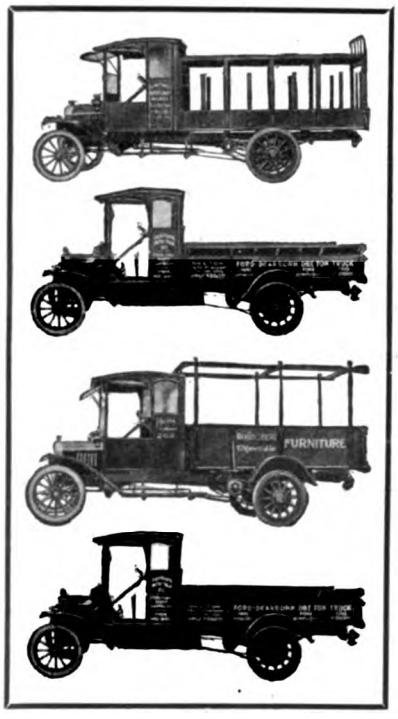
Convert Fords Into One-Ton Trucks

Handle the Sturdiest, Most Dependable Ford Truck Attachment

A FORD CAR NEW or OLD and

$350

Makes This One-Ton Truck



9 ft. Loading Space.
Will Take 50% Overload.
Firestone Solid Rubber Tires
Economical Ford Upkeep.

90% of load carried on Rear Axle and Heavy Truck Springs

Automobile dealers have never before had a money-making opportunity equal to that which is offered them in the DEARBORN ONE-TON TRUCK UNIT. The Dearborn Truck Unit is in every way superior to other attachments and the field for its sale is practically unlimited. Every merchant and farmer is a live prospect.

Our proposition to dealers is the fairest and most liberal of any.

You can take any Ford Chassis, combine it with a Dearborn Truck Unit and you have a truck that will do the work of any $1500 One-Ton Truck made. And it will do the work cheaper than any other truck. The Ford-Dearborn Truck has *Ford Efficiency, Ford Simplicity, Ford Economy and Dearborn Strength.*

Any auto mechanic can attach the Dearborn Unit to the Ford Chassis in a few hours' time. The Dearborn frame surrounds and reinforces the Ford frame, to which it is bolted at front, sides and rear. The rear axle assembly on the Ford becomes a jack shaft rigidly held in place by specially designed hangers. The Ford rear wheels are removed and sprockets attached to the Ford hubs in their place. The tread of the rear wheels is standard, 56 inches, the same as the front wheels of the Ford.

The Dearborn Unit is made in our own shops, under our own supervision and you can be certain that it is right in every way. You can absolutely depend on the strength of the Dearborn Unit. It's one-ton capacity is guaranteed. It will carry a ton and a half if necessary. It is strong where other units are weak. The materials throughout are of the finest quality.

Loading space is 9 ft. and 90% of the load is carried on the rear dead axle with its heavy truck springs and wheels. Rides as easy as in a pleasure car. Tires are Firestone solid rubber.

The Dearborn Unit comes to you complete with full instructions for attaching to the Ford chassis.

We are going to put a dealer in every town. This is your chance to get the agency. This truck unit is the biggest and best selling proposition ever offered to you. The truck gives absolute satisfaction after it is sold. Your service expense is reduced to the minimum. Write today for our Agency Plan and full details on the Dearborn Truck Unit.

FORD-DEARBORN One Ton Truck

DEARBORN MOTOR TRUCK COMPANY, OFFICE and FACTORY: 1260-1264 South Campbell Ave., CHICAGO

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
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Editorial Contents

The New Ford..... 36
A few changes have so improved its appearance that it is nothing like the old Model T.

Ford to Quit Retailing.....36
Is going to run his branches wholesale only and let the cars be sold by dealers on unrestricted contracts, the same as lawn mowers, plows or hats.

Ford Tractor Appears at Fremont..... 7
There are three kinds, one each running on gasoline, kerosene and alcohol. Pictures of the tractor are on page 36.

Think Farming..... 6
The dealer who is to make a success of tractors must learn to harmonize himself with the thoughts of the farmer.

The Fremont Tractor Demonstration..... 9
100,000 flock to Fremont to see the tractors work and show great interest in that of Henry Ford & Son.

1917 Packard.....10-11
The new Packard has a detachable head motor, is two inches lower and is improved in appearance.

Hollier Adds a Six.....34-35
This car is a twin to the eight which Hollier first brought out.

Gasoline Is Going Down..... 38
Declines of from one to two cents obtain all over the country.

Colorado Association Teaches Salesmanship... 40
Has an auxiliary division for the betterment of selling.

Columbia University Adds Selling Course..... 40
Is designed to be of assistance to the man already engaged in business.

Milwaukee Dealers Have Booster Tour..... 41
Will tour the state for six days, advertising the State Fair and Fall Show.

Fake Advertisers Being Checked..... 41
Ad clubs are bringing suits against those who make fraudulent claims.

Pikes Peak Hill-climb..... 33

South America Needs Young Men.....15-17
The third of a series of stories on South America by David Beecroft, managing editor of Motor World.

Make the Prospect Want Your Car..... 13

Through College on Gasoline..... 12

News Pages.....33-44

Advertisers' Index on pages 108-109

"NORMA"
(PATENTED)
BALL BEARINGS



The bearings used in electrical accessories may not determine the quality and value of those accessories. But—to the motor-wise—it is worthy of note that the makers of the most dependable ignition apparatus, lighting generators and starting motors use "NORMA" Bearings to guard against bearing failures.

Are Your Electrical Accessories "NORMA"-Equipped?

THE NORMA COMPANY OF AMERICA
1790 BROADWAY —— NEW YORK
BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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Denver, Colo., Boosts Overland Sales From 300 to 2000

Four years ago Denver, Colorado, people bought 300 Overland cars.

Denver shipments for the year ending July 15, total 2131.

That's a big gain for four years—but it's typical of what Overland popularity is doing for Overland dealers in all parts of the country.

"Made in U. S. A."

The Willys-Overland Co.

Toledo Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII | New York, U. S. A., Wednesday, August 16, 1916 | No. 7

Who'll Get Her?



In the competition for the tractor business everything favors the motor car dealer. Capable, equipped and always on the job, he is for the tractor manufacturer a better ally by far than the old-style implement man.

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Why the dealer entering the tractor business must

THINK FARMING

By Stanley P. McMinn
Motor World Staff Representative with the Tractor Circuit

THIS IS THE FOURTH of a series of articles on the merchandising and service problems peculiar to the farm tractor dealer. Previous articles have discussed tractor service and the merchandising possibilities of tractor accessories. The fifth article will appear next week.

THINK farming!

You are now thinking tractor. The National Tractor Demonstrations have filled you with tractor, enthused you, cast a rosy halo around the iron horse.

Think farming, instead.

Slide into the farmer's easy chair after supper and think with him; get his angle of this great tractor problem.

The farmer is thinking in acres. He has not yet gotten to thinking in horsepower or gasoline, or even dollars. His thoughts all turn to acres plowed.

"What will the tractor do?" he says.

"Can I get out on my land as quickly after rain as I can with horses?"

"What about disking and harrowing and seeding?"

"Where does the tractor fit into my belt work?"

Who is going to answer these questions for the farmer?

The dealer.

The dealer must be the farmer's adviser.

Performance is uppermost in the farmer's mind. Judging by the tractor circuit, he does not care much about construction or operation or anything else. What he wants to know is: "Is the tractor practical for me?"

"How big a tractor shall I get?" is one of his first questions.

"The four-plow outfit," says the dealer who is well posted.

"Why?" says the farmer.

Mr. Dealer, you must think farming to answer this question intelligently.

Let us analyze this question as the dealer must analyze it, with the experience of the tractor circuit in view, and always remembering the fiasco of the big tractor.

Four-Plow Coming Outfit

The four-plow outfit is the logical outfit, because it undeniably reduces man labor, which is the object of every improved farm implement; because it is sufficiently powerful to do all the farmer's plowing; because it has enough power to do all the farmer's belt work.

Will the farmer come to this conclusion himself?

He will not.

He will remember the mammoth tractors of a few years ago; he will remember that to-day he must pay cash for his tractor. He will be cautious.

In short, the farmer will be over cautious.

He will view the one- and two- and three-plow tractors with greater favor because they are cheaper and because he has not sufficient vision or knowledge of mechanical power to see the advantage—nay, the necessity—of more power than they can supply.

He is thinking in acres plowed. He has overlooked that he needs more power for his belt work than he does to plow his land.

Let us go back for a minute to the big tractor, so that we may understand better the farmer's point of view.

The Big Tractor Fiasco

Several years ago, when the big tractor boom was in full swing, thousands were sold. Farmers who had not sufficient land to operate a four-plow machine efficiently bought six- and eight-plow tractors, some larger, expecting, many of them, to keep the tractor busy doing custom work.

But when it came to operating these giant machines, troubles arose. The expense of operation was high; repairs were frequent because of the lack of experience of the designers; proper housing facilities were difficult, due to the size of the machines; big gang plows had not been perfected; and man labor was not appreciably reduced even though horsepower was cut.

The big tractor got a black eye that it has never recovered from. Quite likely, this mistake made by implement dealers, who loaded these great machines onto farmers whom they must have known would be unable to use them efficiently, will never be made again, for there is a greater tendency now to work for the good of the industry than for the good of an individual pocketbook.

To-day a dealer would hesitate to recommend a tractor which he knew would be too large.

Wants a Machine Too Small

But the memory of the big tractor on a little farm remains, and the farmer is over cautious. *To-day the farmer is inclined to buy a machine too small rather than too large.* This, too, will have a more or less bad effect and is one that must be guarded against.

Price will have an important bearing on the farmer's choice. When the big tractor boom blazed its trail across the country, price was secondary. The farmer was not required to pay cash; he

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paid a couple of hundred dollars down, if he could, and was supposed to pay half the balance following the first harvest and the other half following the next harvest. Sometimes the debt stood much longer when crops were bad two years in succession.

The small tractor has changed this. Cash on delivery is now the order of the day. True, some dealers are arranging to take part down and the balance in notes extending over 6 or 8 months, but the farmer has got to meet the notes.

The Influence of Price

So, price is of greater importance than it was a few years ago, and the farmer is very apt to be influenced by price alone. He may decide upon a one- or two-plow machine when he should have a four-plow tractor. Unfortunately, it has not seemed possible yet for the tractor manufacturer to produce a really good tractor that will pull four plows at a really low price. There are plenty of cheap, flimsy, ill-designed machines, which put up a good appearance and which will make a good impression in a short demonstration; but a tractor of this kind is expensive at any price, not only to the farmer, but to the dealer as well, for it always means a heavy service burden.

Manufacturers themselves are looking forward to the day when standardization and market conditions will permit of extensive production of a tractor type that will meet the needs of the great majority of farmers and which will sell at a low price.

But why is the four-plow machine a logical machine

Why the Four-Plow Machine?

A one-plow tractor will not reduce man labor, and it is man labor that the farmer is seeking to reduce; nor will it reduce horse labor, because the horses will have to be kept for other purposes. Again, it will not furnish sufficient power to operate all the machines that a farmer will expect to operate with the belt. On the other hand, the tractor will do more work than the horses it replaces because of its greater speed, and it can be worked irrespective of temperature or insect life. Furthermore, it is possible to work the tractor day and night.

The two-plow machine is little better than the one-plow outfit. It does reduce man labor because of its ability to remain more continuously at work, assuming that there are no breakdowns. It will deliver more power at the belt, though frequently there will not be sufficient power to operate all the farmer's implements. Thus, it may be necessary for the farmer to hire some of this work done. In some cases, notably where the investment in machinery is fairly great, as, for example, in the case of a grain separator, it may be desirable to hire such work done. But, as a general rule, the farmer should own all his equipment, and it follows that he should have power to operate it.

The three-plow tractor is better for the all-around work of the farm, because it undeniably reduces man labor and generally has sufficient power to operate all the implements, including the modern-sized thrasher.

Four-Plow Is Economical

But the four-plow tractor is by far the best size for a man farming about half a section. It will have ample power both for plowing and belt work and it will not be too large for efficient and economical use on a farm of this size.

Another important advantage of this tractor is, that where the acreage to be plowed is not sufficient to keep the machine operating efficiently at plowing, the number of plow bottoms can be reduced by one and a disk or peg-tooth harrow hooked on behind the plow. With the one-, two- or three-plow machines, this would not be feasible, because of the lower power available and because of the narrower strip of plowed ground.

That there will always be a market for the smaller tractors and also for the much larger ones there seems no doubt, but already a number of manufacturers are preparing to center their activity on the four-plow machine, and this quite likely will be the big seller.

Small Farms CAN Use Tractors

The U. S. Department of Agriculture states that no farmer with less than 160 acres under cultivation should purchase a tractor. In truth, however, there are plenty of farms as small as 80 and

(*Continued on Following Page*)

Ford Tractor Makes Its Debut at Fremont

Three of Them—One Running on Gas, One on Kerosene and One Operating on Alcohol

(*Pictures of Tractor on Page 36*)

FREMONT, Neb., August 12.—The widely heralded Ford tractor made its debut at the farm tractor demonstration here this week. That it is of wide public interest is indicated by the fact that something like 100,000 people flocked to the demonstration grounds, each intent on getting a look at this product of Henry Ford & Son, Dearborn, Mich.

The crowd was almost as great as that which attends the national motor car shows in New York and Chicago—and was even more interested.

There were three of the Henry Ford tractors at the demonstration, one operating on gasoline, one on alcohol and one on kerosene. The new tractor created quite a stir, not only among the spectators, but among the other tractor makers. This was the first public appearance of the tractor from the Dearborn plant, and the fact that Ford, father and son, were responsible for it made it an object of special interest among the farmers of Nebraska, where Fords are the common means of locomotion. Though the specifications are not at all those of the pleasure vehicle, it has familiar Ford features sticking out all over it.

Among tractor makers, Ford's tractor aroused much discussion, chiefly on account of its extremely low weight—under 1 ton—in a service where great weight has been thought essential, its absence of water pump and its worm type of final drive. The general opinion seemed to be that Ford will find a number of radical changes necessary before the actual production goes on the market next year.

The tractors are not on the market yet, nor will they be until some time next year. Participation at Fremont seemed to be more in the way of feeling out the market than direct sales effort.

Nevertheless, had the Ford people been there to take orders instead of feel out the market, it is believed scores would have been sold on the spot—so much does the name of Henry Ford mean in that section.

The models on exhibition seemed to have no difficulty in doing their stunts in the plowing demonstrations, except a reprimand or two

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from the judges for speeding; that is, plowing faster than the advertised plowing speed.

Ford's idea in bringing out the tractor was to produce a machine of comparatively small capacity—2 mould-board plows, of as small weight as compatible with strength and wearing qualities, as simple as possible and at as low a price as possible—the same features that have made his pleasure cars a success. That designer Joseph Galamb has succeeded would appear from the fact that while the exact selling price cannot be announced as yet, it is in the neighborhood of $300, it weighs just under 1 ton, and it has the familiar Ford flywheel, magneto, thermo-syphon cooling and other elements of simplicity throughout.

The engine is simply a larger edition of the Ford pleasure car engine, its four cylinders being 4 x 4¼ inches. The engine is rated at 20 H.P., and the tractor at 10 H.P. drawbar pull by the factory. It has three-speed and reverse gearset of the constant mesh type, and a worm drive on the rear axle. It is capable of 5 to 6 mph. on the road and 2.5 to 3 mph. plowing. The clutch is a multiple disk. Headlights are provided for night plowing, from the magneto. There is a unit power plant and four steel wheels.

THINK FARMING

(*Continued from preceding page*)

60, and even 40, acres, which are economically farmed with plows, and this is where the one- and two-plow outfits fit in. But these are highly specialized farms and for this reason the element of competition has been greatly reduced, if not eliminated. In general, however, it is folly for the farmer with less than 160 acres to let the tractor bug get into his head.

Plowing ability is uppermost in the farmer's mind. Construction, operation, cost of maintenance appeared always to be secondary considerations at the National Tractor Circuit.

Day after day, at all the demonstrations, thousands of farmers crowded along behind the tractors, earnestly studying their work. They would squint along the furrow to see that it was straight; they measured the depth plowed and dug down into the soil to ascertain how thoroughly it was turned over and pulverized. In thousands of cases an inspection of the plowing work seemed more satisfying. After watching the machines on the demonstration field, thousands of farmers immediately traced their way back to the cars and to their homes or to the city.

Why is the farmer so interested in plowing ability?

Plowing Ability Uppermost

Consider that he has been plowing for years with horses or mules. He knows to the fraction just how much work he can do in a certain time, how deep he can plow under existing conditions, and is thoroughly familiar with that somewhat elusive factor, quality of plowing. He has been hearing that the tractor does more work than horses, that it can plow deeper and that the quality of the work will be better. Naturally, he wants to know the why.

The answers to some of these questions require only good eye-sight.

But the farmer may not understand at first just why the quality of plowing is better. He perhaps has overlooked the factor of speed. With a horse-drawn plow moving slowly and plowing perhaps only 4 or 5 in. deep, the effect of impact, if it can be so termed, is practically negligible. In other words, the plow merely pushes the earth up into one side.

But with the tractor drawing the plows faster and deeper, the effect of the impact of the plow is noticeable. Instead of merely pushing the earth to one side, the tractor-drawn plow actually throws the earth. For this reason, pulverization is more complete and many of the large clods which remain after horse plowing are broken up. Frequently, depending on the character of the soil, it is unnecessary to disk after tractor plowing; the harrow can be put right on, thus eliminating one farm operation.

Another reason the farmer may not openly show his interest in the belt ability of the machine, is he is familiar with stationary engines. Most farmers have at least one stationary engine for operating wood cutters, ensilage machines, cream separators, etc., and they are likely to take it for granted that if these stationary engines will do the work, the tractor will also do it. But here the farmer may be wrong if he plunges on a one- or two-plow outfit, as already has been pointed out.

Need For Missionary Work

Right here it is necessary for the dealer to make plain that it may be advisable for the farmer to get a machine slightly too large to do all his plowing, in order that he may have one with power enough to operate his other implements. Few farmers who have owned moderate-sized tractors sell them and get smaller ones. Almost invariably a farmer with a small tractor, however, will sell it and get a larger one, and lots of those who saw the demonstrations stated that if they ever purchased another machine it would be larger.

It is a matter of record that many farmers who have purchased tractors sufficiently powerful to do their belt work and therefore slightly too large for efficient plowing, have increased their land holdings either by buying outright or by renting.

The question of practicability, insofar as construction is concerned, is a matter to which the farmer apparently does not attach much importance. If the machine will plow and do his belt work, he is apt to assume that it will continue to do so for an indefinite period, when exactly the reverse likely will be the case if he has followed his own inclination and paid as little for the machine as possible.

Will It Plow Anywhere?

But the farmer does want to know if the machine is a practical machine insofar as plowing on all kinds of land is concerned, working on plowed land, on the side of a hill, and handling the other various field implements for which he now uses horses.

The National demonstrations have shown him that almost any type of tractor on the market now will plow almost any kind of soil, provided the land is practically level or only slightly rolling. They have not yet shown him whether these same machines will go out and plow as quickly after a rain as he could do with horses. Obviously, however, if it is going to take him 15 days to plow a certain acreage with horses, and the same land can be tractor plowed in 10 days, he has a margin of 5 days and can afford to wait a day or two until the land dries out somewhat. Actually, however, experience shows that except in rare instances it is quite possible to get on the land as quickly with a tractor as with horses. This is particularly the case with the type of machine that runs on its own endless track.

What About Other Implements?

As for operating the various other field implements such as are used on plowed land—harrows of various types, disks, seed drills, etc.—there is no particular difficulty. Most tractors will operate on plowed land with the addition of extension cleats, which are furnished by the manufacturers. One large tractor manufacturer, who also produces farm implements, has specialized on header hitches, and now has half a dozen of different types to fit as many different makes of headers. Development along this line is slow, but progress is being made. For the present it must suffice that if the dealer is called upon to supply such equipment he can do so, though he is limited in his choice.

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100,000 Go to Fremont to See Henry Ford Plow

Nebraska's Farm Tractor Demonstration Is the Biggest of the Year—Interest Is Great

FREMONT, NEB., Aug. 11—The 4-day demonstration of agricultural tractors which closed at Fremont to-day has been the most successful in every way of all that have been held. It is the fourth of the series of eight national tractor demonstrations, which started July 18 in Dallas, and included Hutchinson and St. Louis.

In point of attendance, interest exhibited, business done and prospects of future business obtained, the present demonstration is far and away ahead of any of the previous ones on the circuit and ahead of the similar affairs held in Fremont in previous years.

Attendance for the three big days, Wednesday, Thursday and Friday, probably totaled between 80,000 and 90,000 on the two latter days. Wednesday was the best day in the point of numbers, estimates varying from 30,000 to 60,000 for that day alone, but the tractor men were better pleased with the smaller crowds on the latter days, because there were fewer who were simply sightseers.

Gave Away 25,000 Canes

Those 40,000 people who braved the mud of Thursday and the discouraging, steady half day of rain Friday, were attracted to the field not as to a spectacle, but for solid business reasons. Attendance figures, however, are largely guesswork, because there are no paid admissions and there is no exact method of checking the number of visitors. I. H. C. gave away over 25,000 canes in one day.

In point of business done the tractor men, with few minor exceptions, were a unit in proclaiming this the most satisfactory week they have had. How many actual sales were made as a direct result of the demonstration never will be known, for the effect is not wholly immediate; besides which some of the tractor makers do not care to give out sales figures. The International Harvester Co. by Thursday noon had sold 109 tractors, all actual sales, closed at the field, and all to consumers. This is almost equal to the total of this concern's sales during the entire week at Fremont a year ago. This year's high record cannot be credited wholly to this week's demonstration, for it is the cumulative effect of three years of tractor demonstrations.

Fremont Cradle of Demonstrations

Fremont claims the distinction of being the birthplace of organized tractor demonstrations in the United States. Canada had had plowing competitions by tractors before the first of the annual demonstrations at Fremont, but the Canadian affair bore somewhat the same relation to the demonstrations that have been carried out through the central West as a motor car race does to the annual motor car shows at New York and Chicago. Here, the competitive feature is eliminated as far as possible, the plowing speed even being held down by the judges to that advertised by the tractor manufacturer. Nevertheless, there is a great deal of friendly rivalry as to which tractor shall be the first to finish its allotted portion of the plowing field and at the same time turn the deepest furrow and the straightest one.

Deeper Plowing

The 3 years of tractor demonstrations at Fremont have had their effect on the attitude of the farmers of that section. They do not have to be shown that the farm tractor as a piece of farm machinery is a practical and successful thing. Their neighbors have been using them and have produced better crops on account of the deeper plowing made possible by the tractors. Three different farmers, one of whom lived 75 miles away from Fremont, pointed out a field upon which the demonstration tractors had operated the two preceding years and which this season produced a yield nearly double that of its horse-plowed neighbors—"Deeper plowing," was their explanation.

Then, too, that territory is one which has been assiduously cultivated by the big tractor people. Such concerns as the J. I. Case T. M. Co., the International Harvester Co., the Avery Co. and others with wide distribution facilities already established for their farm implements, have done a great deal of educational work with their tractors, as have some of the concerns which specialize on tractors. *That this has had an enormous effect, may be gained from the instance of the I. H. C. dealer in Plymouth, Neb., who brought thirty-five prospects with him and sold seven almost before the demonstrations started. It was preliminary work did that.*

The Classic

Tractor manufacturers exhibited at Fremont to a greater extent than at the earlier demonstrations, both because there were more of them ready and because the Fremont demonstration has become to be recognized as the classic. There were forty different makes of tractors to be seen, and at least one-half of the makers had two or more models on display.

In Thursday's plowing demonstration, which was a representative day, sixty-five machines were in the 160 acres of stubble and the field was plowed in just about 2 hr. The soil was ideal for plowing, being a black loam, just damp enough. It was a little too hard the day before for best plowing, but the night's rain put the field in best condition, though it made the mud roads bad for motor car travel. It opened one's eyes to see the unwieldy-looking tractors running through the mud road at 2½ m.p.h. and pulling stalled motor cars out of ditches.

540 Pounds Pull

According to the Hyatt dynamometer, the draft was 540 pounds with a 14-in. mold-board plow at a depth of 7 to 8 in. in the field Thursday. Mold-boards were almost universally used, though there were a few disks in action. Two of the Twin City tractors were fitted with deep-tillers, for sub-soiling. These are curved spikes from 12 to 24 in. long, fitted to the drive wheels instead of the usual traction lugs or points. The action is similar to that of a rooster's spurs.

One of the stunts in connection with the demonstration was the continuous plowing test of the Standard Detroit 10-20, Wednesday. The tractor plowed 14½ hr., until stopped by a rain storm, and during that time plowed approximately 14½ acres (unofficial) and finished the day's work by pulling a stuck touring car out of the mud.

As to the fuel situation the tractor makers seem to be quite divided. Approximately one-half of the tractors in the field were operating on kerosene. To make sure that there was no false claims in this regard, the technical committee tested the fuel used in the plowing demonstrations. Nevertheless, some of the tractor men who favored gasoline impressed one with their doubts as to the real nature of the fuel used by the kerosene burners.

All of the tractors were exceptionally free from stoppages due to mechanical troubles. With one or two exceptions, all the machines dug in and finished up their task in a steady and businesslike way that was an eye-opener to the novice in tractordom.

Prospects of Selling

Marketing of agricultural tractors differs from the marketing of motor cars in one essential respect. If a farmer, or any other man, for that matter, have sufficient of worldly goods to buy and

(*Continued on Page* 41)

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The New Packard

has

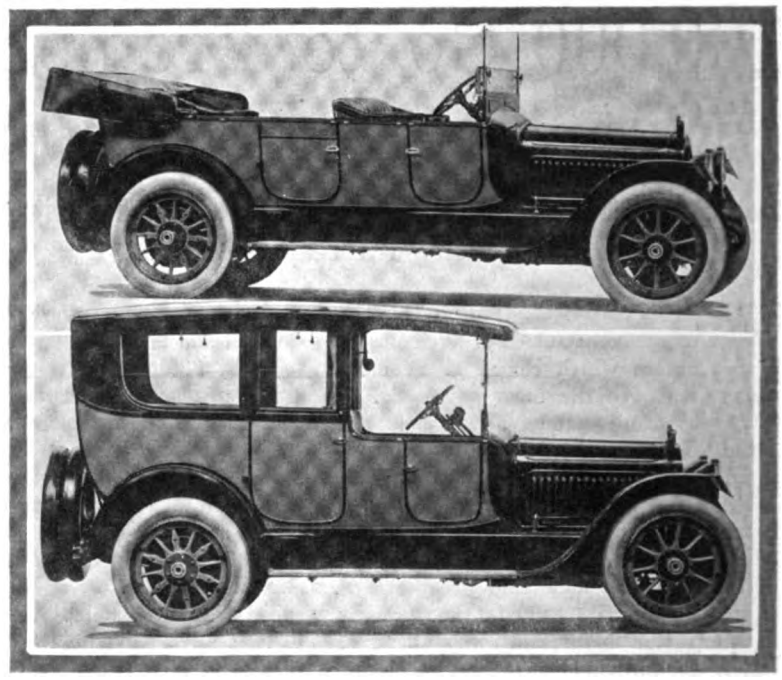
Detachable cylinder heads,
which increase accessibility and facilitate machining operations in manufacture.

New water system,
which eliminates pipes.

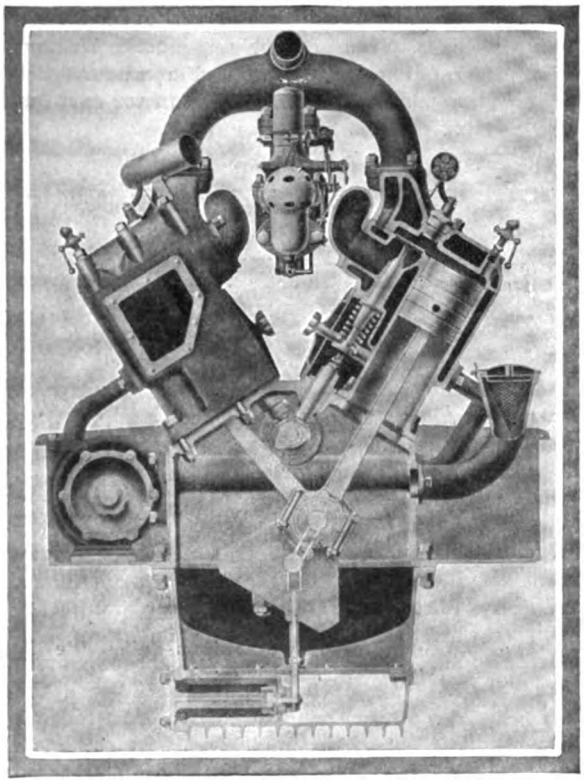
Deeper frame,
which gives body rigidity and lowers it 2 in.

Detail refinements,
which give greater value.

Higher prices,
on touring cars a raise of $115.



The frame has been dropped 2 inches, giving the cars a much more pleasing appearance



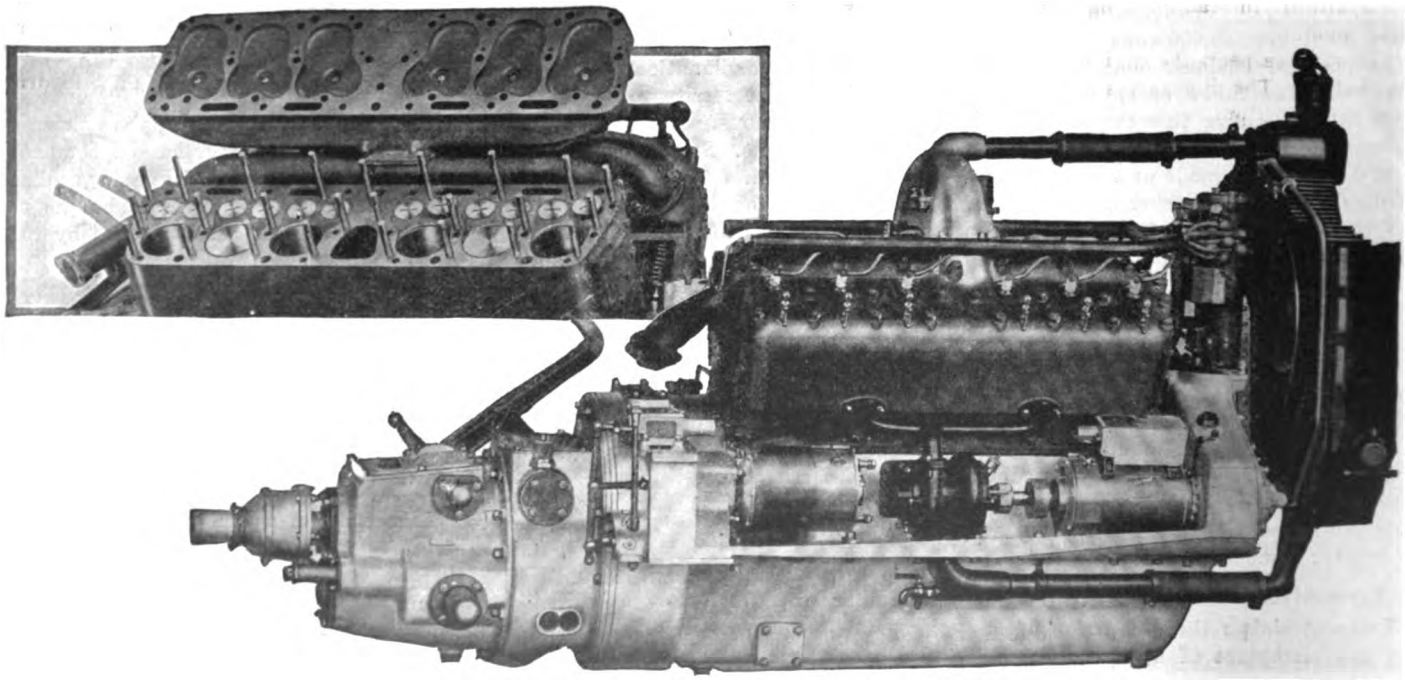
HAVING built close upon 8000 Twin Sixes, the Packard Motor Car Co. is making no changes of real importance in the 1917 series. In matters of detail there are improvements, but the twelve-cylinder engine, the transmission system and the chassis, generally speaking, are the same as before. The Twin Six Packard was entirely new a year ago, and a year's use has shown no weak spots, no detail that had to be changed. All that has been done is to improve here and there so as to make the car still better.

Equal Size Combustion Spaces

As an example of the sort of changes that have been made, the alteration to the cylinder castings is the most striking. Formerly the Packard has had one-piece L-head cylinders, and with these it is not

Left—Sectional view of the new motor. The intake manifold is waterjacketed and contains the outlet for the cooling water

Lower—The cylinder heads are detachable and the compression chamber machined to accurate dimensions. The method of waterjacketing the intake manifold is clearly shown



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commercially possible to machine every portion of the inside of the cylinder. There is advantage in having the compression exactly the same in all the cylinders, and to do this it is essential to machine everywhere, so the new car has detachable cylinder-heads, which do not alter the relative positions of any parts of the engine, merely permitting the full machining and, incidentally, making it easier to remove carbon deposit, as the cylinder heads are held on by twenty-five studs and nuts and can be taken off far more easily than could the cylinder blocks.

In conjunction with the detachable cylinder heads there has been a change in the water outlet system. There are now no separate water pipes running from the cylinder-heads to the radiator; instead of these the intake manifold is surrounded by a larger pipe, which acts as the water outlet from the cylinders, and a single separate pipe then connects the top center of the manifold to the radiator. The layout makes greatly for accessibility and is excellent for carburetion. The proximity of the exhaust manifolds to the carbureter keeps the latter well warmed, and the water surrounding the intake manifold maintains the temperature of the gas.

Thermostat Position Altered

The position of the thermostat has been altered; instead of being beside the pump it is now mounted in the radiator inlet, that is, at the top of the radiator, where the outlet pipe from the cylinders attaches. Here it admits water to the radiator when warm and, when cold, bypasses the water down a branch pipe to the inlet side of the pump. This change of position means that the thermostat now occupies the point in the cooling system which normally is at the highest temperature instead of being at the coolest point.

In other respects the engine is the same as before. The dimensions are 3 x 5 in., the power output is about the same, and the details of lubrication are precisely as on the 1916 car. The aluminum pistons have been changed to the extent that they now have the three rings located two at the top and one at the bottom, the latter acting as an oil scraper. There is also a small detail alteration to the Delco ignition distributor which causes a reduction in the current consumption, while the Bijur generator has been speeded up a little and has an increased output. As formerly, the distributor is situated at the extreme front end of the engine, just behind the fan, but the coils are now located upon the left front crankcase arm instead of being on the cylinders.

New Body Lines

The next change which is noticeable is that the frame has been lowered 2 in., this altering the appearance of the car in a remarkable way. Two inches does not sound a large amount, but it makes a very striking difference in looks. Packard has also abandoned the horizontal end piece on the rear mudguards, which has been a feature for very many years. The fenders now follow the curve of the wheel in a more conventional manner, and this has had the effect of smoothing out the rear end lines of the whole car, giving a much smoother general effect. The touring body is still typically Packard, however, having all the characteristics which give this distinctiveness.

There are two lengths of chassis; the larger is 135 in. wheelbase and the shorter 126½ in., this being an increase of 1½ in. over last year. There are nine bodies for the short chassis and twelve for the long, and all the prices are a little higher, the advance on open cars being $115. This increase is due to the rise in the price of materials, the quality of which has not been changed. On the short chassis $2,685 is the price for the five-passenger and seven-passenger touring cars, for the two-passenger runabout and for a new four-passenger runabout, while there is also a five-passenger salon phaeton at the same figure.

For the long chassis no runabouts are listed, but the price of $3,265 will buy a seven-passenger touring car, seven-passenger salon phaeton, five-passenger phaeton or five-passenger salon phaeton, the word "salon" signifying that the front seats are divided.

Inclosed cars on the short chassis are a three-passenger coupe, $3,965; six-passenger limousine, $4,265; six-passenger landaulet, $4,315, and a four-passenger brougham, $4,315, also. On the long chassis there are four styles of limousine, one for six passengers at $4,665 and three for seven passengers at $4,715, $4,765 and $4,915. There are also two seven-passenger landaulets at $4,765 and $4,815, a six-passenger landaulet at $4,715, and a four-passenger brougham at $4,715.

Recapitulating some of the details that were new a year ago and are still retained, mention may be made of the unit power plant which was new to Packard at that time and is unaltered in any way. The little Hyatt roller bearing in the gearshaft spigot has been entirely satisfactory and, owing to the smooth torque of the twelve cylinders, there has been no difficulty whatever in maintaining the quietness of the constant mesh gears.

In describing the 1916 model it was said that the lubrication system, giving pressure-fed oil to every moving part in the motor, was probably the most thorough ever used for a motor car. This has proved its worth, and the divided supply inside the crankshaft, which gives practically an independent feed to each connecting-rod lower end bearing, has worked out entirely in accordance with anticipations. The same is true of the Morse chain front-end drive, with the eccentric adjustable pinion on the generator shaft, and of the Lanchester vibration damper, which is used as the fan pulley on the crankshaft.

Axles, steering, brakes and springs are unchanged, the platform rear suspension suiting a heavy car particularly well.

Regarding equipment, all Packards will have Goodyear cord tires, 35 x 5, on all four wheels, the fronts having rib treads and the rears the "all weather" tread; Kelly-Springfield or Goodrich fabric tires can be had instead if the customer so desires. The lamp variations are considerable, as there are side lamps as well as small head lamps combined with the large headlamps. The switch gear is all on the control box on the steering post and gives all the possible combinations of lighting at the touch of a finger.

The accessories include Sparton horn, Waltham speedometer and clock, a complete set of spare lamp bulbs, fuses and a battery syringe, two extra demountable rims and a tire pump. The company wishes to draw attention to the fact that it is prepared to vary the specifications of body and equipment when so desired at an extra charge, and that there is a special department in the factory to take care of orders which depart in any way from the standard.

New Packard Twin-6

Made by the Packard Motor Car Co., Detroit

Prices	Model 2-25	Model 2-35
7-pass. touring	$2,865	$3,265
7-pass. salon touring		3,265
7-pass. limousine		4,715
7-pass. limousine, cab sides		4,765
7-pass. imperial limousine		4,915
7-pass. landaulet		4,765
7-pass. landaulet, cab sides		4,815
6-pass. limousine	4,265	4,665
6-pass. landaulet	4,315	4,715
5-pass. phaeton	2,865	3,265
5-pass. salon phaeton	2,865	
4-pass. runabout	2,865	
4-pass. brougham	4,315	4,715
3-pass. coupe	3,965	
2-pass. runabout	2,865	
Chassis	2,465	2,765
Wheelbase	126½	135

SPECIFICATIONS APPLYING TO BOTH MODELS

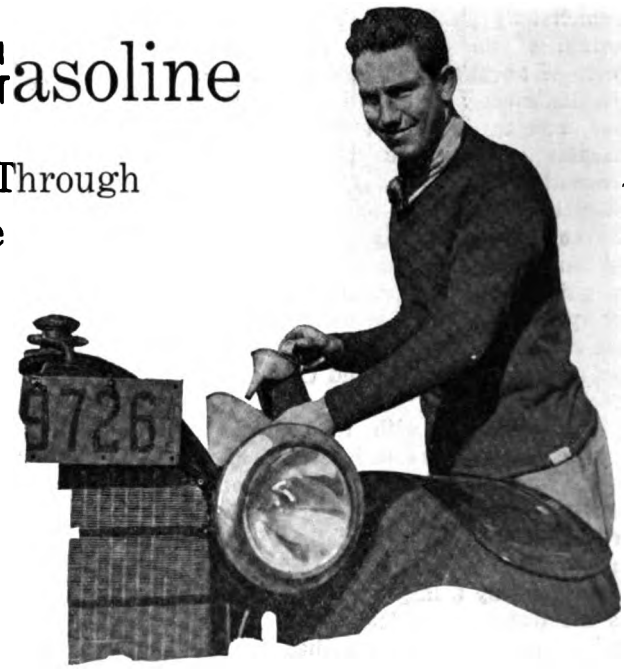
Make of motor	Packard
Number of cylinders	Twelve
Shape	L
How cast	Two V blocks
Bore	3
Stroke	5
S. A. E. horsepower	43.2
Ignition	Delco
Carbureter	Packard
Engine starter	Bijur
Lighting system	Bijur
Clutch	Dry-disk
Gearset	Packard 3-speed
Front tires	35 x 5
Rear tires	35 x 5
Wheels	Wood
Steering	Left
Control	Left
Make of axles	Packard
Type rear axle	Floating

Alterations to order

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Through College on Gasoline

"Slim" Hibbard Is Paying His Way Through School by Operating a Garage



When Hibbard isn't boning over his books he is gathering shekels with his can and funnel

LOS ANGELES, CAL., Aug. 14—Gasoline is putting W. E. "Slim" Hibbard through college. A member of the next senior class at Occidental College, Los Angeles, he takes part in all student activities and operates a supply station a short distance from the campus which supplies him with the necessary funds for his education.

While other students work their way through college by waiting on table, doing gardening work and acting as janitors in the college building, young Hibbard dishes out gasoline and oil. The supply station pays well and provides employment for two young men.

Occidental College boasts of the only college automobile club in the West. There are more than 100 cars on the campus and the faculty has constructed two garages for the motoring students. Hibbard has a corner on the college automobile club's business, and as a special inducement offers gasoline and oils at a reduced rate to the students. This trade alone is enough to keep the supply station busy, but located on the San Fernando Boulevard, better known as El Camino Real, Hibbard gets a lot of business from motorists traveling between Los Angeles and San Francisco over the inland route or coast road.

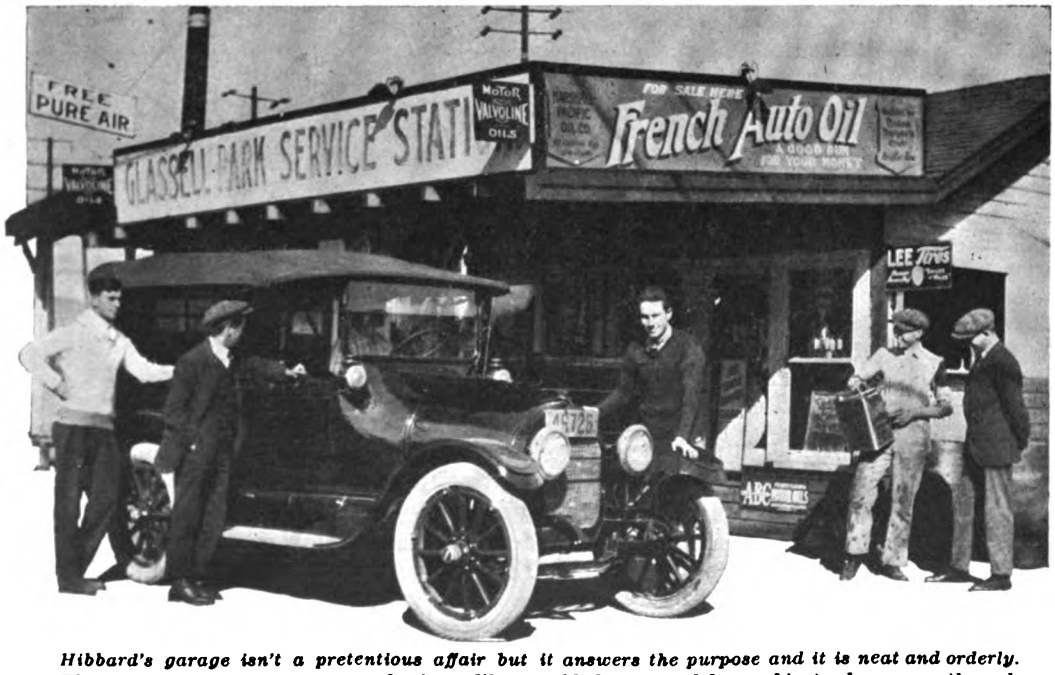
The station is known as the Glassell Park Service Station. The owner's slogan is, "A station of quality."

The building is well covered with signs proclaiming the merits of the goods handled. Puente Gasoline stands out in letters a foot high. Valvoline motor oils is another sign which stands out like a headlight. A line of accessories is also carried. The boys specialize in Howe inner tubes and Lee tires.

W. G. Stidston is in charge of the station while Hibbard is in class or taking part in athletics on the campus. Hibbard is a baseball star and one of the best high jumpers in the State. The proprietor lives between the supply station and the college, so that he is able to divide his time between the two places without loss of precious moments.

Between classes Hibbard is often seen studying in the shade of the station, while Stidston is busy elsewhere. There are times when several cars will be lined up, taking on oil and gas, and there are times when business is so brisk for the college "gent" that he has no time for study but contents himself with taking in the price of gasoline.

The money to start the station was supplied by Hibbard's father, but he has cleared the mortgage and now has a flourishing business. The young supply man also owns his own touring car, which is to be seen in all college doings, such as football parades, class tours and automobile rides for prominent visitors to the college; he has piled up a neat little bank account.



Hibbard's garage isn't a pretentious affair but it answers the purpose and it is neat and orderly. The proprietor operates a very business-like establishment and has a big trade among the college cars

Works Novel Ad Plan

MONTREAL, Aug. 12—The idea of giving a person something for nothing is being carried out by the proprietors of the Inter-Ocean Auto Co., Ltd., 596 St. Catherine Street, W., Montreal dealer in motor car accessories and supplies.

They secured from the license department of the city of Montreal a list containing all the motorists of Montreal and vicinity, and every week pick at random from this list a license number and advise the owner of the car that by applying at their store he will be entitled to whatever article they may be giving that week—mentioning the article or articles—absolutely gratis.

In addition to this, the number is pasted on the firm's window with a printed slip stating that if the driver of the car whose number is given will apply within he can get delivery of the articles mentioned thereon.

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Make the Prospect Want Your Car



Concessions will get you little or nothing

By Ray W. Sherman

"I OFFERED him everything!" declared Henry Bennett. "I threw away almost all my profit on the car. I threw in a tube and a tire and a bag of chains—and still the poor boob wouldn't buy. He went down to your place and bought a Sennett for cash, paid for his tube and shoe and everything else. It's beyond me!"

Henry waved his hands and forearms in a gesture of resignation and half turned his back on Cornelius J. Reilly, the Sennett dealer in Callawassa.

But Reilly only smiled at his boyhood companion and manhood competitor on Callawassa's motor row.

"Henry," he said, "do you remember the time you and Lou Tompkins and Robbie Gray were all running a neck-and-neck race after Tessie Mulvihill?"

He Couldn't Get Tessie

Henry did remember that experience with the present Mrs. Gray.

"And do you remember how, at that same time, Lorella King was running after you about as hot as you were after Tessie?"

Henry hadn't yet forgotten that, either.

"Why didn't you warm up to Lorella, Henry?"

Henry reddened—and grinned.

Reilly answered the question for him: "The thing you can't get is always the thing you want, Henry, isn't it?"

"I suppose so."

"And does that apply any more to a woman than it does to a car or a house or a diamond, or anything else we are likely to want?"

"I suppose not."

The Reason for Values

"Your 'suppose' is correct. The harder it is to get a thing the more we want it. The more difficulty there is in getting it the greater becomes its value—to us. Ice comes high in the tropics because it's hard to get. Gold is valuable because it is scarce—and hard to get. And so it goes.

"Iron is cheap because there is lots of it. It's easy to get. Ice doesn't sell for very much in Greenland.

"Also, the company that makes good goods and can sell all it makes at its own price is often haughty in its attitude to the public. It can afford to be. Some of us car dealers have good cars and the factories can sell all they make, and then some; but we don't seem to get the idea that we still can sell them if we ask the list price for them.

"We're foolish, Henry. The easier you make it for a prospect to get a car, by throwing off on the price or making long trades or giving him accessories, the harder you are making it for yourself to make the sale. What's easy to get is hard to want. The prospect is nothing but a plain, every-day human being, and he's just like you and your young lady friends of four years ago.

It Sold the Car

"I had an Englishman come into my place once to look at a Sennett. He was quite an engineer, and he wanted to crawl all over the car and inspect it himself. I let him go the limit. Finally he said the car suited but that I undoubtedly would throw in a shoe. I said no. He said I surely would throw in a tube. I told him no, that we never allowed a cent discount even in an indirect form. He said he could get such and such discounts at other places, and I told him I would lose the sale rather than give him a postage stamp.

"It worked just as I thought it would. He said: 'Rulleh, the cah must be verreh good, you're so indifferent abowt selling it!' He bought it, Henry. I made him want it because I made him pay for it. The ordinary man believes in his heart that what comes cheap is cheap—and generally he's right. And by cheap I mean punk, not low in price.

"Sample Shoes"

"Every time I see advertised a sale of sample shoes of six and seven dollar grades I pass it up. And why? Because I have investigated several and have found that 'what comes cheap is cheap.' A bargain is a darned scarce animal. Good goods at fair value and a list price from a good dealer are the only sure protection to the buyer.

"The buyer knows this, too, and yet some of them hunt bargains in cars. Sometimes a cut price will make a sale, but a car that is always sold at a cut price loses its value standing. There is one car to-day that is going to have a hard time living down the reputation that has been created through its numerous branches selling cars at ridiculous trade figures. They're easy to get, and are becoming just as hard to sell.

"The man who is out to buy a car wants value for his money. He doesn't want something that isn't good, for a car that won't give satisfaction isn't a bargain even at 5 cents.

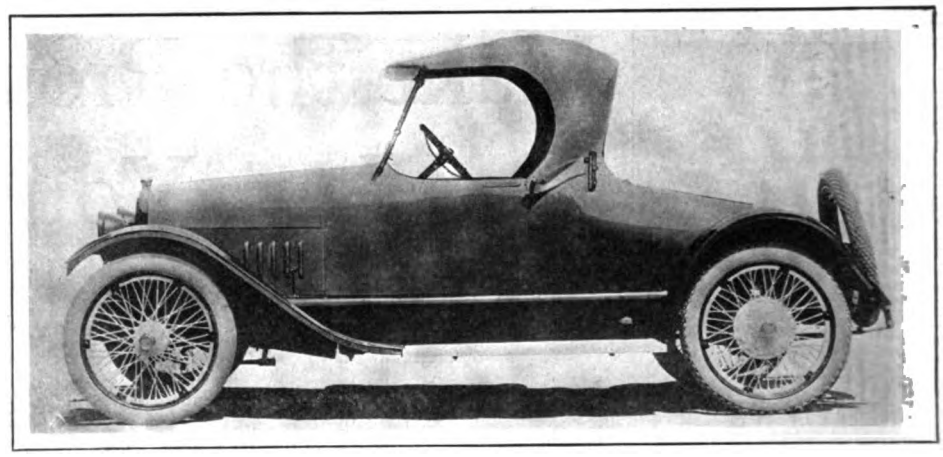
The Only Way

"Prospects have all sorts of ways for figuring out what car is good, but away back in their brains there is something that counts aside from bare facts.

"When you stand for your price, Henry, you take the only possible way of hammering into the prospect's noodle that your car is worth what you ask for it and is not being sold at an exorbitant price. That's why you lost a sale to me. You played Lorella King while the prospect wanted a Tessie Mulvihill."

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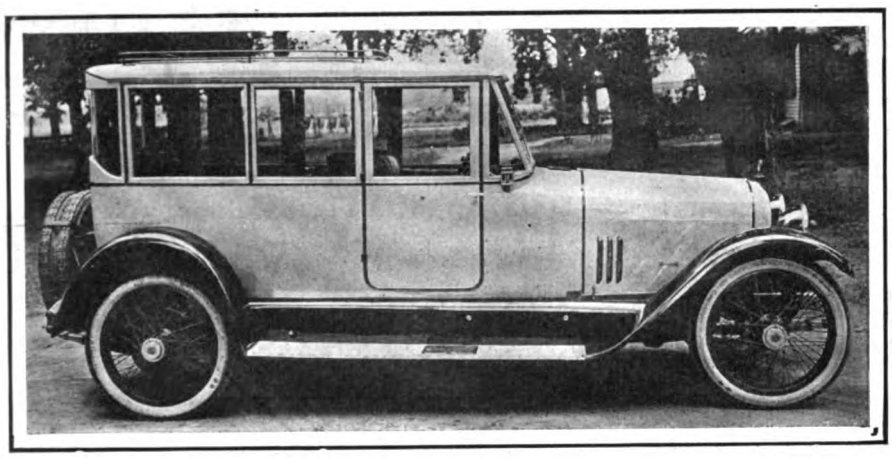
Three Attractive Bodies and a New Truck



DETROITER ROADSTER

(Right)

THE Detroiter Motor Car Co., Detroit, which heretofore has manufactured a touring car only, has added a three-seated roadster body to fit the same six-cylinder chassis, priced at $1,098. The lines are modern, with sloping hood and cowl, slanting windshield and sloping rear deck. At the rear is a large compartment for luggage and made exceptionally weather tight. The color and upholstery are at the option of the purchaser.



NEW MERCER LIMOUSINE

(Left)

NEW inside-driven Mercer limousine which is to sell for about $5,000. Front seats are divided to give access to the rear. Tiny side lamps are at each side of the windshield.

THOMAS 2-TON TRUCK

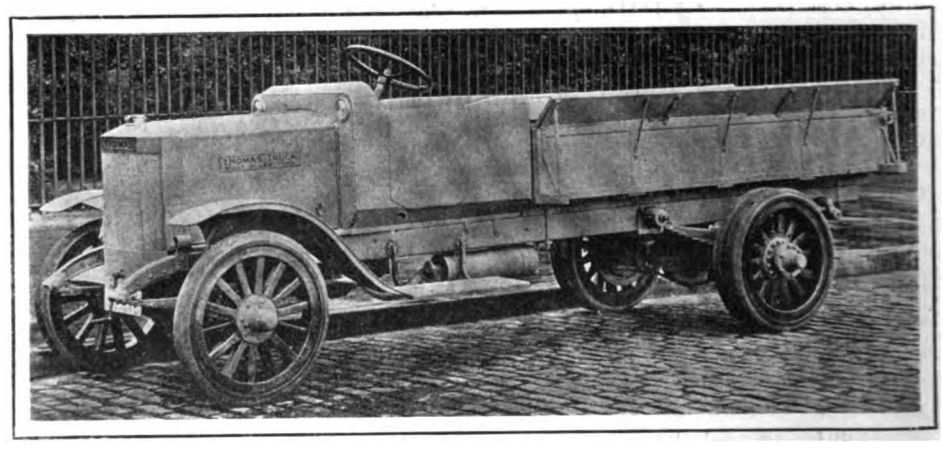
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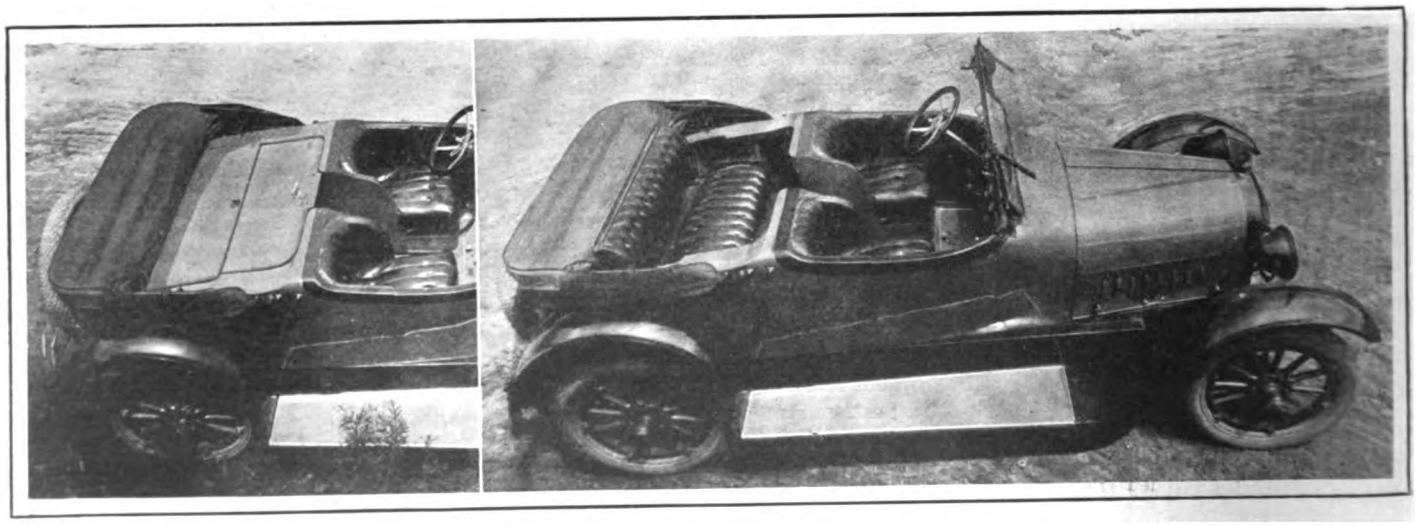
THE Thomas Auto Truck Co., West Fifty-sixth Street, New York City, was organized early this year by C. K. Thomas to make a ¾-ton, a 1-ton, a 1½-ton and a 2-ton truck. The last named is now completed and is shown in the accompanying illustration. The engine is a Buda four, 4⅛ x 5½, with Bosch fixed-spark magneto. There is a dry-disk clutch and a unit gearbox with three speeds, the rear axle being a Timken worm drive design. The wheelbase is variable to order, the standard length being 150 in. and the alternative 166 in.

ANDERSON 5-PASSENGER ROADSTER

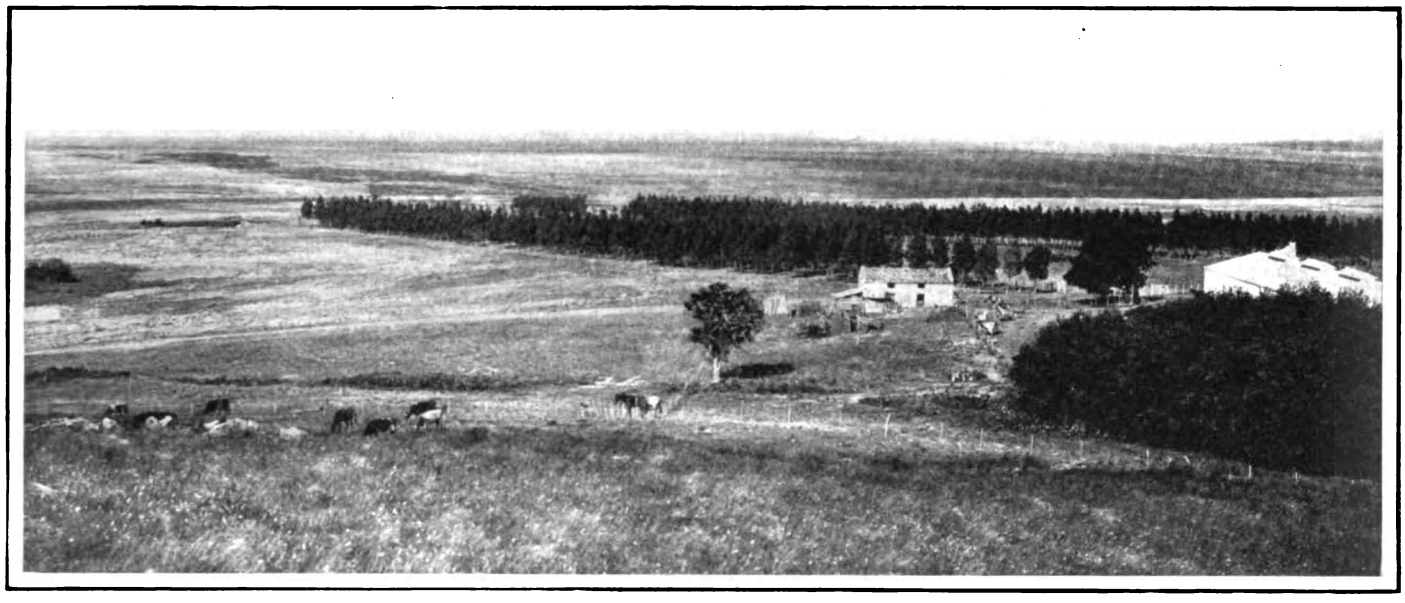
(Below)

AN innovation in the way of a five-passenger roadster body is the latest Anderson Six-forty-six model, which is produced by the Rock Hill Buggy Co., Rock Hill, S. C. The rear seat, which holds three, is so arranged that when not in use it folds over so as to form a flat deck. The entrance to the rear is through the front compartment, the front seats having an aisle between. The body was designed by Joseph A. Anglada, chief engineer, and a patent has been applied for. The outstanding feature of this line of cars, which was described a few months ago, is the equipment, which includes: extra rim, power tire pump, windshield, searchlight, electric cigar lighter, tonneau heater and Boyce Moto-Meter.





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Thousands of acres in the Argentine, undulating like our own West, are awaiting the U. S. A. motor car for the development of roads and the upbuilding of this wealth-yielding country.

Argentina Calls for the U. S. A.'s Young Men—But It Offers No Broadway

By David Beecroft

THIS story is the third of a series on South America by David Beecroft, managing editor of Motor World, who spent ten weeks on the southern continent, investigating the possibilities there for American cars. The car of the U. S. A.—for so the Argentine calls our country—is making headway, but our young men are needed. There is opportunity for them, but they must not go blindly. There are difficulties of language and business and social custom, but the effort is worth while.

BUENOS AIRES, ARGENTINA, June 30—We have told in the preceding two articles about the selling of expensive motor cars in Argentina some years ago and of the recent large-scale introduction of the cheap U. S. A. car within the last 2 years.

This week we shall look briefly at how business has been done by the dealers in the past and how it is being done to-day and must be done to-morrow.

The fact that there never has been a a meeting of motor car dealers in this city of 1,500,000 population and with 4500 motor cars and 4000 motor taxis will suggest that business has generally been of the individual type, too much self and no co-operation.

D. B. Richardson, who is head of the Studebaker business in South America and has as up to date a shop in Buenos Aires as you could find west of Chicago—or even west of New York—has declared that he is going to have a meeting of Buenos Aires motor car dealers and hopes to put that over this fall. He will deserve a Southern Cross if he is successful, for that spirit of cooperation is the thing the Argentine dealer needs. *He has never learned what co-operation means in selling motor cars. Knocking has been his major weapon.*

It's a Long, Long Way

It is a long way from the motor car factory in France, England and Germany to the motor car dealer in Buenos Aires. It takes you just 22 days to come by the best boats from New York to this city and if you get on poor boats you are several days longer. It is exactly the same distance from here to the factories of England, France, Germany and Belgium and a little further to Italy.

Further: Not over one or two of the big men in any U. S. A. motor car factory has ever been here. The same is true with regard to the European factories. In other words, the dealers here feel a long, long way off. They have complaints by the ton and you can scarcely blame them if they have made errors and if they have not their dealers' and jobbers' organizations such as the U. S. A. boasts.

Perhaps some of our U. S. A. dealers would be a little further back if it had not been that they were within long-distance telephone reach of the factory; if it had not been that they were within the zone of night or day telegraph tolls; or if they had not had the sales manager visit them once every three months, pushing more cars onto them or cutting down their territory; or if they had not had the opportunity of going to the Chicago, New York, Minneapolis, Kansas City, Denver or a few other of the annual motor car shows and getting full of the latest talks on salesmanship and just how to sell cars.

Has No Good Dealer Paper

Perhaps they would have been further back if they had been beyond the range of MOTOR WORLD *with its talks on better merchandising, better selling of acces-*

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sories, keeping cleaner shops and better business.

The Buenos Aires dealer has been outside the pale. He has been far away from all of these beneficial influences. He has known the factory only as a trouble source, sending cables collect when they should have prepaid the bill; sending cars that arrive at the end of the selling season instead of the beginning; sending coupes when only five-passenger touring cars will sell; sending 56-in. treads when the country wagons are all 60-inch; sending cars painted black when they have been ordered red; charging for this and charging for that; waiting three years to get an instruction book in Spanish so that those who buy the cars can actually read; and we might cite a score of other troubles that the dealer of the Argentine has of which the dealer in the United States has never dreamed.

Let us pity the Buenos Aires dealer if he does not measure up in car selling stature with the Broadway or Michigan Avenue expert. Let us feel sorry if he has not grown as has the dealer in Salt Lake City or Los Angeles.

The Business Differs

Running a motor car business in Buenos Aires is quite different from running one in the United States. To start with, more capital is needed. You have to pay for the cars when they are on board at boat at New York. It is then three weeks before they reach here and generally a week more before they are out of the customs. That means you have paid for your car a month before it reaches your salesroom. Then boats sail only once in two weeks or once a month, so that you must buy in relatively large quantities, otherwise you will be out of cars.

To buy quantities requires some money, so the Buenos Aires dealer must have a good deal of liquid credit at his disposal. You cannot operate on the shoestring principle, and this may be one reason why our U. S. A. factories so often tie up with large machinery houses that have plenty of credit and are very reliable. They may not be expert car sellers but they have the store and they have the money.

American Men Needed

It is generally conceded here that more U. S. A. business men and dealers will have to locate here if the sale of U. S. A. cars is to go ahead as it should. This information is really a chapter from the experience of those strong U. S. A. concerns in other lines that are well established here and are making a success of their businesses. It is this fact that has really prompted this series of articles.

Take such old lines as Singer sewing machines, Remington typewriters, National cash registers, General Electric, Westinghouse, Edison, International Harvester and a score of others, and they have practically all placed U. S. A. business men in charge and not a few other U. S. A. men in positions of responsibility.

The large packing houses have brought their managers and assistants and practically all heads of departments from Chicago. With these in charge it is not difficult to build up a competent organization. The National City Bank of New York has recently opened offices here, in Rio, in Montevideo, in Sao Paulo and in Santos Brazil and it, too, has placed its own managers in charge and has a good sprinkling of competent U. S. A. men in any of the departments.

Many examples could be cited along the same line in other businesses. This plan of manning establishments has been carried out by the large English and German houses. But they generally have gone further and in many instances have brought chief clerks from the homeland. Some of their best stenographers have been brought here. They have built up selling organizations very similar to what they have at home.

Must Send Americans

This is exactly what the motor car makers will have to do. The selling plans of the United States will have to be brought into the Argentine. They will have to be brought in by young men from the United States. Many of our factories will soon be opening branches in Buenos Aires. Our makers are already feeling that the dealers here are not sufficiently in sympathy with U. S. A. methods, and it is only natural that our makers should profit by the experience of the last ten years in establishing selling organizations at home.

To those young men who hope to come here—and there will be good opportunities for them—it will be essential that they come prepared. Spanish is the language spoken here. In this city there are not over 500 in the U. S. A. colony, but the English colony has 25,000, so that there are quite a few English speaking people. The rank and file with whom you sell cars will speak Spanish and nine out of every ten in your office force will speak Spanish.

You may have difficulty getting an English stenographer. Your telephone girl must be able to speak Spanish and perhaps English. Your salesmen will nearly all be Spanish. You may have one who can speak English. The head of your stock room will speak Spanish. The manager of your repairshop may speak Spanish or Italian. *You can readily see what you will be up against if you do not understand Spanish.*

The successful dealers here speak Spanish, and if they were not proficient in it at the start they secured the services of two or three high-class and dependable men who were masters of it as well as English. The majority of the largest motor car dealers here have one man who speaks English well. If two men are in partnership generally only one understands English.

It is quite possible to secure a competent organization here of native help. The Argentine is quick to "pick up." He is a good imitator, but you must show him. He will make a good salesman but must be told how. Then he must be watched very carefully. Eternal vigilance is essential. Many are not so reliable as in the United States. This imposes an extra duty on the young man who comes here from the United States to take charge of a business. He will be between upper and lower millstones if he has not a knowledge of the language or has not others on whom he can rely to the last word.

Studebaker Has Organization

Studebaker here has the same kind of selling organization as in Chicago or New York. The salesmen are all Argentines and practically all of them are Spanish. They are selling cars here just the same as in Indianapolis. The city is divided into zones and each has his territory. The plan is working successfully. To Ford and Studebaker go much of the credit for introducing the American system. General Motors has had representation here but the plan of selling has not been pushed as it has with the other two.

There is no difficulty in getting competent repairmen. Europe has furnished Argentine with hundreds and thousands of skilled mechanics. They are good workmen and are reliable. Frequently they are not so good at analyzing troubles in a car as in accomplishing the specific repair. The local Argentine frequently makes a good mechanic but not a good foreman. Show him how to repair a job and he will do the work well, but leave him alone and he may not know how to start.

Good Mechanics Available

There is no trouble getting all kinds of machinists here. The dealers and garagemen are generally better qualified and equiped for this work than in the United States. Here they are so far away from the factory that they feel the necessity of relying on themselves. If a bearing breaks they must either have a stock on hand or have the wherewithal to make a new one. They are generally protected in both ways. I have seen them regrinding races for ball bearings and then re-sizing the balls and re-sorting them. You find every grade of intricate repair being done, and you find the finest machinery from the United States and Europe in the garages and salesrooms. Repairs have been carried

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so far that in some shops they have repairmen who specialize on certain popular makes of cars, such as Renault, Benz or Panhard.

It would be quite unusual if quite a number of young men from the United States did not come here within the next few years. Young men are coming here on every boat to take places in other industries. Some of the largest hide-buying companies are U. S. A. firms and they are sending young men here to do the buying. Practically all of the buying in the cattle yards for Armour and some of the others is done by men who have been buying in Chicago, Kansas City and Fort Worth. The express companies have young men from the United States.

College Men Managers

The main work of the telephone companies is being handled in the same way. A Harvard or Yale graduate may be manager of the trolley system, the electric light plant or the water works. With this manning of interests closely related to the United States by our own young men it is only natural to expect that as our motor car industry grows we shall need our own young men. We need them to-day. We shall have more need for them to-morrow, and when the war is over we shall need them badly indeed.

The Climate Differs

Argentina is not as pleasant a place to live in as Seattle, New Orleans or Atlanta. It has a nice climate but there are not a few disadvantages. Looking at the brighter side first: The climate is hot in summer and very pleasant; it is cool in winter. Seasons here are directly opposite to those in U. S. A. Thus, in June Argentina is in winter while the United States is in summer. Christmas day here is generally one of the hottest of the year. December, January and February are the hot summer months, and the weather gets as hot as in St. Louis or Kansas City. In the winter you will wear an overcoat. There is no snow but some frost.

Social Life Not Pleasant

Looking at the social side of Argentine life, the picture is not so inviting. Argentine home life is different from that in the United States. There woman occupies a much lower level than at home. She is more isolated. She rarely walks on the streets of this great city alone. She is afraid of men making embarrassing remarks about her. So when she goes on the street a servant goes along. That makes her safe. If there is not a servant then one of her children goes and that too makes it safe. A young girl rarely if ever goes out alone. Two or

(*Continued on page* 19)



Photographs by Mr. Beecroft *SIX TYPICAL MOTOR CAR BUSINESS PLACES IN ARGENTINE REPUBLIC*

Top—The Cadillac salesroom, Cordoba, 1 day from Buenos Aires.
Center—The biggest accessory establishment in Buenos Aires.
Lower—The Overland establishment in Rosario, 190 miles inland.
Top—The Argyle dealer in Buenos Aires still has a 1911 car in the window.
Center—The Studebaker salesrooms in Rosario.
Lower—The "House of Bosch Magnetos" in Buenos Aires.

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Accounting and Business Systems



By T. W. Snead

Partners' Accounts

System Editor:

We are partners, about to start a garage, each receiving half and putting in half, I to borrow my half of the bank at 6 per cent for a year, payable in any amount each month. We will have accessories, Ford parts, wash-rack and repair department, and on a cash basis. Each will draw a salary each week for living expenses.

Would you kindly suggest how to open the accounts of each partner and handle them?—R. E. D.

Upon starting business as outlined in your letter, if the entire capital of the business was $2,000 and each partner was to contribute one-half of this amount, entries would be made as follows:

The $2,000 would be entered in the cash received column and under all other accounts on the credit side; $1,000 would be credited to partner A and $1,000 to partner B, giving the names of the accounts as "partner A proprietorship," "partner B proprietorship." I presume that partner B in borrowing the money from the bank would do so on his personal promise to pay, and therefore the interest expense would not affect the partnership in any way.

At the end of the month, the net profit, or loss, from the operations of the business would be carried in a profit and loss account, and at the end of the year this profit would be divided equally between the two partners. The salary for each partner would be charged to the expense of the company in the various departments in which the partners show the most activity.

If, however, either partner withdraws any money from the concern, this would be charged to his proprietorship account, thereby reducing his percentage of the net profits of the business, or either it would be loaned to him, upon which he should pay the usual rate of interest.

Entering Deferred Bills

System Editor:

I would like instructions how to enter a bill of gasoline which I will not pay for until the first of the next month, and then show the items as they are paid and how entered.

In the statement of Profit and Loss, Table 1, I would like a practical example of how things would work out if one department did not show a profit.

K-E-B-O Garage.

Bar Harbor, Me.

At the end of the month you would take all of your bills for gasoline purchased during that period and after same had been checked up for deliveries, expenses, etc., the total amount would be entered on Form 2 as follows:

The debit or charge would be under stock accounts and be a charge to the gasoline stock. Your credit would be under all other accounts and would be to accounts payable, Blank Oil Co. Then, in the rear of the binder you would carry sheets similar to your accounts receivable sheet, with the exception that this would be an account payable, and the amount, instead of being entered on the charge side, would be entered on the credit side and the name of the oil company at the top of the sheet.

We will now suppose that it is the first of the next month and we wish to pay this account—a check would be drawn on Form 2 and the amount would be entered under "all cash paid." The debit would be under "all other accounts" to "accounts payable, Blank Oil Co." This amount under accounts payable would then be charged on the sheet in the rear of the binder, which charge would offset the credit that you made the previous month, wiping out this account.

In the profit and loss table, when one department showed a loss instead of a profit, this would be shown in red figures and would be deducted from the total profits of the other departments. In other words, as follows:

Car Dept. made.....	$200.00	profit
Repair Shop.....	100.00	"
Accessory Dept.....	50.00	"
	$350.00	"
Less: Loss Storage Dept.	50.00	"
Net Profit.....	$300.00	

Gas Record System

Editor Motor World:

A short time ago you published a card to be used for gasoline selling which, we recall, was very good. Would you oblige us by securing a sample of this card and forwarding same to us with prices?—Republic Sales Co., 214 Penn Street, Reading, Pa.

We have no samples of the card you mention, nor have we made any for sale, so cannot quote prices. Your local printer can produce these cards for you at a reasonable figure; 1000 would certainly not cost more than $2.

Fig. 1 shows a similar card to the one you mention, but it is more complete. Any recording system to be of any value must be complete. Every item entering into the transactions must be considered and a check provided for the resulting conclusions.

The record extends from 7 a. m. one day to 7 a. m. the following day. This period is divided into day and night shifts, and the shifts are kept separate.

The foreman records the pump indicator reading at the start and finish of his shift. The difference is the amount pumped during the shift, and should agree with the sales record.

The amount actually in the tank is measured at the time the pump readings are taken. The amount in the tank at the start plus that received during the day, minus what is in the tank at the end of the shift, gives the quantity taken from the tank. The method employed here is shown under the item "Tank Measure."

The sales record should not only show the number of gallons sold to customers but also the amount used in the garage. The pump man should be under orders not to pump to employees unless he has a shop requisition signed by the foreman. The sales slips should be totaled at the end of the day, the amount used in the shop accounted for, and the whole tabulated under the sales record.

At the end of the shift the foreman should check the tank measure footing with the sales record footing. If these do not agree the mistake may be located

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REPUBLIC SALES CO.
Reading, Pa.
GASOLINE RECORD
7 a. m., Aug. 1, to 7 a. m., Aug. 2

DAY SHIFT		NIGHT SHIFT	
Pump Readings		**Pump Readings**	
Counter, 6 p.m.	4000	Counter, 7 a.m.	4700
Counter, 7 a.m.	3000	Counter, 6 p.m.	4000
Pumped	1000	Pumped	700
Tank Measure		**Tank Measure**	
Tank, 7 a.m.	5000	Tank, 6 p.m.	4500
Bought	500	Bought	
Total	5500	Total	4500
Tank, 6 p.m.	4500	Tank, 7 a.m.	3800
Sold	1000	Sold	700
Sales Record		**Sales Record**	
Sold, 7 a.m. to 6 p.m.	980	Sold, 6 p.m. to 7 a.m.	692
Shop, etc.	20	Shop, etc.	8
Total	1000	Total	700
Check		**Check**	
Tank measure	1000	Tank measure	700
Sales record	1000	Sales record	700
Short or over		Short or over	
Signed (Day Foreman)		Signed (Night Foreman)	

SUMMARY FOR DAY

Price paid—24c. Sale price—28c.

Gasoline	Gallons	Cost	Selling Price	Gain
Sold	1672	$401.28	$468.16	$66.88
Shop, etc.	28	6.72	6.72	.....

Fig. 1

by comparison with the pump readings. If the pump reading agrees with the sales record incorrect measurement will be indicated, and the stroke of the pump should be adjusted.

If, however, the pump reading and the tank measure agree and the sales record differs, the fault will be that of the pump man. He has either given gasoline without a requisition slip or, in the case of sale, has neglected to record the transaction.

The record would be incomplete if a summary for the day were not taken and the results entered in a book kept for that purpose. The daily cards need only be retained for a month back, as the daily record has all information that should be kept and the monthly report may be made from that.

Handling Bank and Petty Cash

System Editor: In your system kindly advise me how you handle the daily deposits to the bank and how the petty cash is balanced daily.

In posting to the customers' accounts and also to accounts in the general ledger, do you show a folio number? I do not see any columns for check mark or folio on Forms 1 and 2.—El Paso Auto Sales Co.. El Paso, Tex.

If you will refer to the system booklet, a copy of which we are inclosing, you will note on the debit side of Form 1 a column headed All Cash Received. As this sheet is a daily record, the total of this column for any one day should be deposited in your bank and the total amount as shown in this column should show on your bank book.

In regard to petty cash: If you carried, say, a petty cash account of $15, this can be balanced at any time by simply adding the items in the petty cash box, which should at all times amount to $15. In other words, if on Monday, the 27th, you had $15 in cash and on that day you spent $1 for, we will say, carfare, you would put a memorandum in the box saying "Carfare, Gen'l Dept., $1." At the end of the day you should have $14 in cash and $1 expense memorandum, making a total of $15.

You would continue to do this until you had used, we will say, $14 of your cash. You would then take the $14 worth of expense memorandums and enter them on Form 2 in a lump sum, charging on the debit side of Form 2 each department for its own particular expenses, making a total of $14.

Your credit entry would be your check which you would draw to the order of petty cash. This check, after being cashed at the bank, added to the $1 that you had left in your petty cash drawer, would again bring the total up to $15, and so on indefinitely.

In posting to the customers' account and to accounts in the general ledger, instead of using a folio number you post by dates. For instance, if you charge John Jones for a spark plug to-day on Form 1, this amount will be posted to John Jones' account as of Aug. 10, 1916, on Form 3, postings to general ledger sheets to be made once a month at the end of the month, after recapitulation of Forms 1 and 2.

Argentine Calls to the Young Man

(*Continued from Page 17*)

three may go together, but they generally go with their mother.

Read This, Boys

Here a young man rarely calls on a young lady at her home unless he intends to marry her soon. If he does the call is made with the mother or other members of the household in the room all the time. If a young man is seen on the street with a lady it is immediately assumed that they are engaged and will soon be married.

This social custom is a relic of Spanish life and is not conducive to the general good. As a result of this, young men from the United States find life quite weary at times. They find it practically impossible to get into Argentine homes. There is a great barrier between the young man who is not an Argentine and the Argentine home, which makes it lonesome, and many of the young U. S. A. men tire of it. The theater life is not to be compared with that in our second or third rate cities at home. True, the operata is the finest south of the equator and nearly as good as in New York City, but it is very expensive, too expensive for the young man here working on salary.

Breaking Down the Barriers

These and a few other disadvantages have to be overcome by the man from the United States. *They are being overcome.* Men are much better able to cope with the situation here than U. S. A. women. Very frequently you meet the man who likes the city but the woman refuses to live longer under this regime.

This situation is very unfortunate and has already hurt U. S. A. trade here. *It is being mastered.* Conditions have changed very much in the last few years. The next five years will make great changes. The motor car itself is bound to be one of the strongest factors in introducing new social customs.

I have purposely painted the picture as nearly as possible in its true colors. There is no use making it a bed of roses only to discover it a hard stone road of business life.

Argentina needs our young men in the motor car business. Our country is growing into export fields and must be prepared to tread those paths of developing business that citizens of other lands have trod.

The possibilities are here. There is much money for the dealer who gets all Argentina for any one of 20 or 25 U. S. A. cars, not to mention light trucks and heavy trucks, all of which must come into more general use here.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 810) WRIST PIN REMOVER

The pistons of eight- and twelve-cylinder motors are small and it is difficult to remove the wrist pin without injury to the piston. This is particularly true with pistons made from aluminum composition. The remover shown herewith is constructed of cast-iron and permits a powerful leverage to be applied to the pin with no attendant damage to the piston. Wrist pins may be removed and new ones fitted without taking the connecting-rod from the engine.—Cadillac Automobile Co., Boston.

(No. 811) BRAKE BAND GAGE

Brake bands are frequently sprung out of round, and although dragging at certain points are too loose for effective breaking action. The high and low points may be located by the aid of the gage shown herewith. The hub may be made from cast-iron, bored to fit the axle; the arm and pointer being made from soft steel rod. The wheel is removed from the axle, the gage slipped in place and rotated. The high points are marked and the band bent back to shape. A similar gage may be made for cars having floating rear axles.

(No. 812) LATHE DRIVEN TIRE PUMP

A small tire pump, of the type commonly installed on an automobile motor, may be used to supply compressed air for the small garage. The pump is mounted on the tail stock end of the lathe and is driven through a gear fastened to the lathe lead screw. This latter gear is the one supplied with the pump for attachment to the motor, and its split construction permits it to be readily bolted to the lead screw.—William Cook, 3 High Street, Brookline, Mass.

(No. 813) CONNECTING-ROD TESTING

Ordinarily a connecting-rod testing set is only good for engines of one model. The use of self-centering mandrels in the manner shown provides a testing set that may be used on many makes of motors. The threaded mandrils are turned from soft steel, case-hardened and ground. The cone washer B is made in the same manner and ground down until its diameter is the same as that of A. The mandrils are placed in the bearings of the connecting-rods and the nuts tightened until the cones come to a bearing all the way around. The connecting-rod is then rested on V-blocks, supported on a surface plate. If the bearings are in alignment, the weight will be equally distributed on each block, but if any freedom is noted the connecting-rod must be bent or twisted until equal distribution is obtained.—Packard Motor Car Co., Boston.

YOUR IDEAS

If you have been helped by this department, you may help others by contributing your own ideas. You have been thankful to those that have given their ideas, and you should reciprocate. Never mind about literary style or finished sketching. Forward your ideas in the rough; we will do the finishing.

(No. 814) PORTABLE TOOL BOX

A portable tool box, having leather loops for holding tools and parts, is illustrated. The loops are made from a strap and extend around the inside and outside edge of the box. Not only are the tools convenient to use, but the desired tool may be located at a glance.—Stanhope Forge Co., Boston.

(No. 815) LAPPING RINGS

New rings may more readily be fitted to the cylinder by the use of the dummy piston illustrated. The top of an old piston is cut off, leaving only one ring groove; then the bottom is cut away slightly, to permit the wrist pin to be used as a handle. The ring to be fitted is placed on this piston, the cylinder is smeared with Prussian blue, and the piston inserted. The piston is then removed and the high spots taken down with a file or by scraping.—G. A. Wadman, J. W. Maguire Co. (Pierce-Arrow), Boston.

(No. 816) PORTABLE REPAIRSHOP LAMP

An electric light may be placed and held in almost any position by standard shown herewith. The base is a wooden box filled with concrete, supported on castors and carrying the iron pipe upright. An adjustable clamp holds the arm to the upright and permits the lamp to be extended over the work or dropped to shine on the under parts of the car. —Henley-Kimball Co. (Hudson), Boston.

(No. 817) ADJUSTABLE MOTOR STAND

This engine stand is made of 2-in. angle iron riveted together. The cross-members are hinged at the center and may be locked in an inclined position. A motor of any width may be accommodated, as the lengthwise members may be bolted in any position. The construction of the stand does not permit the engine to be completely turned over. It may, however, be swung down to an angle of about 60 deg., permitting free access to the crank bearings or a more easy position in grinding valves.—Stanhope Forge Co., Boston.

(No. 818) VALVE AND SPARK TIMING

Ignition and valve timing on inclosed flywheel motors is greatly facilitated by the device illustrated. The bushing holding the cross-member is made of an old spark plug, and acts as a guide for the vertical rod resting on the piston. The pivot supporting the pointer is placed at ¼ of the distance of the rod to the scale, and the travel of the piston is made twice as large on the scale. In valve timing, the piston is placed in the position that it is desired to have the valve open and the camshaft set. A spark gap held in a fiber washer provides a means of timing the ignition; the scale and pointer being used to determine the position of the piston as before. With L- or T-head motors the rod may be offset to rest on the piston.

(No. 819) MOTOR COOLING TANK

After the motor has been overhauled it is often desirable to test it out on the stand. Much damage may be done, even in a short run, if some method of cooling is not provided. A 5-gal. can, mounted on a wooden stand and provided with suitable hose connections, offers a handy solution. Connections may be readily made or broken and the thermo-syphon cooling is sufficient for an ordinary test run. — Henley-Kimball Co. (Hudson), Boston.

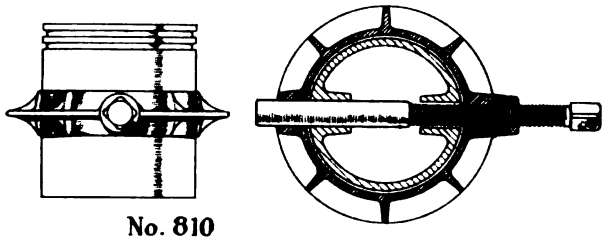
(No. 820) EXTENSION BIT

Clean holes, for the installation of instruments on the instrument board or dash, may be cut by the adjustable bit illustrated. The shank is made from soft steel, with the point case-hardened, and the upper end squared and tapered to fit a bit-stock. The arm and knife should be made from a good grade of tool steel. —Henley-Kimball Co. (Hudson), Boston.

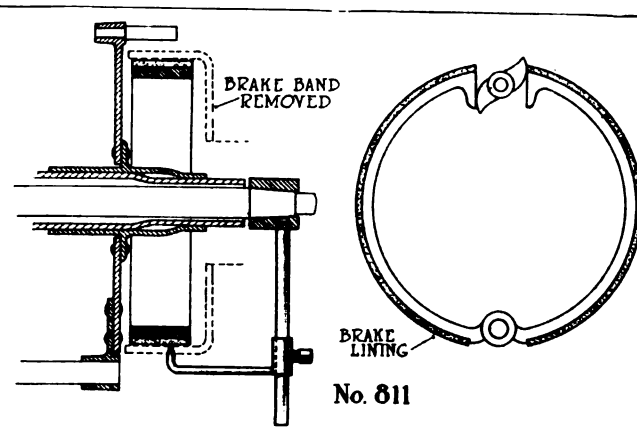
(No. 821) CASE HARDENING

The durability of all fittings and small tools made from soft steel can be greatly increased by the formation of a thin case of hard steel on the outer layer of the piece. Such a layer may be made by heating the part to a cherry-red heat and sprinkling it with potassium-cyanide. The cyanide will fuse and flow over the entire surface, changing the outer layer of the metal to tool steel. The depth of this layer depends largely on the time the heat is held after the cyanide is applied, from 1 to 2 min. usually being sufficient. It should, however, be understood that the case obtained from the above treatment is very thin and is not suited to parts that must be ground to a finish or parts that are to be subjected to much wear.

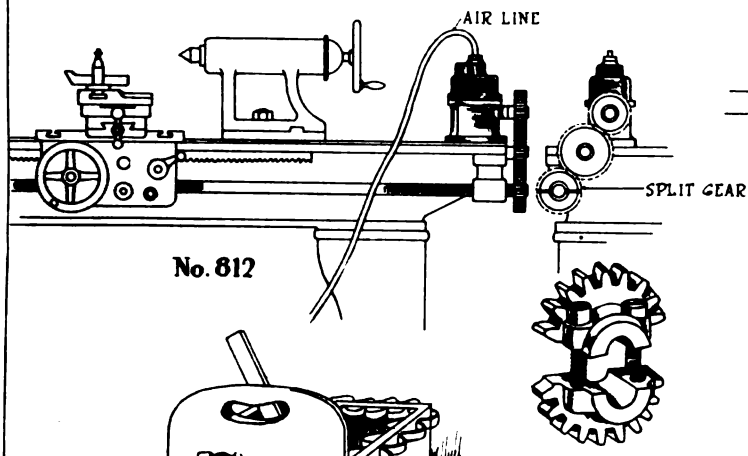
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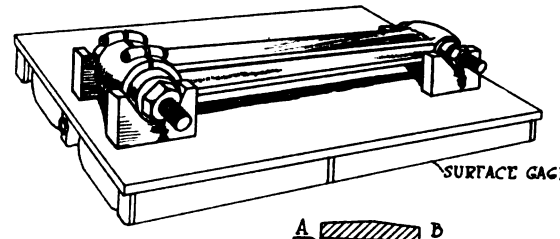
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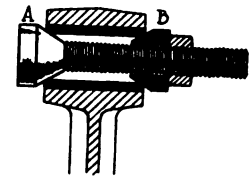
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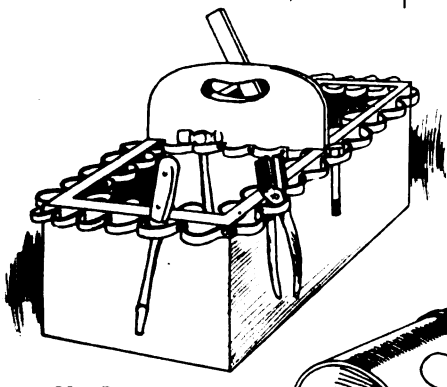


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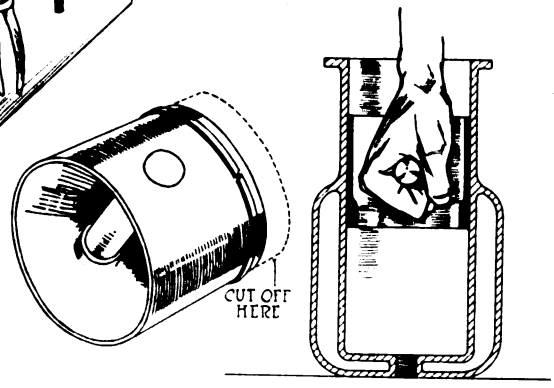


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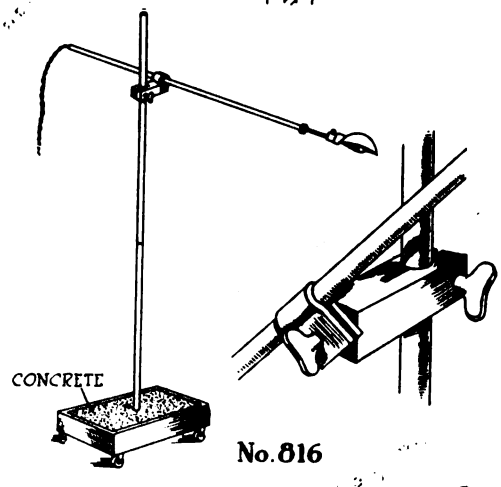




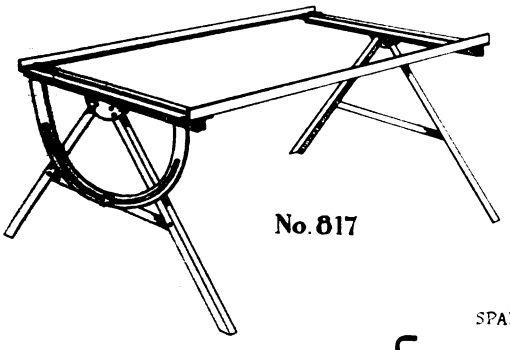
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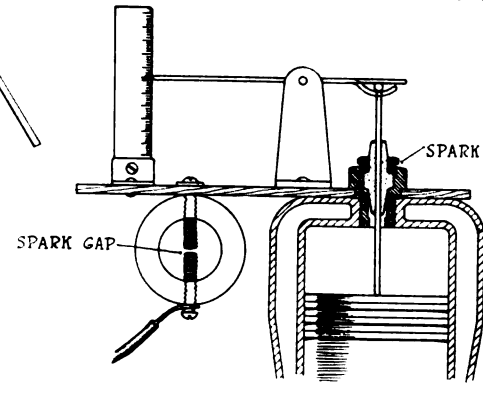
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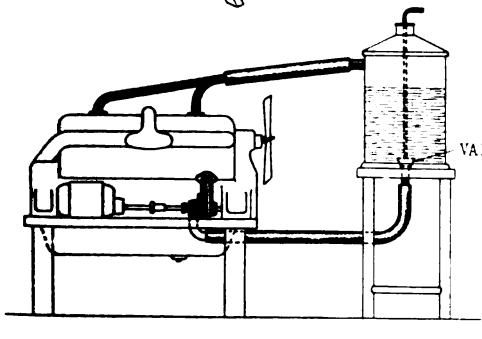
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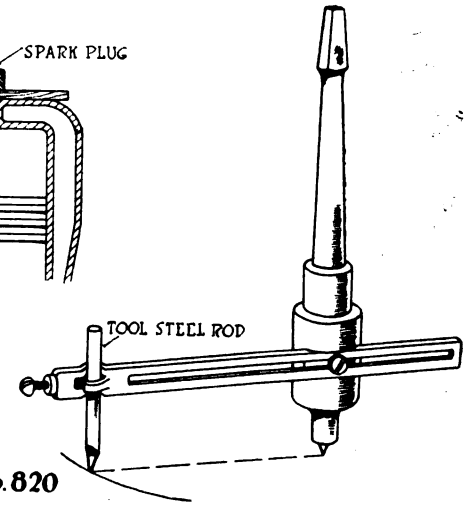
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FIREPROOF GARAGE

Figs. 1 and 4

A garage with many points to recommend it is being completed by Charles H. C. Tiffany, Poughkeepsie, N. Y. First, no elevators are used; second, there is a salesroom for cars and a separate store for accessories; third, there is an apartment on the third floor for the owner and his family; fourth, the building is light and airy and there is no waste space.

The building is situated near the center of the city and on the main road between New York and Albany. It is a concrete and steel structure consisting of three stories and basement, and measuring 53 x 174 feet.

The accessory store and salesroom are situated on either side of the entrance, and the rest of the space on this floor is used for car storage. On the second floor, above the accessory store, is a stockroom for accessories, and above the salesroom is a private office and a ladies' room. The full width of the front of the building on the top floor is the owner's apartment.

The remainder of the two upper floors has not been completed and will not be until this space is required. At this time it is planned to build a ramp connecting these two floors with the ground. The beginning of the ramp, as indicated by the accompanying drawing, will be at the right of the building and will run outside of the building to the second floor. A driveway will extend across the second floor, and the ramp to the third will slope up towards the front of the building.

An unusual feature of this garage is that the distance between the floors has been made no greater than necessary to accommodate the largest limousine, or about 9 feet. Thus the total height of the building is reduced, material is thereby saved, and the length of the ramp and the amount of space it takes up is minimized. The slope of the ramps will be about 13 per cent, or 3 per cent more than the slope of the ramps in the new A. C. A. garage in New York city. The width of the ramps will also be made the minimum, probably 7 feet.

In addition to the front entrance, which is wide enough to accommodate two cars, there is a side entrance to the ground floor through a driveway from a side street. This is nothing more than a ramp and it has a slope of 13 per cent.

Entrance to the repairshop, which is in the rear of the basement, is also through this side street, the driveway from the street to the shop sloping down at a slight angle. The shop is 78 feet long and the full width of the building. A bench is arranged along the rear and the more intricate repairs are done adjacent to this bench. The machine tools, consisting of a lathe, drill press, milling machine, arbor press and speed drill, are situated in one corner of the shop, separated from the rest of the room by a grating.

To guard against fire the heating plant is placed in a small building to the right of the repairshop. Steam heat is used throughout.

One interesting feature of the accessory store is the use of the wall, separating it from the entrance, for the display of goods. This partition is entirely of glass, and since gasoline and oil pumps are located in the entrance, the goods so displayed are noticed by every person who enters.

The arrangement of gasoline and oil pumps is particularly neat and convenient. There is a recess in the wall at either side of the door leading from the accessory store to the garage entrance. In one of these is the gasoline pump and in the other three oil pumps. Above the gasoline pump is a glass cupboard with a padlocked door, in which is contained emergency accessories, such as Prest-O-Lite, batteries, grease, oil and spark plugs, and the purpose of this is to allow the night man to sell these necessities without running the risk of giving him access to the main store.

CONCRETE OR TILE

Editor Motor World:

I am thinking of building a new garage here and would like to have your advice as to what you think would make the best building, solid concrete or tile for the walls. Where can I get cement in carload lots at wholesale prices? I can use about two carloads of cement. —Star Garage, Kinmundy, Ill.

Hollow tile is cheaper than brick and equal to it in every way. It is fire-proof, and is a better protection against heat and cold than concrete. Just how much cheaper it is depends on local conditions and an estimate would only be misleading. Any cement manufacturer will be glad to quote you prices on two carloads of cement.

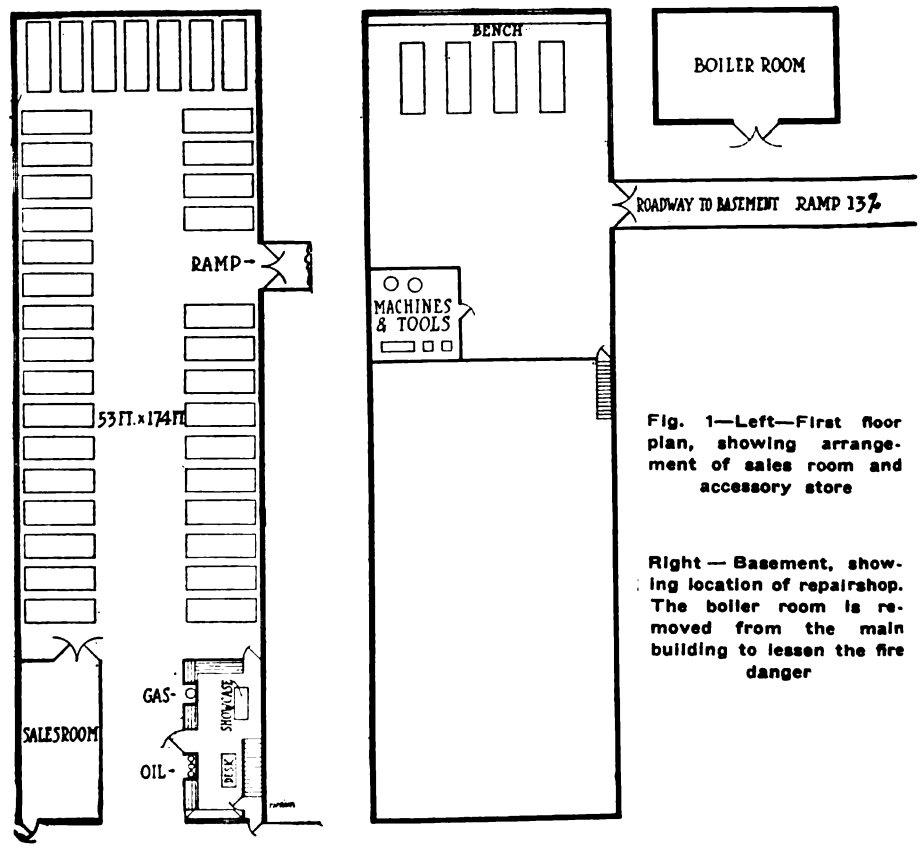


Fig. 1—Left—First floor plan, showing arrangement of sales room and accessory store

Right — Basement, showing location of repairshop. The boiler room is removed from the main building to lessen the fire danger

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The wall should be 8 in. thick, finished inside and out with a concrete plaster. Care should be taken to secure a good mason for the work. Not until the mortar in which the tile is laid is set and thoroughly set, should the plaster be applied. The outside layer should have a waterproofing compound incorporated in it.

Lock hollow brick might be substituted for the tile unless the freight charges are so high as to make this material uneconomical. These bricks are like ordinary ones in appearance and consequently no plaster finish is required.

GARAGE AND SALESROOM 100 x 200

Figs. 2 and 3

Editor Motor World:

Am contemplating building a garage and salesroom and I would be glad to get any plans and suggestions that you might be willing to give.

The ground is 100 ft. wide, fronting north, and 200 ft. deep. Nothing joins this on either side, having three streets and an alley. My plans are a 30 x 40 salesroom on the northeast corner for cars, supplies and office. Immediately in the rear of this is a ladies' rest room and in the rear will be the garage proper with an exit on the east side, an important street. There also will be two entrances on the north. I plan to partition off the rear for repairshop and washrack, which would be about 25 x 100, and have the main entrances to this from the rear.

My plan is to have an all plate glass front and to extend the glass along the east of the salesroom for a short distance. No doors on the west; nothing but high windows.

Would be glad to hear from you as to the advisability of the salesroom, supplies and office altogether, and how to best arrange. Also gasoline tanks, air, etc.—H. L. Simpson, Gainesville, Tex.

Fig. 2 provides for the storage of about eighty-five cars, but the arrangement is rather crowded. Furthermore, the layout of showroom, accessory store and so forth is not all that could be desired. Fig. 3 provides for only about seventy-five cars, but is a much more attractive arrangement. We think both these plans are better than the one suggested by you.

The wash rack is placed in the aisle in both plans. If, however, you have very much work to do by day, of course it will interfere with cars being moved in and out.

It is better to have the accessory store and showroom separate. Putting these two departments together is a disadvantage in that the noise in the accessory store distracts the attention of the salesmen and prospects and it is hard to make a very attractive looking showroom and still have one side of it filled with accessories. The two departments look better and may be run more efficiently when they are separate.

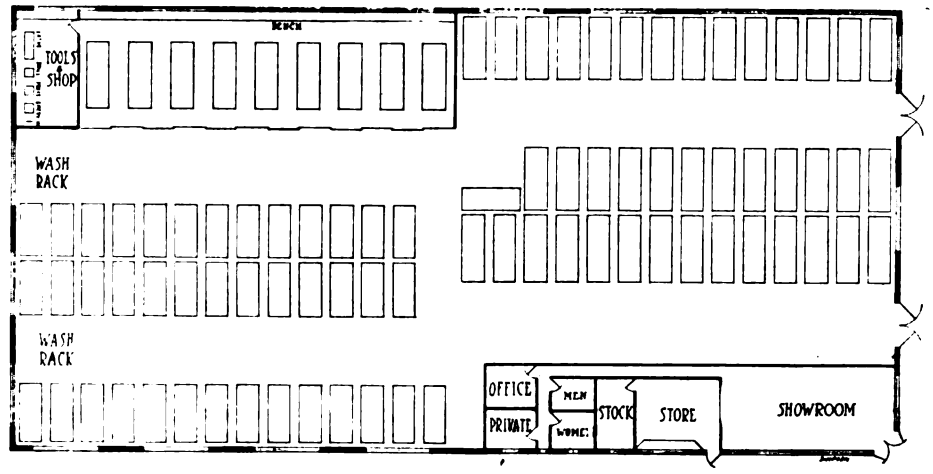


Fig. 2—This arrangement allows 85 cars to be stored, but is not as desirable as the one below

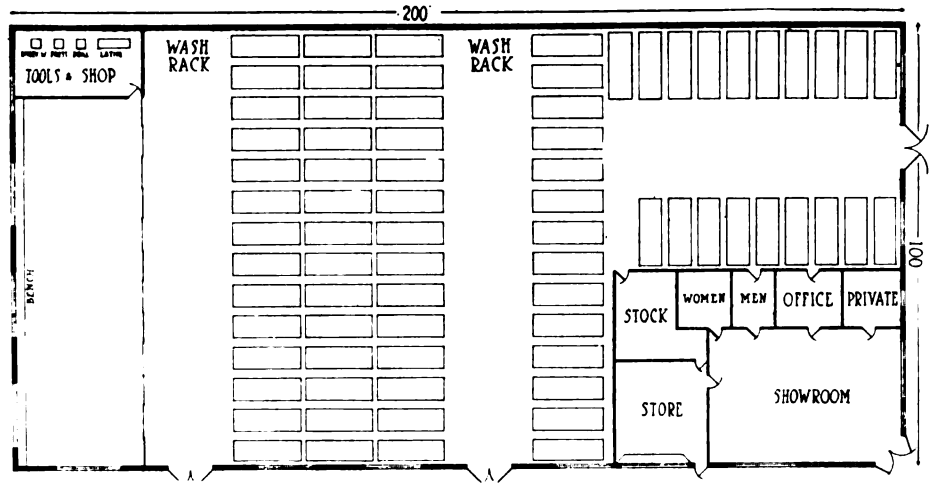


Fig. 3—A more attractive and convenient arrangement of the showroom and repairshop than that shown in Fig. 2. About 75 cars may be cared for

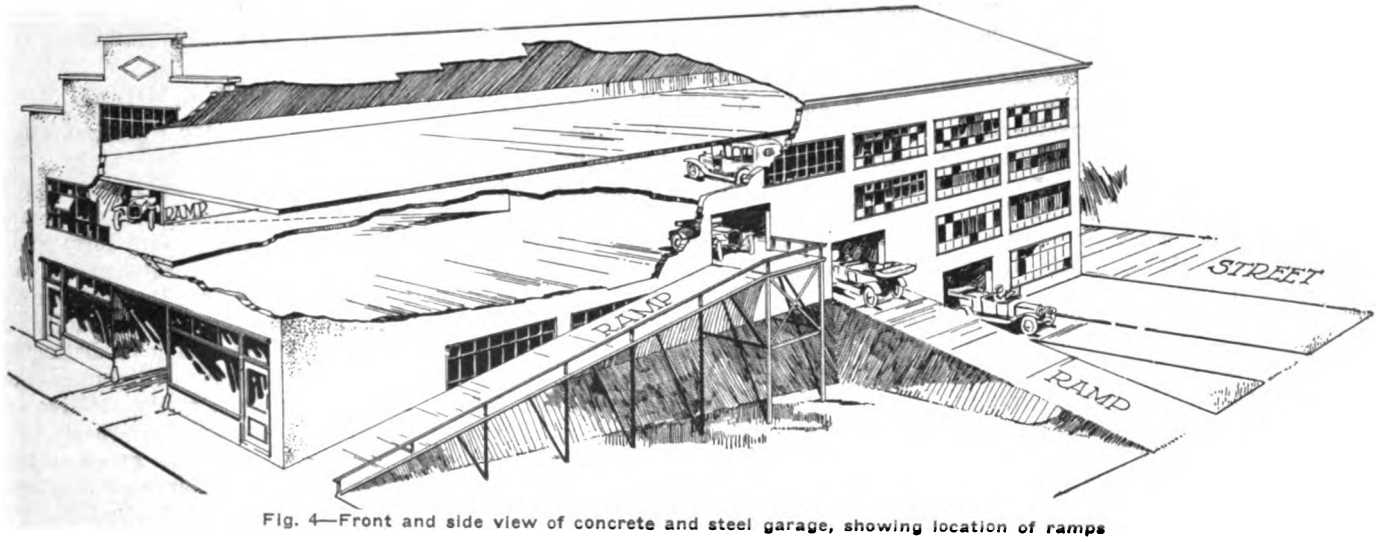


Fig. 4—Front and side view of concrete and steel garage, showing location of ramps

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Accessories & Supplies



PORTABLE FLOOR CRANE

The United Engine & Mfg. Co., Hanover, Pa. PRICES: No. 66, 1-ton, 6-ft. 6-in. lift, 33-in. overhang, $64; No. 76, 1-ton, 7-ft. lift, 33-in. overhang, $66; No. 80, 2-ton, 7-ft. 6-in. lift, 36-in. overhang, $82.

A portable, hand-operated floor crane having the high lift and deep overhang required in repairshop work. A heavy cast-iron base mounted on truck wheels supports the light steel superstructure carrying the hook, chain and drum. Because of the heavy base and light upper structure the center of gravity is very low, preventing top-heaviness and permitting a high lift. The U-shape of the base allows the crane to be placed in any desired position about the car and is narrow enough to pass between the wheels.

NEW GREENFIELD TAP

Greenfield Tap & Die Corporation, Greenfield, Mass.

The Gun tap is so made that it cuts with a shearing action, curling the chips ahead of the cutting edge and preventing clogging. The cutting edges are ground at an angle at the point, permitting the tap to cut freely and make clean, sharp threads. The body of the tap has no cutting action, only serving to hold the work true to the lead. The taps are made with two or three flutes only, shallow so that the tap is nearly as strong as the solid stock. It is claimed that chipping is confined to the cutting edge, which may easily be reground. Regrinding may be repeated until only two or three full threads are left, it is said, and will retain its cutting size to that limit.

MARMON ENGINE STAND

Nordyke & Marmon Co., Indianapolis. PRICE, engine stand, $105; rear axle stand, $45.

These two stands are designed for the new Marmon and are used throughout the Marmon factory with such success that it has been decided to furnish them to dealers. The engine stand is mounted on four wheels, so that it can be readily moved. The engine can be turned into any position and completely assembled or disassembled while on the stand. The rear axle stand may be used for all rear axle work, as it permits the complete building up or tearing down of the rear system. The arm extending from one of the uprights has a spring arrangement by which one side housing is placed against the center piece of the rear axle when the other side housing is mounted above, so that all three pieces of the axle are held in position while they are bolted together.

AUTOMATIC SPARK ADVANCE

Automatic Spark Advance Co., Monadnock Building, San Francisco.

The spark is automatically advanced by the centrifugal action of four balls. The driving and driven members of the coupling are constructed so that there are four V-shaped compartments, in each one of which is a ball. One side of the compartment is part of the driving member and the other part of the driven. As the speed increases, centrifugal force throws the balls outward, and forces the sides of the V's apart, thus advancing the spark. It is said that it may be installed in place of the usual coupling between the pump and magneto and will fit any standard magneto.

MAJOR'S SPRING LUBRICATOR

Major Mfg. Co., 461 Pearl Street, New York. PRICES: Per set of four, Ford, $12; runabout or five-passenger, $20; seven-passenger, $25.

A combination dust boot and lubricator for leaf springs. It is a waterproof, oil-tight casing lined with felt and laced over the leaves of the spring. The felt is saturated with oil, and the motion of the spring draws the oil between the leaves. All grit and water are excluded, and the constant supply of oil promotes easy riding and reduces spring breakage.

COSMO TIME STAMP

A. D. Joslin Co., 221 West Erie Street, Chicago. PRICE, $7, plain dial.

Stamps the time-card with the time at the beginning and end of the job, giving the elapsed time accurately. A small metal case holds the watch and carries the stamp indicating the day, hour and minute. Four different models are made. Model A has a 12-hr. dial, stem winding and setting; model AA is the same, except that it has key-wind; model B has a 24-hr. dial, as has the model BB, the former being stem-wind and the latter key-wind. This time system promotes efficiency and furnishes the repairman with evidence that cannot be disputed.

LAMINATED WOOD WHEELS

F. S. Merrill, Amesbury, Mass. PRICE, $175 per set of four, painted and finished.

A wheel of laminated wood, the wheel appearing as a solid disk, like a pressed steel wheel. The wheel is built up in a very ingenious manner. Wood is cut into triangular pieces, so that a number of triangles put together make up a circular sheet of wood. Several such circles are laid on top of one another, but the centers or places where the peaks of the triangles meet are not on a single center line. Suppose there are six layers of wood, then the center points of the six triangle assemblies will be spaced equally apart. Actually the points are arranged around a small circle, so that if a nail were driven through each center the six nails would be six points on a circle. The layers of wood are consolidated by heavy pressure. The principal claims for the new wheel are immense strength, moderate weight and handsome appearance, and lends itself admirably to decorative painting. In natural wood it looks well, having none of that heavy appearance which often characterizes a disk wheel of steel.

PRIVATE GARAGE HEATER

W. A. Schleit Mfg. Co., Inc., Syracuse. PRICES: $35 to $75, depending on the size of the garage.

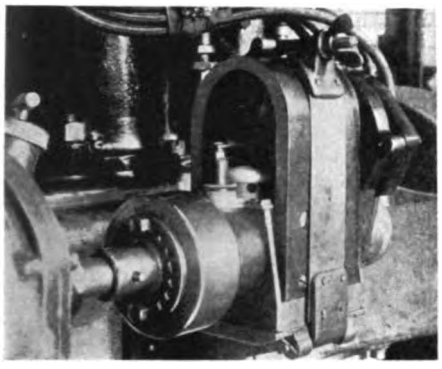
The Wasco is a hot-water heating system designed for the private garage. The outfit consists of a cast-iron hot-water heater, one-piece radiator and hot-water cylinder and piping cut to fit. It is equipped with an automatic regulator designed to give an even heat under varying climatic conditions. The heater burns either hard or soft coal of pea, chestnut or coal size. Heaters are built for garages housing from one to six cars, the small, single-radiator system being suited to the 10 x 12-ft. garage.

STEEL MOTOR WHEEL

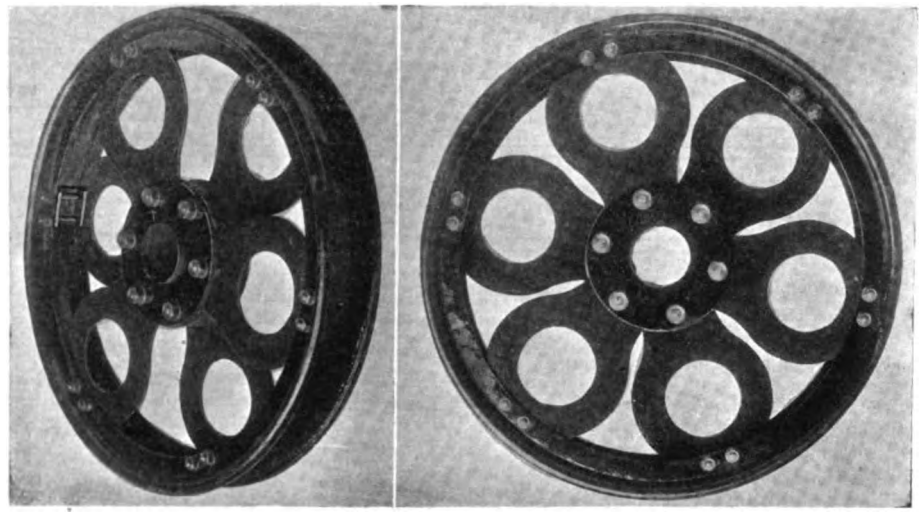
G. W. Morrison, 1170 Broadway, New York.

A steel wheel, styled the Blakoe double trefoil, stamped from sheet metal and designed to accommodate any form of demountable rim. The side plates are bolted to the hub and to brackets in the felloe, and the wheel may readily be taken apart. The wheel has a distinctive appearance and a look of lightness that is a marked contrast to the massive appearance of the solid disk wheel. The lateral strength is not as great as that of a wire wheel, but compares favorably with that of a good wood wheel.

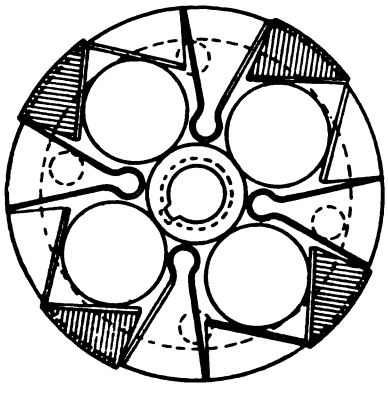
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Automatic spark advance as attached to a magneto



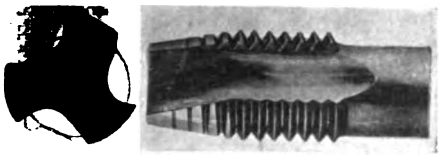
Left—Side view showing method of attaching the spoke-plates to the hub and felloe. Right—Front view showing the light and pleasing appearance of the wheel



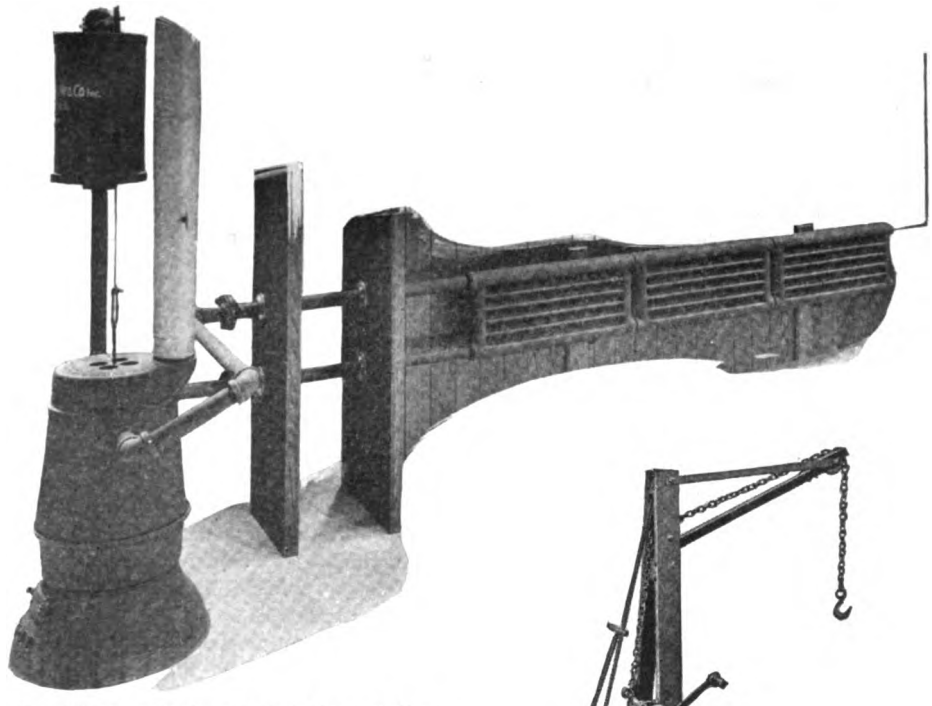
Cross section of the governor on the automatic spark advance. The centrifugal force of the balls in the V-slots advances the spark



Showing the method of lacing Major's spring lubricator to the spring. The outside covering is a waterproof material and lined with oil saturated felt. The lubricator is said to keep all grit water, etc., from between the leaves and furnish a constant supply of oil to the springs



The new Greenfield tap



The Wasco private garage heating system can be supplied for 1 to 6-car garages. The heater burns either hard or soft coal of chestnut or pea size, and is fitted with an automatic regulator



The Cosmo time stamp is convenient to use, promotes efficiency and protects both the owner and the repairshop man



This portable hand-operated floor crane is designed for repairshop work. It has a high lift and deep overhang, and may be had either in the 1 or 2-ton size

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Do It This Way—

···QUERIES ANSWERED···

CASE HARDENING

Editor Motor World:

We would be greatly pleased to have your advice at your early convenience with regard to the hardening of wrist-pins for Fords, particularly the carbonizing agent to use, the degree of heat to maintain, how long to run the heat, how long to let the pins anneal before reheating, etc. We have a gas furnace and a water bath.—E. A. Francis, American Mach. Prod. Co., Marshalltown, Iowa.

The material should be the first consideration: 0.12-0.15 per cent carbon steel is best, although 0.20-0.22 per cent carbon is sometimes used.

The wrist-pins should be machined to a rough finish and ample allowance given for warping and grinding to a finish. The tolerance varies, but we would advise at least 0.02 in.

There are many carbonizing agents on the market, and, if you wish, one of these may be used. A good agent may be made from:

60 parts wood charcoal.
40 parts barium carbonate.

The whole mixture should be dry and granulated. A mixture used by another manufacturer is:

11 lb. prussiate of potash.
30 lb. sal soda.
20 lb. coarse salt.
6 bu. powdered charcoal (hickory).

The carbonizing may be done in your gas furnace. The wrist-pins are packed in the compound and placed in a section of iron pipe. The lower end of the pipe is plugged with fire-clay, a layer of the charcoal mixture packed over it at least 1½ in. deep and the wrist-pins introduced and packed. Contact with each other or the pipe should be avoided and the compound should be rammed tight around the pins.

After sealing the top with fire-clay the pipe is placed in the furnace, blocked up away from the bottom and heated to 1600-1650 deg. Fahr. This heat is held for from 6 to 8 hr., when the pipe is removed and allowed to cool.

The subsequent treatment depends on the grade of job you desire. Many makers reheat the pins to 1550-1650 deg. Fahr. and quench them on a rising heat. This refines the grain of the low carbon core. The pins are then reheated to 1350-1425 deg. Fahr., a cherry-red, and plunged to harden the case.

A tougher case may be obtained by drawing the temperature to 450 deg. in oil.

All temperatures should be measured with a suitable instrument, the Bristol pyrometer being perhaps the best practice. Otherwise the results will be far from uniform.

However, the treatment outlined is rather elaborate and good results may be obtained as follows: After heating at 1600-1650 deg. Fahr. for 6-8 hr., allow the pipe to cool. Remove the pins, reheat to cherry-red and plunge in brine. The pins are now ready for finish grinding.

The case should be 0.90 per cent carbon and the core about 0.20 per cent carbon. The case should be 1/16 in. deep for the compound, heat and time we have indicated.

You many find, on trial, that the temperatures, time and method of treatment may be changed. We would strongly advise that you experiment, find the combination that gives the best result, and then keep the treatment standard. The treatment outlined, however, is very nearly standard.

SPEEDING UP A FORD

Editor Motor World:

I am going to strip a Ford for a racer and intend to bore sixteen ⅛-in. holes in each piston and four ¼-in. holes in each connecting rod and put 2 7/11 gear ratio in rear end. I want to know if you advise taking all of the magnets off of the flywheel and the field coil out. I have an Atwater Kent to put on.—Raymond Ganett, Ardmore, Okla.

Your plans regarding your Ford are all right as far as they go. We would advise that you take off the magneto magnets and coils, as these units will cause a slight drag and will also make a slight difference in the acceleration. It is not important to remove them, but inasmuch as you will no longer require them they might as well be taken off.

Just the changes you have mentioned will make very little difference in the speed of your car. The addition of the ignition system should increase the speed somewhat, but the lightening of the reciprocating parts will have no effect on the speed. It will, however, reduce the vibration and consequently impose less strain on the car at high speeds and make it more agreeable to drive under these circumstances.

If you desire speed there are several other things you might do, and these will be mentioned about in the order of their expensiveness.

The first thing to do is to remove all parts which cause wind resistance, such as fenders, windshield, etc. The next step is to fit a pointed radiator and a smooth, streamline body. With these changes and the new gear ratio you should obtain a speed of at least 60 miles per hour.

A carbureter better adapted for high-speed work than the one regularly fitted will also produce an increase in the speed.

If still more speed is desired the compression may be raised by shaving about 3/16 in. off the cylinder head; and, finally, you might put in a special camshaft. This may be made by any high-class machine shop, or can be purchased at about $12.50. If you do not care to buy the special camshaft you might shift the present camshaft one tooth ahead at a time until the setting which gives the maximum speed is attained. This method will not, however, give any great increase.

With all these changes your motor will be capable of running at a considerably higher speed than it is now and the resulting vibration will cause trouble. Nuts all over the car will loosen up and excessive strains will be put on the various moving parts of the motor. To eliminate or minimize this difficulty you should fit aluminum pistons.

MOTOR HORSEPOWER RATING

Editor Motor World:

Please tell me how the Hudson Motor Co. claims 76 hp. for its Super-six and the ratings are only 29.4 according to Motor World.—J. P. Imbsen (S. D. McCook Co.), Salem.

The S. A. E. rating as published in Motor World is found from the formula:

$$\text{Horsepower} = \frac{D^2 N}{2.5}$$

Where D is the diameter of the cylinder in inches, N is the number of cylinders and 2.5 is an arbitrary constant.

This formula is arbitrary and assumes that all motor car engines will deliver, or should deliver, their rated horsepower at a piston speed of 1000 ft. per minute, that the mean effective pressure in such engine cylinders will average 90 lb. per square inch, and that the mechanical efficiency is 75 per cent.

No account is taken of the construction of the motor—the excellence of the bearings, the high thermal efficiency, the perfect action of the valves and ignition, the increase in compression and speed, and absence of vibration. Any engine having the same number of cylinders and the same bore as the Hudson would be rated the same by this formula.

All engines will show greater horsepower on the brake than is accorded them under the S. A. E. rating. The Hudson motor develops 76 hp. on the brake; hence the Hudson company's rating.

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ANGLES OF THE LAW



By George F. Kaiser

Yes, You Can Sell It

Editor Motor World:

Kindly advise me if you know of any cases where a motor car has been sold for storage and repairs.

We have an automobile which was left here about a year ago for repairs and, same being made, the owners were notified and promised to come and get the car, but have not come, so we would like to know if we have a right to sell the car, as our lawyers do NOT think we have? They say they cannot find any law whereby we can sell the car.

Thanking you very much for this information.

Yours very truly,
(Signed) C. H. Collins.

Utica, N. Y.

You have a lien on a motor car if you have repaired and stored the same. This is provided for under Section 184 of the Lien Law, which reads as follows:

> 184. LIEN OF BAILEE OF MOTOR VEHICLES. A person keeping a garage or place for the storage, maintenance, keeping or repair of motor vehicles, as defined by Article XI of the highway law, and who in connection therewith stores, maintains, keeps or repairs any motor vehicle or furnishes gasoline or other supplies therefor at the request or with the consent of the owner, whether such owner be a conditional vendee or a mortgagor remaining in possession or otherwise, has a lien upon such motor vehicle for the sum due for such storing, maintaining, keeping or repairing of such motor vehicle or for furnishing gasoline or other supplies therefor and may detain such motor vehicle at any time it may be lawfully in his possession until such sum is paid.

To sell property under this lien you must do the following things:

Serve notice upon the owner within the county where the lien arose, or mail it to him at his last known place of residence, or to his last known post office address, if he is then not in that county.

Similar notice must be served on persons who have advised you that they have an interest in the property. The notice must state the nature of the debt or the agreement under which the lien arose, and contain an itemized statement of the claim and show when it became due.

It must contain a brief description of the property against which the lien is claimed, its estimated value, and the amount of the lien at the date of the notice.

You must also request the owner to pay the amount of the lien on a date not less than 10 days from the service of the notice, and state when and where the property will be sold if the amount is not so paid.

You are entitled to charge for storage between the time that the notice is given and the property is sold, if you make a demand for that amount in your notice.

Notice of sale must be published once a week for two consecutive weeks in a newspaper published in the town or city where the sale is to be held, and the sale must be held not less than 15 days from the first publication.

If there is no newspaper published in such town, notice must be posted at least 10 days before the sale and in not less than six conspicuous places therein.

It would not be advisable to attempt to sell this property without the aid of an attorney to guide you through the devious requirements of the law in this regard.

And Now the Tractor

Tractor cases are already beginning to make their appearance in the courts.

The Supreme Court of Mississippi has just passed on the question of oral representations in a recent case of this kind.

Suit had been instituted to recover the purchase price of a tractor, a hay baler and a four-bottom gang plow, for which promissory notes had been given, after the contract of sale had been signed.

In the contract of sale, certain warranties had been set forth which the purchaser claimed had been broken. The machines were retained by him until they were taken by the sheriff on filing of the suit.

The court held that all the oral warranties which might have been made by the agent were superseded by the written contract, as it expressly provided that all warranties were contained therein.

It was further held that as the purchaser had been advised by an expert within the first 7 days it had the machine that it was defective, it was his duty to have notified the seller of the defects within the 10-day period mentioned in the contract.—Case vs. McCoy, 72 Southern (Mississippi), page 138.

Did Not Lose Lien

When a garageman reduces his claim for repairs, he does not lose his lien for the larger amount, according to a recent New York decision.

An automobile was delivered to a dealer for repairs. After the repairs were completed the dealer held the automobile under its lien for the value and amount of such repairs.

It appeared that a bill of $992 had been rendered, which was disputed by the owner. Eventually the owner sold the automobile on condition that the buyer should contest and settle the repair bill. This party offered to pay $550 in settlement of the bill, but the dealer refused to accept less than $792 as the least sum in settlement of the bill.

The new owner thereupon sued the dealer for conversion and the court held that, although the dealer had only recovered a judgment in the sum of $665, he did not lose his lien in the entire amount. —Macumber vs. Detroit, 159 N. Y. S., page 890.

What They Think of Smoking

KANSAS CITY, Aug. 10—Many newspapers in the Middle West have taken cognizance of the Eastern ruling with respect to the garageman who knocked a cigar from the lips of a patron. The following is a characteristic editorial on the subject, which appeared in the *Southwest American* of Fort Smith, Ark.:

THE SMOKER

According to a ruling by a Massachusetts judge, a smoker has no redress if the proprietor of a garage knocks a cigar from his mouth, even if he knocks so hard as to injure the smoker's face. And the decision of the court will be approved by all sensible persons who take the time to stop and think of the danger of smoking in a place where oils and gasoline are kept.

The average American is the most careless person in the world in the matter of fire. He thinks nothing of striking a match on a powder magazine, and he smokes while filling the gasoline tank of his car. He doesn't take the trouble to remove the fire menaces about his own home, where the safety of his family is at stake, and when he takes out an insurance policy he considers his full duty done in the matter of prevention.

Of course, the average American pays the price of his carelessness, and the price is tremendous. It runs into the hundreds of millions of dollars every year and the number of lives claimed would be appalling to any other people. But all the preaching that can be done doesn't seem to improve him, and we have the daily fires in all American cities which we would not have if only the average American would pay a little attention to fire prevention.

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The "Gyp"

COMPLAINT is made regarding the "gyps," which isn't a disease, exactly, but is the colloquial term for the gypsy car trader, the man who plays a David Harum rôle in the motor car business.

It is complained that his methods are illegitimate, that he uses the ultra-extreme in sales methods—if they may be termed sales methods—and takes advantage of every point by which he may buy a car for less money or sell it for more.

It is complained that he is unscrupulous in his money dealings, that he has no conception of the word "service," and never operates in the hope that his satisfied customers will come back again. It is complained that he wants only to get a man once, sting him and get a fresh one the next time.

There are good and bad used car men in this business; that no one disputes. Similarly there are good and bad dealers. The question is: Can the legitimate trade do anything? If so, what?

Withholding patronage would not harm him much and, like the second-hand clothes man, he may continue to exist despite all the better business men of the industry think about him. He may skate on thin legal ice, but a "good gyp" never breaks through. Motor World would like to hear from its readers on this subject: Is there a "gyp" evil? What can be done about it?

Association Bulletins

SOME of the trade organizations in an effort to keep in close touch with members have instituted bulletin services, which are an admirable institution. They play an important part in keeping alive the interest and activity of members.

These bulletin services take various forms. One form is a letter-sized sheet of letter style sent out whenever occasion demands—and with a live association these occasions are frequent.

Another form with many variations is the publication, the magazine, or house organ, whatever it may be termed. In using this form some associations have shown wisdom and foresight and have made their bulletins bulletins and not magazines. When a service of this sort is permitted to run into magazine form it begins to lose its effectiveness. It may furnish an excuse for more advertising revenue, but it loses its effectiveness as an association builder.

These remarks are not made because Motor World fears some of these are going to invade its field, for most of those that are let to run out of the bulletin field into the magazine field eventually run out of the field—and existence—entirely.

Running a publication is a business, and operating an association is also a business. Neither should be a side-line of the other. When the bulletin becomes more than a bulletin it loses its effectiveness as a bulletin, and the promoter is quite likely to develop more pecuniary interest in it than is good for the health of the association. He cannot serve God and mammon—his association and his bulletin.

Motor World has in mind one association—the National Association of Automobile Accessory Jobbers—which is achieving great success with letter-style bulletins. And there are several other associations which achieve their end with small four-page printed bulletins. And it knows of other association publications that are now being run for profit—or an attempt at profit—and which have opportunity for using their association connection as a club over prospective advertisers.

These latter are of little value—if any—to any association. And none of them are getting rich. The small, four-page bulletins carry some advertising, about enough to pay the printing expenses, and one secretary says that if a demand grows for his space he will cut down the size of spaces sold instead of enlarging the bulletin, which truly is a wise idea.

As to the great flock of alleged association publications which slink along under the association cloak with an advertising club in the hand, little needs to be said.

All of which is why Motor World has turned down suggestions that it become the "official organ" of various associations. It believes it can serve them, and all other branches of its section of the industry, by standing on its own feet, selling what it has to sell on its merits, seeking business, not asking favors, and publishing a real trade paper.

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Crookedness Is Made the Easiest Way

A garageman in Kansas City, who asks that his name be not used, sees an evil that he says must be corrected some time, for it is demoralizing the profits as well as the innate honesty of too many garagemen and owners of cars.

This is the evil of repairing collision damage to be paid for by insurance companies. He says:

"The present practice is wrong and is harmful to the insurance companies, the garagemen and the owners. Personally, I don't touch insurance stuff unless it slips in unknown. And I can keep away from it with tolerable ease. The adjusters usually come around and make arrangements for us to repair their cars free, in return for their sending damaged cars to us that they will O. K. repair bills on.

Adjusters' Graft

"This is the first crooked element in the situation: the graft of the adjusters. Why should we do $50 or more repair work a month for nothing in order to get other work on which we must charge only the usual fee, or else must charge exorbitant fees to the ruin of our consciences? The adjusters' repair work is pure graft, and acceptance of it is too likely to imply that the garageman is going to graft some himself in the size of his repair bills to make up for the cost of such gratuitous repairs.

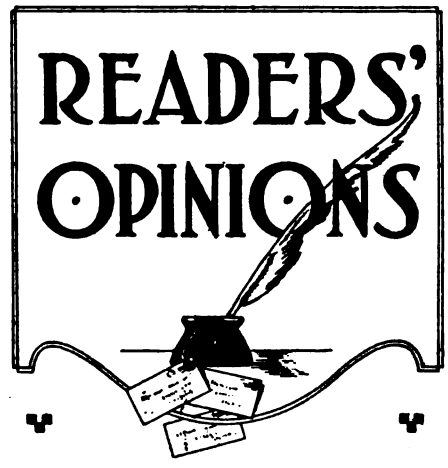
Owner Graft

"The next harmful element is that, horrible as it must seem, the garagemen are being expected to stand in with the owners in the inclusion of repair bills with collision damage bills and force the insurance companies to pay both.

"That this practice is growing I have had actual proof. Some garageman, hard pressed by a customer, must have started it against his will, and now too many others seem forced into it to save their patronage. Not long ago a car was brought into our shop and we made an estimate on the cost of repairing it. The estimate was $120. The owner took the car out. A few nights later the car was stolen and found in the morning on a country road. It was brought to us. The only damage due to the theft was a bent guard and a broken lamp. The owner told us to make full repairs. We did so, and sent him the bill. Three weeks later a check came for the full amount, $140—a check from the insurance company, indorsed by the owner of the car.

Led Into Duplicity

"You see the duplicity that a garageman is unconsciously led into if he monkeys with repairs that are to be paid for by insurance companies. Why should the garageman be made the catspaw to get this illegal disbursement? Yet the



garageman almost has to make a positive agreement to fleece the insurance companies on collision claims if he is going to get the owner's repair business. Owners wait until their cars need repairs, then have a collision, or, to state it less harshly, they do not have repairs made until after a collision.

"What's the answer?

"I'd have the insurance companies give their collision repair business to one garage, and oversee the work. Perhaps several companies could contract with one shop for the work, or each could have its separate shop. The principle would be that the owner would not have the chance to make any deal with the garageman, and the latter would not be forced to enter an illicit, though perhaps silent, compact.

"As a matter of fact, the rates for collision insurance have to be figured now on the basis of more than 50 per cent repair bills not due to collision. I am confident that rates would be less than half what they are now if insurance companies had to pay only for collision damage and not for wear and tear suffered prior to the collision.

"And the way to start the new system is for some garageman to make a deal with an insurance company, or adjuster, to make repairs on collision damage. He will make a great hit with insurance companies and strike the entering wedge that will reduce rates wonderfully. And he will also start something that will relieve garagemen of this hateful necessity of entering repair bills on the collision damage bills."

A Plea for Spark Plug Education

Editor Motor World:

As an example of fine retail selling and what I call service salesmanship, I submit the following—it may act as a tonic for some other accessory dealer:

I was selling a bill of goods to one of my best customers in Greenville the other day, when a motorist came in to purchase a new set of spark plugs.

"What kind of plugs do you want?" asked the garageman.

"———," was the prompt reply.

"What type of ——— plugs?" persisted the garageman.

"Type!" exclaimed the motorist. "I thought there was only one type. I drive a Maxwell car, and want the kind that was in its motor when it left the factory."

The garageman reflected a moment, then referred to a list he brought out from beneath the counter.

"Oh, yes," he said. "You want heavy duty. ——— heavy duty plugs are standard factory equipment on all Maxwell cars. There are fifteen other ———, you know, and it pays to select the style of plug that best suits each particular motor. I know this from experience."

After Mr. Motorist had left with his plugs my customer turned to me and said:

"That's a good example of what I meet every day. The average motorist knows the brand of plug he wants, and about 80 per cent of these, I may add, prefer ———; but ninety-nine out of a hundred think that each manufacturer makes but one type. They forget that automobiles vary as much in their motors as in their body designs. And the dealer who does not make sure of the type best suited to the requirements of each particular car makes a big mistake.

"I would no more sell spark plugs promiscuously than tires. A dealer wouldn't think of selling a tire without asking the motorist whether he wanted clincher or Q. D. type, and yet he does as bad, or worse, when he sells him plugs without full information as to the kind needed.

"When a motorist buys spark plugs in a hit-or-miss fashion the chances are he gets a type adapted to some car other than that which he drives, which means trouble eventually. And the unfortunate part of it is that the motorist blames the plugs instead of the dealer, who, had he been solicitous enough, could have brought out the type designed specially for that motor.

"Satisfied customers mean permanent customers. So it pays to sell people goods that give the right kind of service."

B. H. B.

Tackle Used-Car Evil

OAKLAND, CAL., Aug. 12—In order to reach a better understanding as to the market price on used cars as part payment on new cars, the motor car dealers of Oakland and Berkeley have suggested that all dealers hand to the secretary a complete list showing the selling price of all second-hand cars by filling out cards as inclosed, dating from July 1 to Aug. 1. From these cards a complete list will be compiled which will be placed in the hands of every dealer sending in such report.

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The RETAIL NEWS

MIDDLE WEST

Murray & Co., Gaylord, Mich., have contracted for a two-story garage, 45 x 90.

F. M. Backus, Howell, Mich., is now the sole owner of the Fowler & Head Garage.

A. E. Runnels, Sault Ste. Marie, Mich., has disposed of his livery business. The Chippewa Automobile Co. has taken over the former barn and will have it remodeled and use it as a garage.

The Wetmore-Quinn Co., 279 Jefferson Avenue, Detroit, which has handled the Paige and Saxon during the last several years, will hereafter devote all its attention to the Paige.

The Becker Motor Car Co., Grand Rapids, Mich., formerly Ford distributer and now handling the Saxon and Studebaker, has made some changes in its personnel. Ray E. Becker is now president of the company; Rex Johnson, who was with the engineering department of the Studebaker Corp., has become treasurer; L. F. Carter is general manager; J. A. Noblett, retail sales manager; Fred Nebelious, floor service manager; Tine Carr, shop foreman.

The Siegel Garage & Service Co., Milwaukee, has been incorporated to operate a garage, repairshop and deal in cars and accessories: capital, $2,000; incorporators, Louis, Nell, David and Etta Siegel.

The Badger State Oil Co., Milwaukee, has been incorporated at $225,000 by A. J. Eberhardt, F. F. Wolfgram and M. H. Shekley.

Whitmore & Persson, Watertown, Wis., operating a garage in First Street, have dissolved partnership, Persson retiring.

Nirschl's Garage, 906-908 Milwaukee Avenue, South Milwaukee, is erecting a large addition.

The Peninsula Automobile Co., Sturgeon Bay, has moved into its new garage, costing $10,000. The office, showroom, ladies' restroom and reception room are finished in fumed oak, fitted up with wicker furniture, and are always decorated with cut flowers. The garage caters to the tourist business, which this season reached its highest point in the Door County peninsula of Wisconsin.

J. Wesolowski, Merton, Wis., who took occupancy of a new garage only six months ago, is building an addition.

The Ford Motor Co. of Detroit has acquired a two-story building at Adams and Ontario Streets, Toledo, where a branch salesroom was opened Aug. 1. W. Barclay Deyo will be the manager, with K. D. Sheldon assistant. On account of the nearness to Detroit, the branch will be used only for sales purposes.

H. G. Edwards, Niles, Mich., has established a Buick sales agency.

Wilke & Seiler, Forestville, Door County, Wis., have dissolved partnership, Bert Seiler retiring. W. J. Knopp has purchased the interest and the firm henceforth will be styled Wilke & Knopp.

Ervin and Jerry Seismeyer, Wrightstown, Wis., have leased the former Powers livery and will open a garage and repairshop.

The Calumet Auto Co., Brillion, Wis., has moved its repairshop into a new garage building on Main Street.

C. A. Pope, Darlington, Wis., has sold his repairshop to J. W. Wilkinson.

J. C. Haberman, Prairie du Sac, Wis., is installing new machine tool equipment, including boring and reaming tools, lathes and drills.

The Packard Cleveland Motor Co., Cleveland, has increased its capital from $60,000 to $100,000.

C. J. and F. L. Shaw, Galesburg, Ill., have purchased the old Christian Church, West and Ferris Streets, and remodeled it into a garage and repairshop.

The John Dee Automobile Sales Co.'s plant, Rock Island, Ill., is to be enlarged by a brick addition, 40 x 65, one story, to cost $5,000. A new front for the old building is to be installed at the same time.

Monroe Bros.' garage, Ottawa, Ill., was destroyed by fire.

The Martin-Matteeson Co.'s garage, Galesburg, Ill., was damaged by fire.

Ray C. Sparks, Champaign, Ill., has purchased a half interest in the Herrick Automobile Supply Co. of that city and will take an active part in the management. The company is preparing to establish branch houses in central Illinois.

J. J. Basten, New Franken, Wis., is erecting a large garage, farm machinery warehouse and service station of reinforced concrete construction.

H. G. Franz, Columbus, formerly a partner in the Vintent-Franz-Clemens Co. Garage at 909 Gustavus Lane, has taken over the entire business from his two partners.

Wilbur Winders, Columbus, distributer of the Velie and Chevrolet, will soon move into new quarters at 180-182 East Long Street.

The Shisler-Bidlack Auto Sales Co., Columbus, has taken the agency for the Regal.

The Abbott-Detroit Sales Co. of Michigan has been incorporated at $50,000 in Bay City, Mich., to distribute the Abbott-Detroit in Michigan. Its officers are: D. L. Galbraith, president; H. W. Garland, vice-president; H. F. Smth, secretary-treasurer, and M. W. Crawford, general manager. Headquarters wil be in a new building being erected at Sixth and Adams Streets.

The Salem Motor Co., Salem, Ohio, has been incorporated under the laws of Ohio at $40,000. The company was incorporated to take over the business known as the Frank W. Glass Garage, 157 Garfield Avenue, which deals in cars and accessories. Frank W. Glass is president and general manager.

The Briscoe Co. of Wisconsin, Madison, Wis., has been incorporated to deal in new and used cars and operate a garage; capital, $50,000; incorporators, Glenn W. Steshens, Ethel Lee and Louis C. Horner.

Archie N. Durand, Stevens Point, Wis., has organized the South Side Garage Co. and opened a garage and repairshop in the Kingsbury Building, 751 Strongs Avenue.

The Thorp Automobile Co., Thorp, Wis., is building a new fireproof garage costing $5,000.

Pattison Bros., Mondovi, Wis., have purchased a site for a new reinforced concrete garage and repairshop, to cost about $6,000 with equipment.

Asire & Palmer, Marquette, Mich., Overland, Cadillac and Jeffery dealers, are about to open a branch salesroom in Ishpeming, Mich. The branch will be managed by Bret Read.

The Sandusky-Buick Co., Sandusky, Ohio, has been formed to handle the Buick. The company, located at 221 Fulton Street, is under the management of F. A. Purdy.

Charles Forbes, Grant, Mich., has opened a garage.

The Seman Garage, Grant, Mich., has been purchased by Glenn Bullman. George Bishop, former proprietor, will retire from the garage business.

Albert Binkle, Harbor Beach, Mich., Overland and Buick dealer, will shortly move into a new garage and salesrooms.

The Becker Auto Co., Grand Rapids, Mich., which for the past seven years has handled the Ford in western Michigan, discontinued the Ford Aug. 1 and took the Saxon agency. The Ford company will hereafter operate its own retail store.

The Hoppe-Hatter Motor Co., 539-543 Broadway, Buick and Baker-R. & L. electric dealer, will move within a few days to its new garage and service station on Milwaukee Street. The building is of reinforced concrete, 60 x 120, with steel-trussed floors and roof, two-story and basement. The salesroom floor will be done in terrazzo, with black and white panels. All walls will be wainscoted with wood panels finished in ivory.

The Overland-Wausau Co., Wausau, Wis., organized recently to distribute the Overland and Willys-Knight, has taken temporary quarters in the Morgan Garage until its new branch house is completed. The new building will be of reinforced concrete, with pressed brick front, three-story and basement, 66 x 120, and located at First and McIndoe Streets. W. R. Stelling is general manager and T. O. Kellogg, secretary and treasurer.

Grover McGeehan, DePere, Wis., has purchased the agency, repairshop and garage of the R. J. McGeehan, Son & Co., machinery and implements, which recently passed into the exclusive ownership of Elmer McGeehan.

The Central Garage, Greenland, Mich., has been opened by R. J. Barbera.

James McClure, Houghton, Mich., of the McClure Garage, has secured the agency for the Buick.

Ernest Vriesland and **Harry A. Sherwood**, Grand Rapids, Mich., will operate a garage at 1110 Ferrace Avenue, S. E.

J. C. Cushman, Williamstown, Mich., has opened a garage.

The Cadillac-Overland Co., Cadillac, Mich., has taken possession of its new garage and service station, 50 x 120, on North Mitchell Street.

William S. Brown, Portland, Mich., has taken the agency for the Maxwell.

The Chesaning Garage, Saginaw, Mich., has been incorporated at $30,000 by Theodore S. Greenfelder, Frank A. Greenfelder, Frank J. Walser and Henry Stuart.

The Niles Buick Sales Co., Niles, Mich., has recently been established by H. G. Edwards and George Thompson. Salesrooms will be maintained at the White Front Garage, of which Mr. Thompson is the proprietor. The building will be remodeled.

The Miller-Myers Implement Co., Stanley, Wis., will erect a garage, service station, repairshop and implement warehouse, 38 x 116, to be ready Oct. 15.

J. H. Ford, Dodgeville, Wis., owner of the Dodgeville Motor Car Co., has sold his garage to Ford Carter and will erect a new two-story fireproof structure on South Iowa Street. Ford is a Studebaker dealer.

Charles Byse, Red Granite, Wis., has purchased a site for his proposed new garage and repairshop, to be 36 x 110, of concrete and brick.

Julius Detert and Arnold Pankow, Watertown, Wis., have formed a partnership to handle the Dodge Bros. and have established a garage and repairshop at 111 Fifth Street.

The Prairie du Chien Garage, South Church Street, Prairie du Chien, Wis., has passed into the possession of Frank Zach, who purchased the interests of his partners, James E. Harris and Van J. Brokaw.

The Ohio Tire Service Co., Columbus, has removed from 241 North Fourth Street to larger quarters at 70 North Fourth Street. J. C. Henne is manager of the concern.

The Milwaukee Packard branch at Grand Avenue and Thirty-fifth Street will be enlarged by a 70 x 60-ft. addition, to be used principally as a service station.

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The Farmer Auto Co., St. Joseph, Mo., which for 6 years was the Ford distributer, is now handling the Dodge Bros. and Hudson since the Ford company established a branch in the city. The Diamond Motor Co. has been taken over by the Farmer company.

George W. Franklin, Detroit distributer of the Dort, has incorporated as the George W. Franklin Co.

Venner & Blackhurst, Midland, Mich., have purchased the Main Garage.

The C. F. Mahoney Co., Beaver Dam, Wis., has sold its tire and accessory business to W. E. Snyder. Mahoney has become connected with the Ruedebusch Garage, Mayville, Wis.

The Hoppe-Hatter Motor Co., Milwaukee, Buick dealer, has been made Wisconsin dealer for the Paige, until now distributed in this territory by R. D. Rockstead.

Robert Robertson, Randolph, Wis., is erecting a garage and repairshop, 46 x 116.

The Galloa Garage, New London, Wis., will be ready for occupancy Sept. 1.

DeMars Bros., Washburn, Wis., owning and operating the Service Garage, have made an installation of oxy-acetylene welding and cutting apparatus.

The Algoma Motor Truck Co., Algoma, Wis., which has just taken occupancy of its fine new garage, has taken the agency for the Republic truck.

P. E. Lehmkuhl, Cumberland, Wis., has opened a tire store and repairshop in the Merchants' Hotel garage.

Schauer Bros., Westfield, Wis., have purchased a site adjoining the Westfield Garage and will open a repairshop.

Floyd Ghastin, Sextonville, Wis., will erect a new garage and repairshop.

W. W. Gilson, Baraga, Mich., has purchased a site on State Street, where he will erect a garage and livery barn. The garage will be 1½ stories high and 40 ft. long, while the livery barn will be 30 ft. long.

The Ford Service Station, Imlay City, Mich., has been opened here.

The Dewey-Smith Co., 208 Cooper Street, Jackson, Mich., has taken the agency for the Redden Make-a-Truck.

The Auto Liquidation Co., Kalamazoo, Mich., has been incorporated at $15,000 to sell cars and dispose of properties of liquidating automobile concerns. The incorporators are Mrs. Mary B. Lay, Edwin J. Dayton and Sam Levy.

The Rivers & Norton Garage, Battle Creek, Mich., has become distributer for the Maxfer 1-ton truck and the Elgin.

William S. Brown, Portland, Mich., has taken the Maxwell agency.

The Loveland Co., Woodward and Palmer Avenues, Detroit, is now distributer of the Saxon in Detroit and ten counties of Michigan. Formerly the Saxon was handled by the Wetmore-Quinn Co., which now concentrates upon the Paige. The Loveland company, which started in business in 1911, has been dealing in new and used cars and will now give up its used-car department. The company, which has branches in Cleveland, Akron and Buffalo, will handle 4000 Saxon cars during the 1917 season.

SOUTH

H. J. Roberts, Montgomery, Ala., who has been associated with the Hudson Motor Car Co. and also the Chalmers Motor Co. at different periods during the past 8 years in the manufacturing and service departments, and also sales departments, was appointed general manager of the Weaver Henderson Auto Co. on July 15.

CANADA

J. M. Armstrong, Edmonton, Alta., of the Imperial Garage & Auto Co., has been appointed Chalmers dealer.

The Vancouver Motor Co., Vancouver, B. C., has removed to 825 Pender Street.

The Canadian Double Tread Tire Co., Vancouver, B. C., has removed to 1260 Granville Street.

EAST

Alvan T. Fuller, Boston, who has the Packard agency for Eastern New England, has signed a contract for an addition to his service station here that will be a duplicate of the present one. It will be connected with the other by a bridge of U shape, leaving an 80-ft. court between the two buildings. The additional structure will give him 150,000 additional square feet of floor and make it what is claimed to be the largest plant in the country controlled by one dealer. The first floor of the new building will be for the used cars and the rest for a service station. The cost will be about $250,000, making the total plant worth more than $500,000.

The Gramm Co., Inc., 1457 Broadway, New York City, has closed a contract with the Day-Elder Motors Co., Newark, N. J., as eastern distributer of D-E motor trucks in the territory comprising New York City, Long Island, and lower New York State as far north as Albany, the State of Connecticut, and northern and eastern New Jersey with the exception of Union and Essex Counties. The Gramm company is at present distributer of the Gramm-Bernstein line of heavy trucks.

H. H. Hay, Baltimore, Md., has closed a contract with the Day-Elder Motors Co., Newark, N. J., as distributer of D-E motor trucks in the States of Maryland and Delaware and the District of Columbia. Hay is located at 932 Linden Avenue, Baltimore, Md.

The Sanford Street Garage, Buffalo, has been opened as an agency for the Atterbury truck.

The Atlantic Refining Co., Philadelphia, is having garage and service stations erected at Broad and Hunting Park Avenue, Philadelphia, and at Wilkes-Barre and Norristown, Pa.

Alvan T. Fuller, Boston, Packard dealer, has opened a branch in Haverhill.

Frank Crockett, Boston, has joined the Connell & McCone Co., Overland dealer, to take charge of its new service plant.

The Pennsylvania Rubber Co., Boston, has moved into a new building on Beacon Street.

The Greenfield Buick Co., Greenfield, Mass., has moved into new salesrooms.

Wallace O. Powers, Athol, Mass., has bought back the garage he sold to E. L. Gladwin.

George F. Lombard & Son, Medford, Mass., have purchased the Fellsway Garage.

John H. Bates & Son, Wakefield, Mass., is enlarging their garage.

Curtis, Curtis & Lyon Co., Brockton, Mass., has been formed to operate the Allen Garage.

The Overland service station, Portland, Me., was opened last week and another one will be opened in Bangor.

J. W. Maguire, Boston, Pierce-Arrow dealer, has had plans drawn for a service station that will cost $100,000.

The White Motors Co., New Haven, is erecting a large two-story building at 264-266 Crown Street, on which work is well advanced. On the ground floor will be a showroom and offices; the rest of the building will be devoted to service and stockroom. Over 24,000 ft. of floor space will be provided and the walls will be built strongly enough to allow for the addition of a third floor. The White, Chalmers and Buick will continue as the White Motor Co.'s line.

Charles E. Riess, New York, Hupmobile distributer in the metropolitan district, will move to 1741 Broadway about Sept. 15, at which address he will occupy all four floors. The service station, which will continue at 226 West Fifty-sixth Street, will be enlarged and improved.

George D. Knox and **James H. Whaley**, Hartford, Conn., have formed the Knox-Whaley Co. and taken the Maxwell agency, previously held by the Erwin M. Jennings Co. Knox is the Peerless and Monroe distributer, at No. 344 Pearl Street. Whaley until recently was with the Hartford-Buick Co., which he left to go into business for himself.

The Heydt Motor Co., Reading, Pa., has been incorporated at $20,000, by Irvin H. Heydt, Preston L. Bell and Earl L. Auman.

The Hartford Crow Elk-Hart Co., Hartford, Conn., has removed from 25 Belden Street to 280 Franklin Avenue.

NORTHWEST

Louis Dupois, Thorne, N. D., will build a garage.

John and Leslie Swanson, Fordville, N. D., will build a garage and repairshop.

The Phoenix Iron Works, Winona, Minn., will build a $5,000 addition to its garage.

I. H. Foutty, Ethridge, Mont., will remodel a grain house he bought into a garage.

A. N. Rust, St. Paul, has been made manager of the Fisk Rubber Co. agency. He is from Chicago.

The Ford Motor Co. has opened the first factory branch here at 102-104 Michigan Street. It is in a four-story-and-basement building and will handle cars for northern Minnesota and northern Wisconsin. A repairshop is part of the equipmet. Fifty employees will be on the list. H. A. Netter of Milwaukee will be manager and R. W. Foster of Minneapolis assistant manager. The Mutual Auto Co., former agent, has relinquished its Ford business.

The Doubele Sewed Tire Co., 134 East Sixth Street, St. Paul, has been opened by W. C. Stevens of Milwaukee.

The Velva Auto Co., Velva, N. D., has been sold to John F. Warner of South Prairie, N. D. J. D. Atkinson will remain as manager, and W. F. Slaybaugh, sales manager, becomes manager of the Minot Auto Co., Minot, N. D.

Stice & Jensen, Williston, N. D., have dissolved. Jensen will organize a Maxwell agency at Minot, N. D.

Morse Merritt Auto Co., Billings, Mont., has filed a petition in bankruptcy.

At Buffalo, Minn., a brick and stone garage to cost $10,000 will be built after plans being prepared by Leo Schaefer, St. Cloud, Minn.

Wreisner Bros., Dassel, Minn., will erect an addition to their garage, 20 x 60.

A. C. Carney, Wells, Minn., has succeeded B. O. Henjum as manager for the Motor Inn Co.

Aughenbaugh & Kelly, Waseca, Minn., are building a garage at First Street and Lake Avenue.

G. F. Miller, Annandale, Minn., has opened a garage.

Chris Rogstad, Van Hook, N. D., has opened a garage.

W. H. Thomas, Bowdon, N. D., has formed a partnership with Otto Mielke, Jr., and moved to the new garage of Mielke & Sons.

Irvin McCormick, Bottineau, N. D., has leased the Battcher garage.

Burnett & Syverud, Canton, S. D., garage, have dissolved, Mr. Syverud continuing.

Fred Linnberg, Hibbing, Minn., is erecting a brick garage on Third Avenue.

Schwender Bros., Mankato, Minn., 210 N. Front Street, have plans made for an addition to their garage, 22 x 150.

F. A. Buch, Fargo, N. D., is having a building erected for his taxicab business.

Erskine, Logan & Co., Grand Rapids, Minn., is building a garage.

George E. Hall, Red Cloud, Neb., has sold his interest in the Hall Garage to Don Fulton, who, with Earl Hall, will continue the business.

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Harry Wendelschaefer, Waterville, Minn., has bought back the garage business he sold Martin & Lucas.

The Northern Motor Car Co., 344 Exchange Street, St. Paul, has taken the Republic truck agency.

M. J. Osborn, St. Paul, Overland agent, has leased a garage at 305 West Third Street.

Altschwager Bros. Co., Minneapolis, is making alterations to its public garage at 1308 Marquette Avenue, to cost $7,500.

Samuel Amundson, Litchville, N. D., has left the Tvedt Garage and opened a repair-shop in the Frogen blacksmith shop.

George J. Welsh, St. Paul, Neb., has bought the Grothan Garage.

The S. N. Dawkins Garage, Ute, Neb., has been traded for the farm of Carl Ballantyne, Moorhead, Neb.

Walter Kershaw, Eddyville, Neb., has purchased the motor delivery and supply business of Fred C. Hyde.

Causner & Mercellus, Atkinson, Neb., have bought out the Nelson Garage, Gregg & Hewitt retiring.

The Lunze Auto Co., Lewis, Iowa, has opened for business.

Walter Hansen, Newman Grove, Neb., has disposed of his interest in the West Garage to his partner, Peter Petersen.

John Muff and **Frank Vyhnalek**, Crete, Neb., will open a new garage soon.

The Farmers' Union, Glenville, Neb., has purchased the garage formerly run by Martin Marsh.

The City Garage, Alliance, Neb., has been purchased from B. U. Shepherd by George Hedgcock.

Broan & Jones, Central City, Neb., have sold out their Ford agency to H. F. Lee and Herbert McCullough.

Peter Gibbons, Ranier, Minn., is remodeling the Clark Building for a garage.

The Motor Inn Garage, Aitkin, Minn., has opened. Earl Ame is manager.

Eureka Garage Co., Eureka, S. D., has been incorporated at $15,000 by Stephen Harrison, J. E. Zoerb and D. Zoerb.

The Dakota Motor Sales Co., Minot, N. D., will occupy the building formerly of the Western Motor Sales Co., West Central Avenue.

A. Jette, Polson, Mont., will erect a garage.

M. C. Christopherson, Mabel, Minn., has opened a garage on Main Street.

Western Motor Co., Valley City, N. D., has succeeded Ben Sykes at the Second Avenue Garage.

SOUTHWEST

The S. G. Davis Motor Car Co., Dallas, has leased the two-story building at 2114 Commerce Street. Some innovations in service requirements are planned. The company handles the Scripps-Booth.

W. S. Cline & Son, Esbon, Kan., have opened a garage.

I. W. Rice, Bethany, Mo., has bought the equipment of Charles Stagner, and will open a garage and repair shop in the Edison Building.

The Imperial Auto Supply Co., Kansas City, branch of the Crescent Tire Co., has leased a building at 1530 Grand Avenue and will open a supply store.

M. G. Slawson, Girard, Kan., has bought the Studebaker agency and service station of Love Smith; Smith has established a Studebaker agency in Pittsburg.

The Peake Auto Supply Co., Kansas City, has moved to Seventeenth and Grand Streets, the former location of the Firestone Tire & Rubber Co.

The Kansas City branch of the Firestone Tire & Rubber Co. is now occupying a new home at Twentieth and Grand Streets; the formal opening will take place in September.

F. M. Hayden, of the White Co., Cleveland, has been named assistant to Branch Manager Wallace C. Capen of St. Louis.

W. C. Erwin of Indianapolis, expert on road tractors, has joined the sales staff of the White Co. branch in St. Louis to handle these vehicles.

The Supreme Motor Co., St. Louis, organized recently to take over the Stutz agency, opened the company's new building at 3019 Locust Street Aug. 1. The manager is D. A. Livingston.

The Hudson-Phillips Motor Car Co., St. Louis, has removed to new quarters at Locust Street and Leonard Avenue. There will be a formal opening in September.

Joseph T. Zook, Louisiana, Mo., has opened a garage on Fifth Avenue. A repairshop will be operated.

Alex and **Willis Hamel**, St. Joseph, Kan., have purchased the Louis Gagnon Garage.

R. D. Bone, Trenton, Mo., who has been assistant sales manager of the Kansas City branch of the Buick agency, and A. M. Hyde have taken the agency for the Buick and will operate under the name of Hyde & Bone.

Beetler & Gray, Marceline, Mo., have opened a garage, taking the agency for the Allen.

Beals & Walten, King City, Mo., have built an addition to their garage.

The Shefts Bros., Oskmulgee, Okla., will open a repairshop.

John Mulkey, Ardmore, Okla., purchased an interest in the Reo Motor Sales Co. and moved his Dort agency to the Reo Building, combining the two businesses.

Oscar Ek, McPherson, Kan., has opened a new garage and will handle the Jones and accessories.

J. T. Zook, Louisiana, Mo., has opened a garage.

George Parkins, Douglass, Kan., is erecting a garage and machine shop, 50 x 25.

Fred B. Johnston, Fort Smith, Ark., distributer of the Reo, will occupy the Lee-Collier Tire Building as soon as it has been enlarged and remodeled.

The Ollinger Auto Co., Salina, Kan., has taken over the Overland agency, changing its name to Overland-Salina Co.

Elmer Freebury, Goodman, Mo., has rented the repairshop of A. R. Wardell.

A. J. Missimer, Russell, Kan., has bought the Main Street Garage.

Carl Keen, Valley Falls, Kan., has purchased the S. H. Early Garage.

H. H. Dean, Cedar, Kan., is enlarging his garage.

H. S. Biethroad, Lamar, Mo., has sold his garage and repairshop to D. A. Benedict.

Chas. Stagner, Bethany, Mo., has sold his garage to I. W. Rice, who will move the business to the Edson Building.

The A. B. D. Motor Co., Kansas City, has taken over the Chandler agency. The officers are as follows: E. Bierwirth, formerly president of the National Paper Box Co., president; A. W. Aylor, Eldorado Springs, Mo., first vice-president; M. E. Groom, formerly retail sales manager of the Southwest Motors Co., second vice-president; K. L. Day, formerly branch manager of the Paterson Motor Car Co., treasurer and manager; W. M. Goodrich, who has had charge of the wholesale work of the Chandler Motor Co. in this territory since the opening of the Chandler company here, treasurer. The building in which the company has located at 1830-32 Grand Avenue is being remodeled.

Hahn Bros., Coffeyville, Kan., have taken the Overland agency and are having salesrooms built.

T. B. Yaryan, Carthage, Mo., has sold his garage to W. D. Barcroft.

Carpenter & Van Alstine, Oswego, Kan., have purchased the garage formerly owned by Scott & Hollingsworth.

W. F. Lyons, Kansas City, for 3 years owner of the Central Garage, Twelfth and Central, has leased a garage at Twelfth and Sharlotte Streets, 124 x 305.

Amos J. Missimer, Russell, Kan., has purchased the Main Street Garage from H. H. Bashor.

The Donald D. Davis Motor Car Co., Kansas City, which has the agency for the Scripps-Booth, will also handle the National.

I. H. Snider has secured the agency for the Pullman, distributing over Kansas, Oklahoma, Arkansas and Missouri. The firm will operate under the name of the Herff-Brooks Motor Co.

C. S. Wright, Kansas City, for 3 years manager of the Bond Motor Co., Saxon and Oldsmobile, has retired and it is said will enter business for himself. The sales department of the Bond Motor Co. will be in direct charge of the secretary of the company, W. T. Scarritt.

Wm. Stretton, Downs, Kan., has bought the Baker Garage.

William Burdett & Son, Vermillion, Kan., have opened a garage and taken the Overland agency.

COAST

The Jamieson Motor Co., Spokane, distributer of the Pathfinder, has moved into a new home at Jefferson and Sprague Avenues.

The Culton-Moylan-Reilly Auto Co., Spokane, is now occupying a new home on Second Avenue.

The Ford Factory Branch, Tacoma, has been opened, with J. W. Capeck, manager; Bert Blanghy, assistant manager, and H. F. Weeks, chief clerk.

N. F. Rea, Tacoma, has been appointed Gramm-Bernstein truck distributer in southwest Washington and has opened salesrooms and a service station at 2135 Jefferson Avenue.

The East Side Auto Repair Co., Portland, Ore., is now located at 717 Hawthorne Avenue.

The Carlton-Shephard-Bowles, Inc., Los Angeles, is the successor to the Carlton, Faulkner & Bowles Co. and has been appointed distributer of the Stewart truck in addition to the Jeffery, Fiat and McFarlan.

J. B. de Long, Los Angeles, has been appointed southern California distributer of the Partin-Palmer and has opened a garage and salesroom at 1042 South Olive Street.

The Hyatt Roller Bearing Co., Los Angeles, has leased a new store at Grand Avenue and Twelfth Street.

Ballard & Leaming, Los Angeles, have opened a vulcanizing plant and tire store at 745 South Los Angeles Street.

J. D. Stall, Norwalk, Cal., has opened the Norwalk Garage.

G. R. Smith, El Segundo, Cal., has opened the first garage in the place. The Smith Garage is housed in an attractive brick building on Main Street.

Earl V. Armstrong, Inc., Los Angeles, has taken over 1200 additional feet of floor, having secured the garage room adjoining the Chandler agency and service station at 1144 South Hope Street.

J. A. Hansen and **Charles E. Palmer**, Readan, Wash., have erected an addition to the Hansen Building and have installed machine shop equipment.

Offutt & Edwards, Newport, Wash., have purchased the City Garage and installed a vulcanizing plant.

G. O. Nettleton, Spokane, secretary of the Northwest Auto Supply Co., has been placed in charge of the company's garage at 142 First Avenue. The capital of the company has been increased.

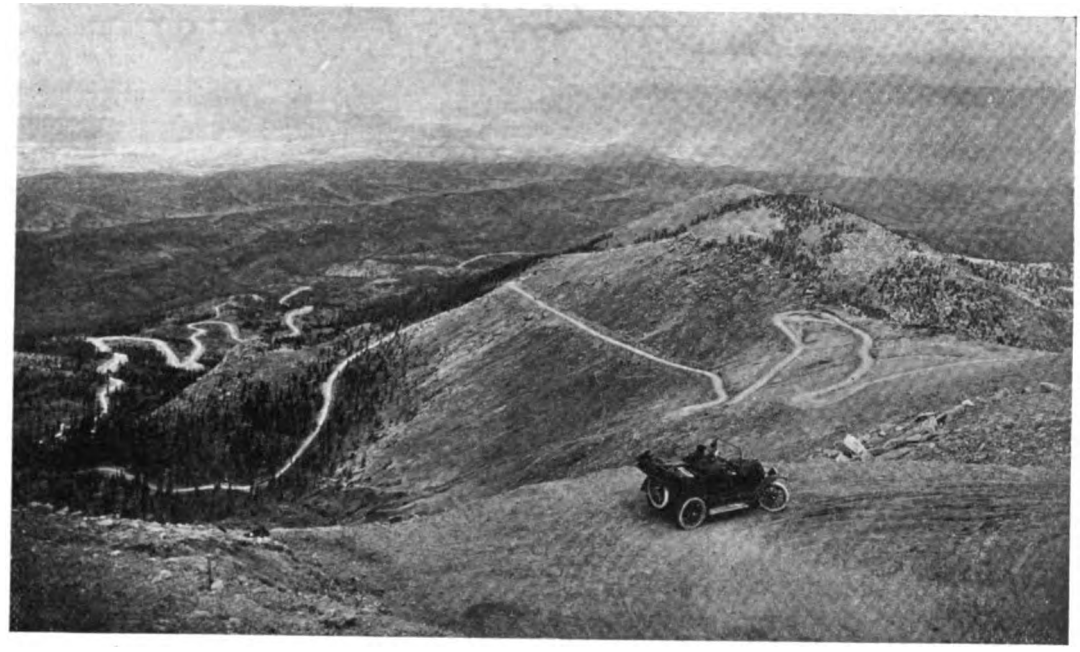
F. U. Bliss, Spokane, has been appointed manager of the Spokane branch of Rothweiler & Co., 224 S. Washington Street, manufacturer of Ford truck attachments.

The Washington Magneto Exchange, 161 Sprague Avenue W., Spokane, has doubled its floor space and added a stock of accessories. An electric equipment repair department has been installed. Otto J. Goeppinger and Albrecht Gross continue as proprietors.

The Reliance Auto Accessories Co., Spokane, has leased salesrooms at 1023 South Sprague Avenue.

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Pikes Peak Climb Won by Lentz, Mulford, Junk



The car in the foreground is on a turn near the top. The climb is up the long, meandering white road that disappears into the foot-hills

Course, 12½ miles.
Maximum grade, 10.5 per cent.
Average grade, 7 per cent.

Results

PENROSE TROPHY EVENT

Car	Driver	Time	Prize
Romano	Lentz	20:55.6	*$3,000
Hudson	Mulford.	21:40.5	1,000
Chalmers	Junk	22:46.7	
Hudson	Hughes	22:53	
Cadillac	Mortenson	23:30	
Grant	Jones	25:42	
Ford	Knowles	26:20	
Chalmers	Stentz	26:28	
Ford	Peterson	26:32	
Studebaker	Morgan	28:23	
Duesenberg	Buzane	Out	
Saxon	Wetmore	Out	
Ford	Henry	Out	
Pathfinder	Hughson.	Out	
Mercer	Parish	Out	
Maxwell	Worthington	Out	

231 CUBIC INCHES AND UNDER

Car	Driver	Time	Prize
Chalmers	Junk	23:04.6	$500
Chalmers	Stantz	23:29.9	250
Grant	Jones	26:05.3	150
Ford	Peterson	28:00.3	
Saxon	Wetmore	28:43.4	
Ford	Knowles	29:25.7	
Ford	Spangler.	36:58.8	
Ford	Henry	Ditch,Glencove	
Maxwell	Worthington	Out	

231 TO 300 CUBIC INCHES

Car	Driver	Time	Prize
Hudson Super Six.	Mulford.	18:24.7	$500
Duesenberg	Buzane.	23:48.4	250
Mercer.	Parish	28:31.8	150
Delage	Oldfield	31:38.6	
Duesenberg	Hughes	Out, eng. trouble	
Hudson Super Six.	Patterson.	Off course, disq.	

*And cup.

COLORADO SPRINGS, Col., Aug. 12—Rae Lentz, Ralph Mulford and Fred Junk, driving respectively the Romano, Hudson Super-Six and Chalmers, divided honors in climbing Pike's Peak during the 2-day motoring festival that ended here to-day. It was predicted before the events took place that the winner's time in each of the three events would be close to 15 min.; but the prognosticators did not take into consideration several factors, among which were the weather, carbureter troubles and proper gearing.

Two events were run yesterday, one for cars of 231 cu. in. displacement and under and one for cars with a displacement ranging from 231 to 300 cu. in.

Six cars were entered in the 231 to 300 cu. in. event. These were sent away in two groups, the first including Hughes, Mulford, Parish and Oldfield, and the second Buzane and Patterson. Hughes went out in the Ws above timberline with motor trouble, and a faulty timing device made it necessary to recall Oldfield and Parish after they reached Glencove, as their time at the start was not registered. This left the course free for Mulford, and he covered the 12½-mile course in 18 min. 24.7 sec.

Sending two cars back put four in the second group to start, and Patterson's Hudson seemed to have second place cinched but ran off the course when about 20 ft. from the finish line and was disqualified. This left Buzane, in a Duesenberg, second and Parish, in a Mercer, third, as Oldfield's Delage did not do anything spectacular. In fact, Barney did not get his car on the course until the morning of the race.

To-day's event, which was for the Penrose trophy and $3,000 in cash, was won by Rae Lentz in a Romano special having an eight-cylinder aeroplane motor with a displacement of 402.12 cu. in. Ever since Lentz began to perform on the course he was predicted to be a likely winner, but his time to-day was not equal to that shown by Mulford in winning yesterday's event; but, of course, physical conditions were different to-day, for most of the race was run in rain, sleet and snow. Mulford finished second in to-day's race, and he, too, found climbing more difficult to-day.

Conditions were anything but auspicious for to-day's event. Most of the climb was through a driving storm of rain, hail and snow, and the spectators, who journeyed far up the mountain to watch the drivers zigzagging far below them, shivered in the cold. Goggles worn by the racing crews were so covered with rain and sleet that they had to be discarded.

Ross Increases Price

DETROIT, Aug. 15—The Ross Automobile Co. has increased the price of its seven-passenger touring car and three-passenger roadster $200, to $1,550. This raise goes into effect Sept. 1, and was caused by the increase in the cost of raw materials and refinements in new models.

New England Enforcing Headlight Law

BOSTON, Aug. 12—A general headlight crusade has been started in this territory. The Massachusetts Highway Commission has written letters to every chief of police in the state enclosing a copy of the law and calling attention to the fact that it has been on the books since January 1 but without enforcement. The Massachusetts law requires all cars to show an object distinctly 150 feet ahead, 10 feet on each side, and not dazzle any person by throwing a glare into the eyes. The latter is covered in the rule requiring no glare above 3½ feet above the ground 50 feet ahead of the car. Merely dimming the big lights and using the small bulbs does not meet the law, for the small bulbs do not throw light ahead far enough to see an object 150 feet or light the side of the road.

New Yorkers coming through Connecticut will find the Springfield police very active, and as the police officials there have equipped their machines with a device that meets the law they claim all motorists can find something if they try.

Schwarz Wheel to Expand

PHILADELPHIA, Aug. 14 — The Schwarz Wheel Co. has purchased 6 acres at Holmesburg near its present plant for extensions. The close of the fiscal year showed the greatest volume of business ever done. All the officers were re-elected.

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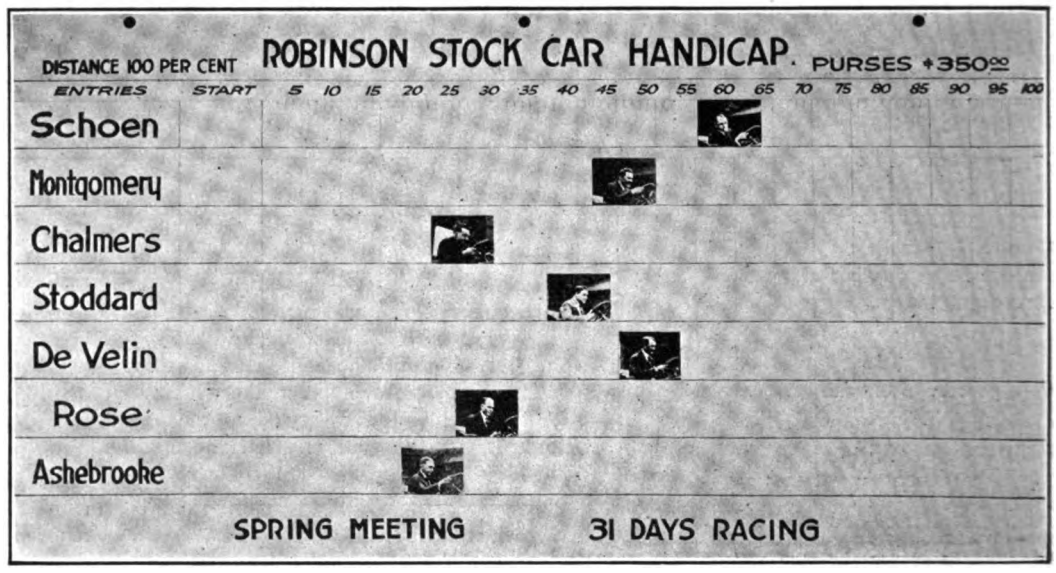
Conducting a Sales Contest

A contribution by L. H. Van Riper, advertising manager of the L. J. Robinson Co., Detroit, Chalmers distributer

THE spirit of rivalry is always an incentive to the man with red blood in his veins, and when that rivalry can be figured out on a basis of giving every man an equal chance to win it works out in automobile selling.

In a sales contest just closed we attempted, by the handicap system, to place each man on an equal footing, and results have proven that in most cases we were successful.

Before announcing the contest we had each salesman photographed behind the wheel of a Six-30 Chalmers, with the idea of putting a personal touch into it and making it interesting to our owners and prospects. We then had a board made with slides, into which these photographs fitted, as will be noted in the illustration, and as each sale was made and the car delivered the photograph was moved along. For instance, the salesman with a twenty-car quota was moved 5 points and the man with a five-car quota was moved 20 points.



Each salesman could see himself on this chart racing across the 31 days of selling. The figures at the top represent per cent of quota.

No Advance Information

No advance information regarding the contest was given out, as otherwise sales might have been held over from the preceding month. The morning of the first a sales meeting was held and an idea gotten from each man as to just how many cars he thought he could sell during that month. Comparison with our schedule showed that we had alloted less cars to each man than he had stated he thought he could sell.

Announcement of the contest, with individual allotment figures, was then made and a prize of $50 offered to each man who sold his full allotment and reached the 100 per cent mark. To make it further competitive, we grouped the first six men in pairs, giving each pair a different quota and thereby providing rivalry between the individual men.

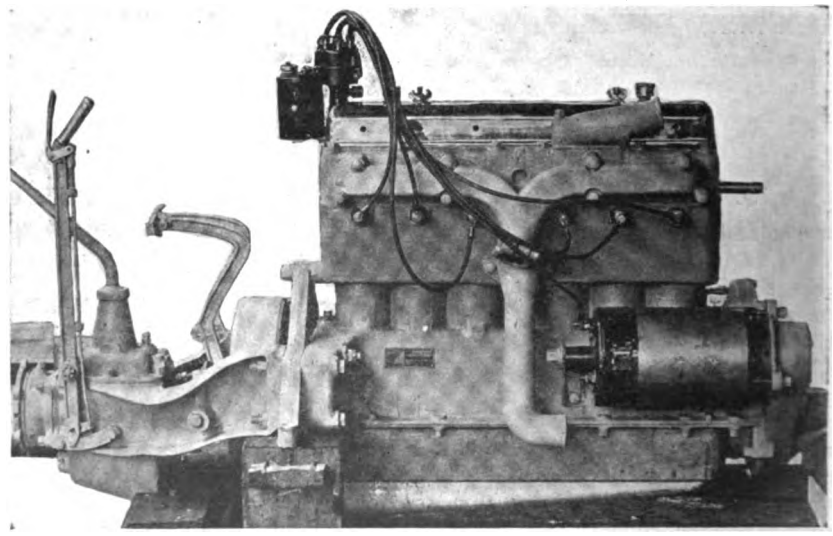
The board was hung in a conspicuous place in our sales manager's office and proved to be a magnet of interest to our owners and visitors, as well as to everyone connected with our own establishment, the most frequent morning salutation among our men being, "Where do you stand to-day?" It produced a marked effect on our salesmen, for it kept every man working in the endeavor each day to head the list. At one time or another every man but one showed ahead of the rest and kept the interest among them up to fever heat.

Each salesman was, of course, interested in winning an additional $50 for his month's work, but the real incentive that kept them working from early morning till late at night was the nosing out of some other fellow who was but a few points ahead. A pretty race developed between Schoen and Montgomery, the former finishing first under the wire, with Montgomery just one car behind. De Velin, who got away to a poor start, came fast in the last few days and finished third, with the balance of the men close at his heels.

Another contest will be worked out for late summer, and still another in the fall, for I am sure this initial contest has more than repaid us in additional sales. Aside from that, it has produced a competitive spirit which cannot help but increase our sales during months in which no contest is scheduled.

The publicity given the contest had much to do with its success, as but few people came into our showroom who were not interested in some one of the competitors, and much outside help was given in the way of suggesting possible purchasers.

Any way you want to figure it a sales contest is constructive in its effect, for it develops additional energy in the man who is inclined to be satisfied with a fair showing, shows up the unsuccessful salesman to his fellows, and spurs the best man to still greater endeavors in salesmanship.



The valves in the new Hollier Six motor are contained in the detachable cylinder head, and are exceptionally accessible

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Hollier Has Added a Six to Its Line



The straight lines of the 5-passenger body give the six a very pleasing appearance

A SIX-CYLINDER car, as well as the eight, is now being manufactured by the Lewis Spring & Axle Co., Chelsea, Mich. It is priced $100 lower than the eight, selling for $1,085, and is a new car throughout. Some of the characteristics of the Hollier eight, however, will be found in the six, particularly the spring suspension, which is the identical 42-in. cantilever, and all the chassis frame and structural work.

The six cylinders are cast in a single block, with the valves in the detachable cylinder-head. With the 3 x 4¼-in. cylinders, a formula rating of 21.60 hp. is given at 1000 ft. per minute piston speed, but the makers claim a much greater output than this, due to the high-speed characteristics of the engine and an advantageous shape of combustion chamber, due to the use of large overhead valves.

Probably the most noticeable feature of the engine is the accessible arrangement of the valve action. This is entirely contained in the cylinder-head, which is detachable, thus allowing the valves to be readily ground, besides affording easy access to the pistons and cylinders. All the valves are actuated by a single camshaft by the use of a rocker arm motion. The drive of the camshaft is through helical gears, working steel against iron, with the gears inclosed in the usual front case and running in a bath of oil.

In the moving parts of the engine conventional practice obtains. The pistons are three-ring and the connecting-rods alloy steel I-beams. Three bearings support the crankshaft, which is also a special alloy of 1 9/16 in. diameter. The bearings are die-cast white metal and before the shafts are mounted the running contact parts are ground to a mirror finish.

Oil is supplied by a splash system fed by gravity from a sight feed on the dash. The oil is pumped to the sight feed and at this point has sufficient head to give a positive feed to the splash troughs. The cylinders are oiled from the lubricant thrown off from the connecting-rods.

Vacuum feed is used for the gasoline. This is from a 14-gal. tank on the rear of the frame, the tank being connected in the usual manner by a suction pipe which syphons the gasoline to the feed tank on the front of the dash. From here the flow is by gravity to the carbureter. Thermo-syphon is used for cooling.

The Hollier Six

Price—	
Five-passenger touring	$1,085
Four-passenger roadster	1,085
Color	Blue
Number of cylinders	Six
Shape	L-head
How cast	Block
Bore	3
Stroke	4¼
S. A. E. horsepower	21.60
Engine starter	Allis-Chalmers
Lighting system	Allis-Chalmers
Clutch	Cone
Wheelbase	116
Front tires	Non-skid 33 x 4
Rear tires	Non-skid 33 x 4
Wheels	Wood
Steering	Left
Control	Center
Type rear axle	Floating

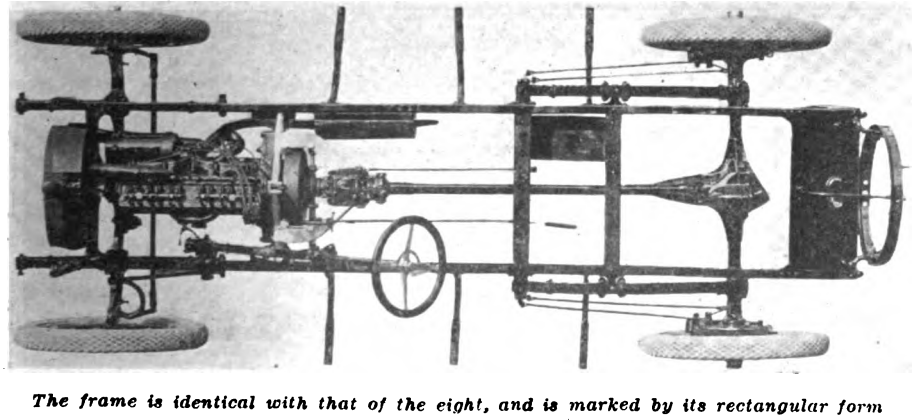
In the power transmission system there is a leather-faced cone clutch mounted on an aluminum casting. This has a nominal diameter of 12 in. and a 2½-in. face. The gearset is in a unit with both the crankcase and clutch, forming a unit power plant. It has three speeds froward, with the main shaft made from a solid forging of chrome vanadium steel. The gears have ¾-in. faces and are also chrome vanadium steel forgings, heat-treated and ground. Annular ball bearings are used on the main shaft and on the front end of the secondary shaft, the rear end bearing being made up of a bronze bushing with babbitt lining.

Under normal load the driveshaft is about horizontal. The rear axle is floating, with solid swaged tubes pressed into a housing of malleable steel. Five-pitch driving gears with tooth face width of 1 5/16 in. are used in connection with a four-pinion bevel differential. Annular ball bearings are used throughout. The front axle is a high-carbon steel forking of I-section having a 2¼-in. web with 1¼-in. flange. The spring seats are forged integrally with the axle and the tie rod is at the rear. Stops are provided to limit the movement of the steering knuckles.

Twelve-spoke artillery wheels are standard. They are of hickory and fitted with 33 x 4 tires with non-skids in the rear as stock equipment. The brakes operate directly on the rear wheels and are fitted with 12-in. drums. There is a double set of these brakes, both internal expanding and external contracting being used on the single set of drums. The drums are of steel and the brakes asbestos combination.

Six volts is used for the entire electrical equipment. This is in connection with a six-cell storage battery of 80 amp.-hr. capacity. The headlights are 15 c.p. and fitted with dimmers for town driving. The tail light is wired in series with the dash lamp.

Two styles of bodies are furnished as standard. These are a five-passenger touring and four-passenger roadster. On both these bodies leather upholstery and curled hair are used. The finish is blue.



The frame is identical with that of the eight, and is marked by its rectangular form

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Ford of 1917 Doesn't Look Like the Old One

But Few Changes Have Been Made and Still the Model T Looks Vastly Better

DETROIT, Aug. 15—The new Ford for 1917 has to be seen to appreciate how greatly the few alterations improve its appearance. The average person will have to look twice to be sure it is a Ford. These changes are principally in the externals. They are:

1—*The fitting of an entirely new radiator of black enamel, which is of about the same width and height as the present one, although it has the appearance of being of slightly less thickness.*

2—*The use of a sloping hood that eliminates any break where it adjoins the body.*

3—*The addition of crowned fenders front and rear which conform to the curve of the wheels in most modern fashion.*

There is no other change. The wheelbase and body remain identical with the previous model. The new radiator shell in a stamping in two pieces: one, the shell proper and the other the top portion that bears the Ford name stamped in it. The familiar Ford filler cap and radiator [illegible] of brass protrude at the top.

Now that the radiator is enameled, there is really very little brass about the car, only the filler and hub caps being of this metal. The shape of the new radiator is very pleasing in that there are no abrupt edges as in the type that has become familiar the world over, the new shell having rounded edges where the side parts of the shell curve into the top portion, and the front edge is also rounded over.

The new hood is provided with louvres in the sides, and is shaped so that there is an unbroken line from the radiator to the body proper and it, as well as the radiator and fenders, have been given a high finish. The fenders are substantial pressings that are free from vibrations when in position on the car. They are well attached to the chassis and also to the body.

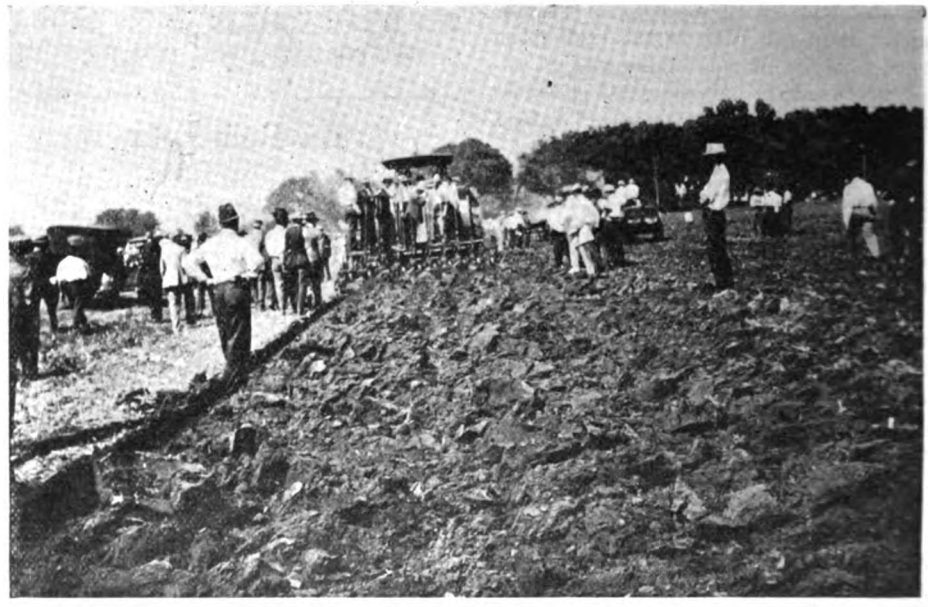
Besides these external changes, which add a great deal to the general appearance of the car, there are two minor changes under the hood. One is the fitting of a shield around the fan, this concentrating the air and insuring its going to the whole of the radiator surface, as an aid to cooling, and the other is the fitting of an electric horn. This horn is mounted at the right rear side of the cylinders between them and the steering column. It is of the vibrator type and is arranged to operate from the current of the flywheel magneto. The operating button is mounted on the steering column just under the steering wheel. As told previously, the touring car is $360 and the runabout $345.

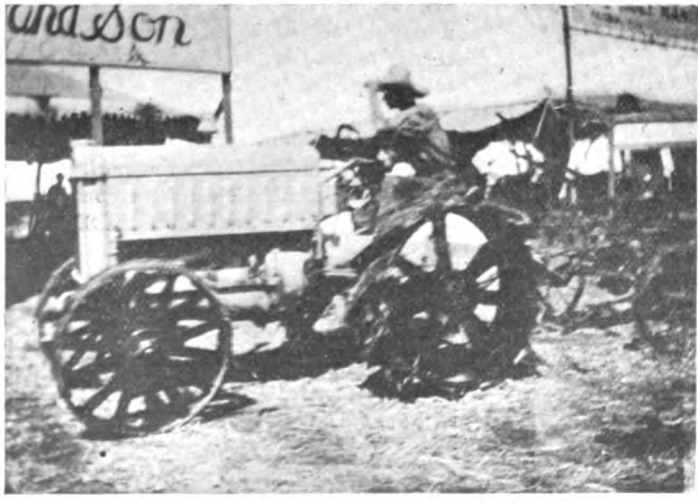
And Ford Is to Quit Selling Cars at Retail

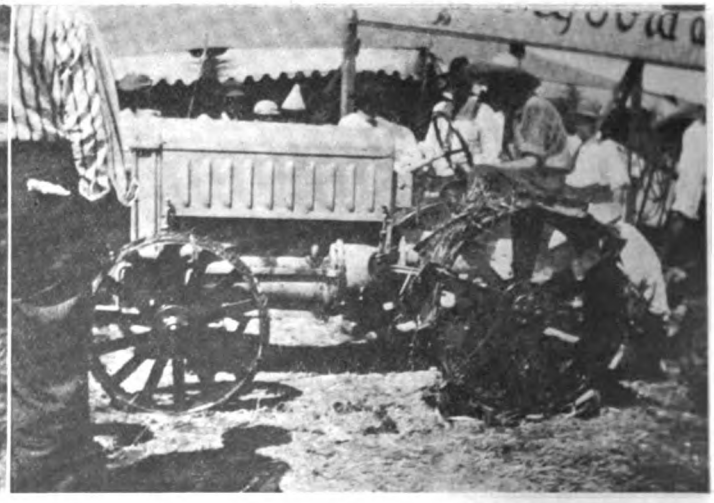
Is Going to Market the Cars on an Unrestricted Agency Plan Just Like Plows or Hats

DETROIT, Aug. 15—That the Ford Motor Co. will discontinue the selling of cars at retail is a certainty, although it will probably be some little time before the new plan of marketing the Ford car is worked out completely.

Briefly, the new merchandising plan of the big producer is similar to the methods of distributing any manufactured article, in that the actual distribution *to the ultimate user will be through dealers who will have no exclusive territory rights, and who will be allowed to sell the machines anywhere or everywhere. The many Ford branches throughout the country are to be nothing more than assembly stations and*



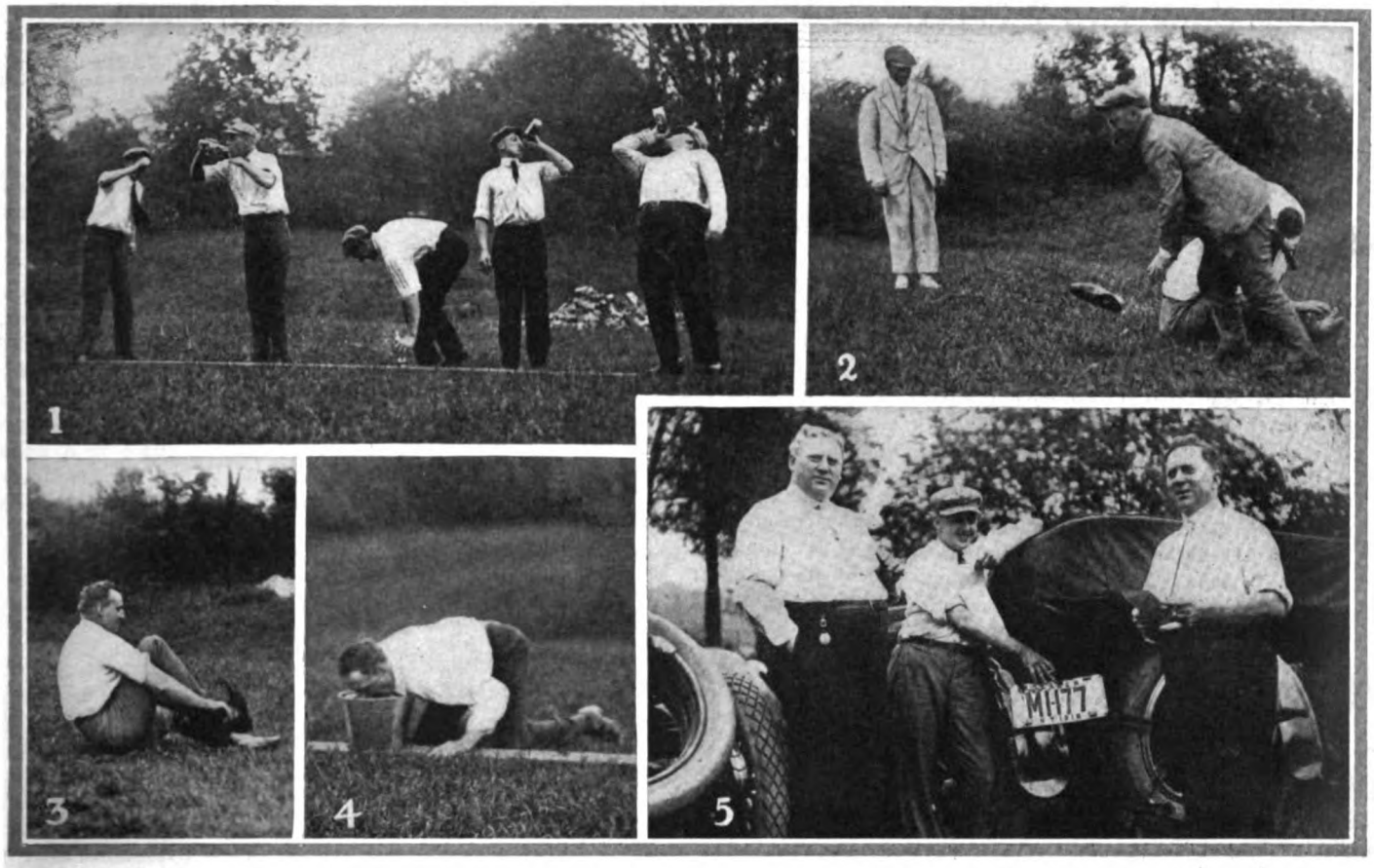




FORD'S TRACTOR AT FREMONT
Thousands followed the Ford tractors as they turned over Nebraska's soil at a rapid clip and hauled machinery around the lot. The upper picture is not of a Ford, but shows well what the tractor can do

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Utica's Dealers Can Do Something Besides Sell Cars



THE ANNUAL OUTING OF THE UTICA (N. Y.) AUTOMOBILE TRADE ASSOCIATION was held August 9 at Trout Brook. The pictures tell the story. 1—Soda water contest (yes, it's soda water); left to right: Leo Fülkins, Allie Smith, August Menge, George Van Slyke, Henry Burch. 2—Shoe-off-and-on contest; white suit, Charles G. Hanna, who put sand in the shoes; half standing, Secretary George C. Donahue; and (No. 3) George Bronner, of Little Falls, trying not to hurt his corns. 4—That isn't a pail of beer; it's crab apples in water, and William T. Carroll is winning the contest. 5—Number plate contest; John M. Weaver, center, won it by having the best poker hand on his plate. A. A. Lederman, left, and T. F. Fitzpatrick, right, haven't anything to do with it

wholesale distribution points to these dealers. The dealers, in turn, will be required to give service.

It is believed that the Ford car to-day is well-nigh a standard product, just as a lawn mower or other implement might be regarded, and nearly everyone who knows anything about machinery or mechanical matters should be able to take care of it and do ordinary repairing. With this thought in mind, the service matter clarifies greatly, and with the wholesale branch nearby, it is no great problem to take care of any condition in connection with the car that may arise. The dealer will have the branch from which he bought his cars to fall back upon in every way, and he will also get all his parts through that branch.

In short, the new Ford selling methods are revolutionary so far as the automobile industry is concerned, but they are the principles of merchandising any standard article of commerce. Take any piece of merchandise such as any of the well-known brands of breakfast food, for instance. The maker of this distributes to jobbers, who in turn supply the grocers, and any grocer can get a stock with no restrictions as to where he sells.

Suppose we consider the marketing of plows. If a certain man with a general store wants to handle a line of plows, he can secure such merchandise with no territory restrictions. The store across the street might also carry the same make of plow for his trade.

So with the sale of Fords. The Ford branch houses in all parts of the country will distribute the finished cars to the dealers, at wholesale, and one garage might handle them across the street from another. Each would retail them to his own trade.

These retailers of Fords will of course have to be reputable dealers before they can get a supply of cars, and they will have to contract to give recognized service, but they can sell anywhere they are able to sell.

No information as to the number of cars a dealer will have to buy in order to get them through the branch at wholesale is available, but in all probability the minimum allotment will be ten cars.

It is thought that the new method will greatly reduce the garage and service cost to the ultimate user of the cars, although the plan is not yet old enough for any predictions of this kind to be made. Economies all along the line, resulting from the new plan, might suggest ways and means of lowering the cost, but these are yet to be proved.

In the sense that any reputable concern will be able to get a supply of Fords at a Ford branch, any big user of cars, even though these machines be for his own business, can get them direct, providing he wants enough to come within the minimum wholesale requirements.

In other words, if a big department store wanted ten or twenty-five cars for its own delivery system, it could go direct to the Ford branch and secure them at wholesale prices, without going through a dealer. If this same concern wanted less than the minimum wholesale allotment, it would have to buy them through any Ford seller and pay retail prices.

Ford Salesmen Won't Lose Jobs

NEW YORK, Aug. 15—The salesmen in the Ford retail branches will not be cast adrift upon a cold world. Many will be better off than heretofore. Advices from leading cities state that they are forming partnerships and agencies to sell Fords, and will thereby be able to profit by their previous experience. There will be eight agencies in Cleveland and in St. Louis ten. Some of the salesmen will get jobs with their former co-workers who now become dealers.

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Gasoline Falls in All Sections 1 to 2 Cents

Except in Portland, Ore., Where There Is a Raise—Fear of Crude Over-Production

NEW YORK, Aug. 15—Gasoline continues to drop in price throughout the country. Declines of from 1 to 2 cents occurred last week, and further reductions are predicted.

The recent reduction in prices by the leading gasoline companies, it is stated, was caused by a threatened overproduction. It was feared the output would overreach the demand and well-drilling was discouraged as a result.

Reports from different sections of the country show a steady decline. New York City prices again declined 1 cent, making a reduction of 2 cents a gallon within 3 days. The spot, or present-delivery, gasoline basis was nominally steady at 23 cents per gallon in steel barrels to garages and 25 cents to consumers.

Portland, Ore., prices have proved an exception to the rule. Instead of a reduction prices have been advanced 1 cent and gasoline is now retailing throughout the city at 20½ cents per gallon.

Gasoline at the present time is selling lower throughout the South and Southwest than in any other section of the country. The Standard Oil Co. is now selling gasoline in New Orleans at filling stations at 19½ cents, as against 21½ cents a month ago. A further cut is expected.

Gasoline in Dallas is still selling for 19 cents, with prospects of no decrease. Although reductions of 10 cents per barrel have been made in Oklahoma and Louisiana crude oils, the price of gasoline is not expected to go much lower in this part of the Southwest. One motor car dealer in Dallas will start on Oct. 14 a novel plan for selling his customers gasoline. He will furnish them with gasoline and oil at cost. A service station will be opened at his plant.

Louisville, Ky., prices have declined 2 cents during the past 3 days. For several months the fuel has been retailing at 23 cents, but since Thursday it has been selling at 21 cents. The Louisville branch of the Ford company continues to sell gasoline at 20½ cents a gallon to Ford owners only.

Prices throughout Denver territory remain unchanged, wholesaling at 23 cents to the garages and filling stations.

New Jersey prices were reduced last week 1 cent and customers are now paying from 24 to 26 cents a gallon. The wholesale price is 21 cents to garages. Gasoline declines were reported yesterday by the Atlantic Refining Co. in Philadelphia from 25 cents to 24 cents, tank-wagon basis. Pittsburgh quotations by the principal oil companies have been reduced 1 cent a gallon to 26 cents. This follows three reductions in the price of crude oil, a total of 25 cents a barrel.

Lower prices now prevail throughout New England. Last week Boston prices dropped 1 cent, from 25 to 24 cents wholesale. The dealers then announced a 1-cent drop. Some of the dealers are wondering about the retail price, which varies above the wholesale by 2, 3 or more cents.

The gasoline situation in Milwaukee has caused one independent oil refiner to pit its forces against those of the Standard Oil Co. by the medium of newspaper advertising. Answering the full-page advertisements being published by Standard Oil in all Milwaukee newspapers, the Wadhams Oil Co. is using large newspaper space to explain why it chooses to sell Wadhams gasoline exclusively and why its prices are higher than the 18.6-cent price offered by Standard.

Sues Standard on Patent

KANSAS CITY, Aug. 12—The Universal Oil Products Co., Chicago, has filed suit in the United States District Court here against the Standard Oil Co. of Indiana, involving the title to a patented process for making gasoline. An injunction and an accounting are asked.

Fall Fair Grows

CLEVELAND, Aug. 14—All the space allotted for automobiles at the industrial exposition and fair to be held Sept. 2-9 has been sold and it has been necessary to add more space. It is now suggested that a fall show be held annually.

Here's One on Henry!

ST. LOUIS, Aug. 12—Henry Schnuhr, Mascoutah, Ill., does not read the newspapers. Last Tuesday he attended a public sale at the Louis Forcade farm, in his neighborhood, and bought a 1915 Ford car for $377. Not until Friday did he learn of the cost of a new one, and then he consulted a lawyer to learn if there was any way by which he could get "out of his bargain."

Haynes Declares 108% Stock

KOKOMO, IND., Aug. 12—The Haynes Automobile Co. declared a stock dividend of 108 per cent at its annual meeting Aug. 8 in this city. The capital stock was increased from $1,400,000 to $4,000,000, and it was decided to proceed immediately to the erection of a new factory that will turn out the light sixes. Net earnings of $1,000,000 are reported. The company built 6700 cars and will be able to produce 12,000 the ensuing year, 3000 of which will be twelves and the remainder sixes. The directors re-elected Elwood Haynes president, Stephen Tudor secretary, A. E. Starbuck treasurer, and A. G. Seiberling general manager.

Say Repairmen Break Cars to Get Business

Serious Charge Made in Massachusetts and Investigation Is to Be Made

BOSTON, Aug. 12—What appears to be attempts on the part of garage employees to tamper with cars so that the owners would have repair bills has been brought to light in a city near Boston and the owners of the cars are considering taking the matter before the highway commission. One man bought a car and had an expert go over it. There was nothing the matter with it and it ran smoothly. He hired space in a garage, and the next day when he went out he found that the car was missing on a couple of cylinders. Then he got his expert friend to go over it again, and they found the marks of wrenches where the car had been tampered with. He took his car away.

In another garage nearby a physician left his car one afternoon and when he took it out again the steering gear seemed to be acting queer and he bumped a pole. His son was talking about the accident with two other boys, and they remarked that while they were in the garage getting a bicycle fixed two men were working on the physician's car. As he had not ordered anything done and the car was in perfect shape he became suspicious. Talking with some of the other motor owners in the little city they compared stories, and it led to the belief that employees were tinkering with cars to make repair jobs necessary. So the matter is now being discussed as to the advisability of having the highway commission make an inquiry among owners in that place to see if it is a general practice. If so the garages would be closed by the revocation of their registrations and the highway commission would mete out drastic punishment, for such a system would leave any owner liable to figure in a fatal accident unintentionally.

Pathfinder Makes High-Gear Run

NEW YORK, Aug. 5—A Pathfinder twin-six has crossed the continent with its gears locked in high. It arrived in this city from San Diego Tuesday and as a final demonstration was run at 60 m.p.h. on the Sheepshead Speedway. The car left San Diego July 3 and was checked along the route by A. A. A. officials. The mileage was 4921 at the end of the speedway test. The daily average was 200 miles. There was no night driving. The days actually traveled were 28. The average gasoline consumption was 10.2 miles per gallon.

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Dealers to Fight for Goodrich's Road Signs

California Would Tear Them Down Through a "Snap" Law and Trade Is Up in Arms

SACRAMENTO, CAL., Aug. 12—Tradesmen and motorists throughout the State are up in arms over the decision of the State Highway Commission against the road signs placed along the California highways by the B. F. Goodrich Co.

At the session of the State Legislature a bill was slipped through, giving the highway commission power to remove or have removed all signs along the public highways of the State bearing advertising. The law gives the highway commission the right, however, to make exceptions, and this is the point over which a great fight is promised.

The Goodrich company has been instructed to remove all its signs in California, although these are of great benefit to motorists in many sections. The company has been given until Dec. 1 to remove these road signs, but some organization, seemingly, is already removing the signs. At least the road signs of the Goodrich company are disappearing, especially in Southern California.

The motor clubs which have placed signs are exempt from the ruling of the highway commission, although the club's signs bear advertising in every case. The California State Automobile Association, with headquarters at San Francisco, which is affiliated with the A. A. A., has indorsed the work of the Goodrich sign posting service and officials of the A. A. A. have been warm in their praise of the signing system employed by the Goodrich company in California.

The Automobile Club of Southern California, which is not affiliated with the A. A. A., has worked against the Goodrich signs, and it is claimed that it was largely due to the influence of the club located in Los Angeles that the highway commission ruled as it did.

There is a large motor club at Santa Ana, Cal., known as the Automobile Club of Orange County, and this organization is friendly to the Goodrich company, also. With the Santa Ana club in the south and the strong A. A. A. affiliated organization in the north, both supporting the tire company, and hundreds of individual motorists all over the State writing letters of protest to the highway commission, strong pressure is to be brought to bear to protect the signs.

The Automobile Club of Southern California places signs and charges the county for the same, while the Goodrich company places signs free of charge. The National Old Trails route, which was signed as far east as Kansas City by the Automobile Club of Southern California, was paid for by towns and organizations along the route, it is claimed, and the club is given credit for it.

If the highway commission makes all motor clubs exempt in ruling against advertising signs, it will be an easy matter for the California State Automobile Association to furnish metal disks to be attached to the Goodrich signs, making these official club signs by merely accepting the service of the tire company and the co-operation of that organization for the benefit of the California and visiting motorists using the State highways.

Texas Overlanders Meet

DALLAS, Aug. 14—Overland dealers from many points in Texas gathered here this week at the annual meeting of salesmen. Ideas of salesmanship were discussed, new contracts were made and new territory was allotted. Several men from the factory attended.

Marmon Places "Truth" upon Its Record Run

NEW YORK, Aug. 14—Authenticity was the keynote of the system of the Marmon company in carrying out the checking work on its transcontinental car which established the record last week. The Automobile Club of America was the official medium selected by the Marmon company to do this work. The car was sealed in a dozen places by a representative of the club in New York City and on its arrival in San Francisco the California representative checked the seals. The run was made in 4 days, 18 hr., 30 min.

Out of twelve seals put on the car at the beginning of its run, eight were intact. Of the remaining four, three were gone and the other broken and hanging on the car. Those seals that were missing were placed on the transmission case to the torque tube; on the bolt through the differential case; and on the left front spring. The seal on the torque tube to the differential housing was broken, but hanging to the car.

After thoroughly investigating the original seals on the car, certain identification marks on the car were gone over. It was found that the original six wheels were gone. The rest of the parts were found intact with the exception of the socket on the torque tube end, which had been moved or repaired.

105,000 Cars in Texas

DALLAS, Aug. 12—According to an estimate of the Dallas Automobile Club, the State of Texas June 1, this year, had in actual use and operation a total of 105,000 cars, an increase of 15,000 since Jan. 1.

Crops of Texas Mean Business for Car Men

Cotton Will Bring $100,000,000 More Than in 1915—Other Production Promising

1916 Texas Crop Estimates

	1915	1916
Cotton (bales).....	3,322,480	4,200,000
Cotton (price).....	$225,000,000	$326,000,000
Wheat (bu.).....	22,862,000	12,000,000
Corn (bu.).....	175,075,000	165,000,000
Oats (bu.).....	44,375,000	12,000,000
Rice (bu.).....	7,113,000	10,000,000
Maize (bu.).....	.....	75,000,000

AUSTIN, Tex., Aug. 12—Good crops and high prices for the products of the farms and ranches mean much to the motor car trade of Texas. Money from the sale of this season's crops is beginning to circulate and the benefit that it is having on all lines of business is already apparent. Cotton-picking will have become general by the middle of August. The bales that have been marketed up to this time brought record-breaking prices, and it is expected that the market will continue its present high level during the remainder of the season. This season's prospective crop of 4,200,000 bales will bring an increase of more than $100,000,000 over the returns of the preceding year.

While the forage crop is not as large as last year, it is being utilized to much better advantage and profit by reason of the fact that there has been a great increase in the number of silos. In western Texas the maize crop will go above 75,000,000 bu., which is a considerable increase over last year's yield. It is only within the last few years that the threshing of maize has been carried on to any great extent in this State. Under the general head of maize are included Kaffir corn, feterita, milo maize, cane and other varieties of sorghums. This grain is now regarded as one of the staple crops of Texas and the demand for it has spread to remote parts of the United States and to foreign countries. It usually sells for about the same price as corn.

In the matter of fruits, vegetables and melons, the returns from these crops have been larger this season than was ever before known. It is estimated by traffic officials of railroads that the total shipments of onions, new potatoes, sweet potatoes, tomatoes, cabbages, lettuce, cauliflower, strawberries, cantaloupes, watermelons and peaches will have reached 25,000 carloads by the end of the year.

Livestock interests are unusually prosperous. Stock farming and dairying are being carried on much more than they were a year ago.

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Colorado Association Teaches Salesmanship

Establishes Auxiliary Wherein Sales Subjects Are Discussed by Member Salesmen

DENVER, Aug. 12—The Automobile Trades Association of Colorado is operating a Salesmen's Bureau for the betterment of salesmanship.

This is affiliated with the parent trades body, but has its own meetings, separate membership fee and activities. And the new bureau has already accomplished enough to be regarded as one of the most valuable enterprises ever undertaken in this territory for the welfare of the motor car industry.

Meetings are held once in 2 weeks, and the programs present selling methods and deal with selling problems from many angles. There are addresses by experts and open discussions by the members. In addition to speakers from large Denver concerns, the bureau secures visiting sales managers and other factory representatives from all parts of the country.

Such visitors have been especially plentiful this year on account of the rapid growth of business in the Rocky Mountain region and the numerous tests of cars and appliances in mountain driving, and these speeches treat both scientific selling and a wide range of technical subjects.

The members of the bureau are able to glean a large amount of valuable information from these talks, and also increase their acquaintance and improve their knowledge and ideals through their own exchange of experiences and suggestions in the open discussions.

"One of the most important results of the few meetings held thus far has been breaking several salesmen of the habit of 'knocking' the other man's line," declares Secretary Edgar W. Johnson of the Trades Association. "Through getting better acquainted with one another and listening to the advice of successful men, who hold responsible selling and other positions in big concerns, a lot of fellows have seen the folly of wasting time trying to run down a competitor's goods instead of devoting their efforts entirely to showing the good qualities of their own line.

"I believe this 'knocking' foolishness is now practically eliminated among the members of our new bureau, and that customers, employers, the salesmen themselves and the standing of the automobile business in general will benefit greatly from this achievement.

"And I want to say further that this 'anti-knocking' campaign, and also other practical movements we have started for greater efficiency in salesmanship and higher ideals and ethics in the general conduct of business have been aided substantially by the valuable pointers constantly set forth along all these lines by Motor World."

Dues are $5 a year. The membership now numbers 66, and the membership committee predicts that the 100 mark will be reached before the close of the year. On account of hot weather and an extra brisk condition of business right now, the regular meetings of the bureau have been discontinued until September, but at that time a special campaign will be conducted to enlist new members.

The Salesmen's Bureau took a prominent part in the Trades Association's first annual picnic recently held, and promises to become one of the most lively divisions of the central trades body.

Trims Windows for Dealers

NEW YORK, Aug. 14—As part of a dealer co-operation plan, the Champion Spark Plug Co., Toledo, is sending a window-trimming motor car about the country. It is now in this section. George B. Nason and E. D. Farquharson, who accompany the car, have already visited a large number of cities and have installed window displays for Champion dealers. It is planned to place several more of these cars in service.

Find Gasoline Men of Bay State Honest

BOSTON, Aug. 12—Commissioner of Weights and Measures Thure Hanson has started his inspectors on a state-wide tour of inspection of gasoline pumps. There have been vague rumors that some of the pumps were not as accurate as they might be.

The first places visited were in the Allston section of Boston, which is the very end of the motor district. From there the inspectors will work their way in town. After the first week of tests Mr. Hanson said he found that the pumps were varying in measurement. There were 178 pumps tried out. Of that number 42.7 per cent were correct. There were 33.7 per cent giving long gallons and 23.6 per cent were not giving full measure.

The inspectors tested each pump from two to five times so that there could be no charge of hasty decisions. The largest shortage found was 8 gills, or 5 per cent, in 5 gal., while the largest excess was 36 gills, or 22.5 per cent, in the same amount. The inspectors said that it appeared that the public was getting full measure.

Columbia University Adds Selling Course

To Open This Fall and Last Three Years—Intended as Practical Help to Business Men

NEW YORK, Aug. 14—Columbia University plans a course in salesmanship, which coincides with the idea that played such a big part in the recent World's Salesmanship Congress in Detroit.

A new business school is to include courses in spelling, advertising, sales management, business English and commercial correspondence. It is planned to make the instruction practical and of immediate value to young men already engaged in business vocations. The course will be 3 years.

Mayor Kiel to the Rescue

ST. LOUIS, Aug. 12—Mayor Kiel has vetoed the proposed gasoline ordinance which would have prohibited pouring more than 3 gal. of gasoline into motor car tanks on the streets. More than 100 small dealers and grocers protested the ordinance at the public hearing. The Mayor, in vetoing the bill, said that permitting the pouring of 3 gal. of gasoline destroyed its effect as a safety measure.

The ordinance was introduced by Alderman Renick, salesman for the Pierce Oil Corporation, which owns about one-fourth of the 100 filling stations in the city. An outside protest came from the produce district, where practically all of the delivery trucks get their gasoline from oil wagons. All of the automobile associations protested the bill, which was passed by the Aldermen with only one dissenting vote, and if the same vote obtains again the veto will be overruled.

Thirty Thousand Cars in Oregon

PORTLAND, ORE., Aug. 12—Thirty thousand five hundred and four cars have been registered thus far in Oregon. Last year at this time there were 23,585.

Establishes "Shopeteria"

SEATTLE, Aug. 12—Imitating the "serve-self" restaurant, the C. P. M. Garage has established what is calls a "shopeteria" to provide service for customers who wish to work on their own cars. In order to avoid the loss of tools a room is provided wherein the customer may work on his own car under lock and key. Tools are issued from the office to the customer, and must be accounted for and returned when the bill is settled. If a helper is required his time is charged for.

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Dealer Show Boosters Will Tour Wisconsin

Milwaukee Tradesmen in String of Cars Will Preach State Fair and Motor Show

MILWAUKEE, Aug. 12—Fifty-five cities and more than 100 villages and hamlets will be visited by the second annual "booster" tour of the Milwaukee Automobile Dealers Association, which starts from Milwaukee Monday, Aug. 28, and ends at Milwaukee Saturday, Sept. 2. Governor E. L. Philipp of Wisconsin and Mayor D. W. Hoan of Milwaukee have consented to accompany the tourists from start to finish.

The principal object of the tour is to advertise the Wisconsin State Fair at Milwaukee, September 11 to 16, and the big motor show to be conducted by the dealers on the fair grounds. The route as definitely fixed this week is:

First day—Milwaukee to Madison, via Waukesha, Oconomowoc, Johnson Creek, Jefferson, Lake Mills, Deerfield and Cottage Grove.

Second day—Madison to Green Lake, via Sun Prairie, Marshall, Waterloo, Columbus, Fall River, Randolph, Fox Lake, Markesan.

Third day—Green Lake to Green Bay, via Ripon, Berlin, Omro, Oshkosh, Neenah, Menashy, Appleton, Kaukauma, De Pere.

Fourth day—Green Bay to Sturgeon Bay, via Luxemburg, Casco, Rio Creek, Forrestville.

Fifth day—Sturgeon Bay to Elkhart Lake, via Algoma, Kewaunee, Two Rivers, Manitowoc.

Sixth day—Elkhart Lake to Milwaukee, via Plymouth, Fond du Lac, Campbellsport, Kewaunee, West Bend, Cedarburg.

The forty members of the M. A. D. plan to enter a total of sixty cars, accommodating from 275 to 300 "boosters." The tour will not be a contest in any sense, but purely an advertising affair and sociability run for the benefit of the motor car industry of the State and the promotion of the big agricultural show next month. The committee in charge consists of Edgar F. Sanger, chairman; Raymond D. Rockstead and W. A. Rafter.

Willard Plans Four New Buildings

CLEVELAND, Aug. 12—The Willard Storage Battery Co. plans four new buildings, which will mean 150,000 cu. ft. of floor. One of the buildings is a power house.

The Fremont Tractor Demonstration

(*Continued from Page 9*)

maintain a motor car, he is considered at least a possible prospect. But when it comes to buying a tractor for tilling his fields, there enters another consideration, and that is, "Will it pay?"

The answer to this question involves a number of considerations, but the chief of these, particularly in level country, is the tillable acreage. The Department of Agriculture has found that in general on level land a tractor will pay if properly managed, when the tillable acreage is not less than 160 acres. According to Nebraska real estate men, who have been in touch with conditions in this territory for years, the average size of the farms in Nebraska is double that figure. There are, of course, many farms of 160 acres or less, but there also are many in which the acreage is in the neighborhood of 1000. It is on the larger farms that the tractors have been operating for the greatest period and with the most success.

Custom Work Does Not Pay

One landowner, whose holdings approximate 1200 acres of corn and wheat lands, has been operating two very large tractors for several years, and this week purchased two smaller ones of the same make to use in addition to his larger ones. To a certain extent it is the smaller-capacity and less expensive tractors that are popularizing these machines in this territory. A big, heavy, expensive machine, capable of pulling eight or ten 14-in. plows, represents too much capital to the owner of 240 or 360 acres, and its capacity is so great that there is not work for it on one farm a sufficient proportion of the time. It has been found as a general rule that to keep the machine sufficiently busy by doing custom work on other farms is not a paying proposition.

The later types of smaller, lighter and less expensive tractors, capable of handling from two to four plows, seem in the opinion of a large proportion of the farmers in the territory to meet the demands of the moderate-size farm.

Crops Are Good

The August crop report for the State of Nebraska, as compiled by the Federal Bureau of Crop Estimates Aug. 1, together with the actual production last year, is given below. It should be borne in mind that last year's production was approximately 120 per cent of the normal yield for the past 5 years; also that this estimate was made before the general rains of this week, which put hundreds of thousands of dollars in the pockets of the Nebraska farmers, and in the minds of some meant a full corn crop instead of a partial harvest.

Crop	Aug. 1, 1916 (Estimate) Bushels	1915 Production Bushels
Corn	180,000,000	213,000,000
Winter wheat	61,600,000	66,618,000
Spring wheat	4,560,000	5,536,000
Oats	75,100,000	70,400,000

Fremont markets Aug. 9, 1916, quoted No. 2 wheat at $1.30, No. 3 corn at 75 cents and oats at 35 cents per bushel. On Aug. 1, 1915, wheat was 29 cents less, corn 5 cents less, and oats the same. Livestock and dairy products last year put $244,000,000 in the coffers of the Nebraska farmer and 1916 will do as well.

Fake Advertisers Are Being Brought to Time

Ad Clubs Get After Those Who Make False Claims and Many Fines Are Imposed

NEW YORK, Aug. 12—Those who advertise falsely are being brought to time by the Associated Advertising Clubs of the World, whose motto is "Truth." A vigilance committee is maintained for this work. Post-office fraud orders are secured where advisable against those whose claims are not true.

One New York City retailer who advertised "Genuine Panama hats at $2.85—values $5, $6 and $7.50" was prosecuted and fined $25 when it was proven the hats were not Panama.

A Spokane piano merchant advertised "Weiler pianos, regularly $400, on sale at the special price of $195." It was found that these pianos cost $75 at the factory and were laid down in Spokane at $90. The advertiser was fined $50.

A fraud order has been issued against a Niagara Falls concern which advertised for men to travel and appoint agents at a salary of $80 a month. It was disclosed that the principal object was to sell sample cases to salesmen at $6 each. These are but instances of the cases that are being brought from time to time. The Associated Clubs had much to do with the recent case of A. C. Bidwell of the International Automobile League.

One Hundred Victims in St. Louis

ST. LOUIS, Aug. 12—Matthew F. Morse, secretary of the Automobile Club of St. Louis, who aided in obtaining the fraud orders against the International Automobile League and kindred organizations, estimates that more than 300 St. Louis car owners paid membership fees to this organization. Some of these people were mulcted of large amounts before they decided to heed privately circulated warnings. The St. Louis license list was the basis of membership solicitation here.

Hits Back at Standard

MILWAUKEE, Aug. 12—At least one independent oil refiner in Milwaukee is pitting its forces against those of the Standard Oil Co. in the present gasoline war in Milwaukee. Answering the full-page advertisements being published by S. O. in all Milwaukee newspapers, the Wadhams Oil Co. is using large newspaper space to explain why it chooses to sell Wadhams high-quality gasoline exclusively and why its prices are higher than the 18.6-cent price offered by the Standard.

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Atlantic City's Show Aid to Whole Country

So Many Visitors Are From Out-of-Town That Names Are Sent to Other Dealers

ATLANTIC CITY, N. J., Aug. 14—The dealers who are promoting their first annual automobile show on Young's Million Dollar Pier believe they are doing a great deal of missionary work for dealers all over the United States. Thus far, about 50,000 visitors have flocked in to see the nineteen exhibits, and their number includes tourists from everywhere, but whenever a name is secured as a prospective buyer, it is forwarded to the dealer in the prospect's home town.

The daily attendance has run as high as 12,000, and it is estimated that when the 2-week show closes next Sunday evening the attendance will have been 125,000. The cosmopolitan character of the attendance is indicated by the presence of four natives of India. The exposition is regarded as one of the best advertisements Atlantic City has ever had.

The average space per dealer was 342 ft. and the charge was 25 cents per square foot.

A serious handicap to the dealers was the rigid rules of the Young's Pier management, which makes impossible the sale of anything on the pier after the general admission price of 25 cents is paid. The latter includes access to the automobile show, the dance floor, the vaudeville show and observation chairs. In spite of this, a number of sales were actually made, but the salesman had to take the buyer out on the boardwalk and there accept his check.

The general feeling among the exhibitors is that Easter would be a more logical time to hold the show, on account of the better prospects of actual sales. The number of visitors, of course, would be curtailed, as it is estimated that the several railroads bring about 10,000,000 people to the "shore" each summer season. An effort will be made to change the date for next year.

The show is staged on the south side of the pier, overlooking a broad expanse of bathing beach. There were no preferred positions, each dealer taking as much space as he found necessary. The spaces vary from 150 to 500 sq. ft., with an average of 342. The new 1917 cars on the floor were the McFarlan, Ford, Cole, Grant, Peerless, Maxwell and King.

The exhibitors were: L. S. Bowers Co., Philadelphia, Cole and Grant; E. C. Johnson Co., Philadelphia, Premier and Reo; Moline-Knight Sales Co., Philadelphia, Moline-Knight; Peerless Automobile Co., Philadelphia, Peerless; Baker-Bell Motor Co., Philadelphia, McFarlan and Empire; King Car Agency, Philadelphia, King; Maxwell Motor Sales Co., Atlantic City, Maxwell; Ford Motor Co., Atlantic City, Ford; S. R. Blocksom Motor Co., Philadelphia, Stutz; Oldsmobile Co., Philadelphia, Oldsmobile; Fiat Motor Co., Philadelphia, Apperson; Jeffery Agency, Atlantic City, Jeffery; Briscoe Agency, Atlantic City, Briscoe; Auto Appliance Co., Baltimore; Bales Puncture Plugger Co., Philadelphia; Keystone Lubricating Co., Philadelphia; International Harvester Co., through O. H. Gutridge, Atlantic City; Guarantee Securities Co., New York; Crew-Levick Co., Philadelphia.

Salem to Have State Fair Show

SALEM, ORE., Aug. 12—The third annual car show at the Oregon State Fair will be held Sept. 25-30, at this city, under the management of Joseph M. Rieg. Half of Machinery Hall will be used.

Texas Tractor Show Next Fall

DALLAS, Aug. 14—The second Texas tractor show and demonstration will be held at the Texas State Fair grounds during the 1916 fair, according to announcement to-day by J. C. Duke, superintendent of this division of the State fair.

St. Louis Run in October

ST. LOUIS, Aug. 12—The Reliability Run of the Automobile Club of St. Louis will be held early in October to Keokuk, Iowa. It will last 3 days.

New Philadelphia to Organize

NEW PHILADELPHIA, OHIO, Aug. 14—The dealers and garagemen of this section plan an organization to be affiliated with the Ohio Automobile Trade Association. The first meeting will be held Aug. 17. F. T. Price, state president, will attend.

Joseph Maw Passes Away

WINNIPEG, Aug. 10—Joseph Maw of Joseph Maw & Co. died recently. The company handles implements and the Chalmers, Reo, Briscoe, Gray, Dort, Hupmobile and Scripps-Booth, and is one of Canada's pioneer dealers. Maw retired some time ago and spent much of his time in Los Angeles.

Gives $500 for Armory Examination

MINNEAPOLIS, Aug. 12—To insure opening of the National Guard Armory for the winter automobile show, the Minneapolis Automobile Trade Association advanced $500 for a quick examination of the building, which settled some this summer. A move is on also for the erection of a convention and display hall building by civic organizations. The Pence Automobile Co. has offered its large warehouse at Eighth and Washington Avenues N. for the meeting of the National Association of Stationary Engineers, Sept. 11-16, in place of the Armory, while the examination is being made.

Dallas Going to Have Big Show at the Fair

Trade Has Already Started on Work for Fall Merchandising Fete at State's Exhibit

DALLAS, Aug. 9—Plans for an automobile show during the State Fair, Aug. 14 to 31, were practically completed at a meeting held to-day by nearly all of the automobile and accessory dealers of this city.

State Fair officials will allow $5,000 for decorations and plans and the dealers will increase that amount by their own appropriations. Indications are there will be more than ninety exhibits, and in case Dallas dealers do not take all the space, outsiders will be permitted to enter. Entries close Sept. 1. The manager of the show will be M. A. Sacksteder of the Sacksteder-Potter Co. These committees were appointed:

Rules and Regulations—W. G. Langley, Franklin Automobile Co., chairman; Dan F. Safford, Overland Automobile Co.; M. F. Sterett, Electric Appliance Co.

Decorations—S. G. Davis, Davis Automobile Co.; Oscar Dunlap, Ferris-Dunlap Co.; W. F. Burton, Burton-Rountree Co.

Publicity—J. V. Hardy, Ray Rose Co.; J. W. Frawley, Frawley Automobile Co.; E. E. Rhodes, Fisk Co.

Regulation of Traffic at Grounds—Roy Munger, Munger Automobile Co.; W. F. Rose, Rose-Fosdick Co.; J. H. Sides, Maxwell.

Drawing of Space—C. L. Zutavern, Texas Oakland Co.; J. R. Frey, Tennison Bros.; E. O. Thackston, Burton-Rountree Co.

Distributers maintaining Dallas offices who to-day contracted for space are: Burton-Rountree Co., Hupmobile; Battle & Hubbard Automobile Co.; Couch Auto Co., Case; R. L. Cameron Auto Co., King; S. G. Davis Automobile Co., Oldsmobile; Dallas Chalmers Co.; Electric Appliance Co.; Frawley Motor Co., Reo and Dort; Ferris-Dunlap Co.; Franklin Auto Co.; Gray & Reardon, Paige and National; Haynes Auto Co.; Overland Automobile Co.

Mitchell-Lewis Motor Co.; Morris Automobile Co.; Munger Automobile Co., Cadillac; Randall Adams Auto Co., Packard and Chandler; Ray-Rose Co., Saxon; Rose-Fosdick Co., Hudson; J. H. Sides Motor Co., Maxwell; Kissel Kar Co.; Tennison Bros. Co., Briscoe; Texas Oakland Co.; Trinity Motor Co., Dodge Bros.; Hart Bros. Co., Apperson; Buick Automobile Co.; Tri-State Motor Co., Pathfinder.

Puritan Compiles Garage Register

DETROIT, Aug. 12—The Puritan Machine Co., in order to keep in closer touch with and protect legitimate garagemen, have evolved a plan of registering garagemen.

The plan is to issue identification cards to garagemen, entitling them to a trade discount. These cards are numbered serially and given to each garageman, who will then be registered with the company.

Upon the presentation of the card, or by furnishing the number of this card, he will be given the proper discount on repair parts and accessories. This plan has worked out very successfully in Detroit and has received the co-operation of the garagemen, as it protects them from individuals who are not garagemen and, therefore, not entitled to any discount.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

C. C. Winningham has taken direct charge of the advertising of the Hudson Motor Car Co., Detroit, following the resignation of W. L. Agnew. Winningham previously had been sales manager and the advertising had been part of his department.

W. L. Agnew, until recently advertising manager of the Hudson Motor Car Co., has joined the Chalmers Motor Car Co., where he will be connected with the sales promotion department.

J. M. Ramsden has resigned as St. Louis manager for the J. I. Case T. M. Co., Racine, Wis., to become a general traveler for the Oakland Motor Car Co., Pontiac, Mich.

Fred A. Wade has been appointed purchasing agent of the Buick Motor Co., succeeding J. T. Wilson. He was in a similar capacity with the Maxwell Motor Co.

R. W. Dudley, of the St. Louis branch of the U. S. Tire Co., has been named traveling representative for that company in Arkansas, succeeding S. L. Chorlins, who resigned recently to go into business at Pine Bluff.

W. F. French has been appointed purchasing agent of the Bour-Davis Motor Car Co., Detroit.

G. Vernon, "Billy" Beck, has been made sales manager of the Elgin Motor Car Corp., Chicago. He has been connected with several automobile companies and lately was western sales manager for the Detroiter Motor Car Co.

George S. Morrow has resigned as president and general manager of the Oldsmobile Co. of Pittsburgh. He may engage in business on the Pacific Coast.

Ben Rennard, formerly with the Chandler Motor Car Co., Cleveland, has been appointed special representative of the Ross Automobile Co., Detroit.

E. H. Baker has been appointed central eastern sales manager for the Cole Motor Co. Baker was formerly president of the Cole Motor Co. of Buffalo.

Chas. Kuehn, for many years connected with the advertising department of the Packard Co., has joined the Cheltenham Advertising Agency of New York. His headquarters will be in the New York office.

Paul B. Donaldson, formerly connected with the Philadelphia branch of the Chase Motor Truck Co., has been transferred to the home office at Syracuse, N. Y., to act as special field representative.

L. R. Smith has resigned as Indianapolis representative of the Eisemann Magneto Co. to become general sales manager for the motor department of The Buda Co., Harvey, Ill.

W. J. MacInnes, formerly connected with the General Motors Co., United Motors Co., and the Winton Co. in advertising work, has become connected with the Western Advertising Agency, Racine, Wis., and Chicago.

Buda to Sell Own Motors

HARVEY, ILL., Aug. 12—The Buda Co. is organizing a sales department and will handle the sales of the Buda motor direct, instead of through Bradenburg & Co. Lon R. Smith, former western representative of the Eisemann Magneto Co., will be motor sales manager, beginning Sept. 15. C. V. Richardson, recently chief engineer of the Republic Motor Truck Co., has been made sales engineer.

Ford Production for 13 Years

Total output 13 years, 1,406,997 cars
Ford Motor Co., organized June 16, 1903.
Employed 311 men first year.
Capital stock in 1903, $100,000.
Capital stock in 1916, $2,000,000.
Number of men employed in 1916, 31,035.

Year	Cars Made and Sold	Increase or Decrease	Daily Average
1903-1904.	1,708	.....	5
1905.....	1,695	— 13	5
1906.....	1,599	— 96	5
1907.....	8,423	+ 6,824	28
1908.....	6,398	— 2,025	21
1909.....	10,607	+ 3,209	35
1910.....	18,664	+ 8,057	62
1911.....	34,466	+ 15,802	115
1912.....	68,544	+ 30,078	228
1913.....164,452		+ 95,908	545
1914.....248,307		+ 83,855	827
1915.....308,213		+ 59,906	1,027
1916.....533,921		+225,708	*1,816

Largest one-day output, 2,430 cars, Feb. 29, 1916.
Sales value of 1916 output, minimum, $235,000,000.
Sales value of 1903-1904 output, less than $2,500,000.
Expected output of 1917, minimum, 750,000 cars.
The Ford Motor Co., in June, 1915, announced that it will increase its capital stock to $100,000,000, but as the laws of the State of Michigan do not allow such a large capitalization and as the Ford company did not want to incorporate in another State, the present capital stock of the company is still $2,000,000.

* The average daily output is based upon 300 working days, except for 1916, where the actual number was furnished by the company as 296.

New Name for American Jack

HICKSVILLE, OHIO, Aug. 14—The American Automatic Automobile Jack Co. has reincorporated as the Maumee Valley Mfg. Co. with capital of $100,000 and will take over the Goller show case factory. The new company will continue the manufacture of show cases and fixtures along with the jacks. Those interested in the new company are Dr. J. S. Hall, H. M. Hartzler, C. J. Horn, J. D. Serrill and W. E. Simmons.

Invades Downtown

PORTLAND, ORE., Aug. 12—A departure new to the automobile trade here is an exclusive salon salesroom near the heart of the business district, just opened by W. B. Doan, Paige and Saxon distributer. The salesroom contains 2000 ft. of floor.

Enger Raises Capitalization

CINCINNATI, Aug. 12—Papers were filed with the Secretary of State recently, incorporating the Enger Motor Car Co. at $4,000,000 for the purpose of manufacturing Enger cars, which have been on the market for some time. It is planned to build additions and secure more equipment for the factory. The incorporators are Frank J. Enger, E. L. Jones, George W. Platt, E. E. Lincoln and Edward Ritchie.

Simplex in Aircraft Merger

NEW YORK, Aug. 10—The Simplex Automobile Co., which for a year has been part of the Wright aircraft organization, is included in the $10,000,000 Wright-Martin aeroplane merger just completed. The Simplex company has for some time been manufacturing aeroplane motors for foreign countries, along with a high-priced automobile chassis. The merger will not cause any changes in this policy. The Simplex plant at New Brunswick, N. J., which has been entirely rebuilt, will be used to manufacture the aviation motor, which is of the Hispano-Suiza type, and the Simplex cars. There are 2200 employees at the New Brunswick plant.

The principals in the deal are the Wright Co. of New York and the Glen L. Martin Co. of Los Angeles. The new consolidation will be known as the Wright-Martin Aircraft Corp.

Factory News of the Week

Durant Denies $700 Eight Report

NEW YORK, Aug. 10—W. C. Durant, president of the Chevrolet Motor Co., has gone on record as denying the intention of the company to put out a $700 eight. The report was published widely in the press of the country, and it was also stated that a big cut in price was to follow the Ford announcement. This has also been denied categorically.

It is well known that the Chevrolet company has been developing an eight-cylinder car for some months, and no denial of this has been made by the company. It is well understood, however, by those who have followed the plans of the company closely that this will be priced at considerably above the figure given and very likely at from $1,100 to $1,200. The present prices of the Chevrolet cars are $490 for the little four and $750 for the larger one.

W. C. Sills, treasurer, states that the company had on hand Aug. 1 cash and securities in excess of $25,000,000.

Page Plans Ford Starter

ADRIAN, MICH., Aug. 10—The Page Fence Co., which has been making windshields, is to begin soon the manufacturing of a starter and light regulator for Ford cars. The company has made an arrangement with the inventor, B. S. Baldwin, Hicksville, Ohio, to that effect, it is said. In the windshield department work is being rushed, as orders on hand are at least 50 per cent ahead of what they were at this time a year ago.

Chalmers Assets Gain 50 Per Cent

DETROIT, Aug. 10—Chalmers assets have increased by 50 per cent in the last year. Preliminary statements made regarding business during the 1916 fiscal year which ended June 30 show a gain in total assets of $4,857,274, the total now being $13,051,538.

The surplus totaled $2,066,673.88 instead of $1,010,422 in 1915. Cash on hand and in banks showed a decrease totaling $564,746.64 instead of $1,173,135.

Auto Parts "Opens" New Home

MILWAUKEE, Aug. 10—The Auto Parts Mfg. Co. informally opened its new factory to-day at 313-317 Milwaukee Street. Engraved invitations were used.

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Can't Revive Revivo

LOUISVILLE, KY., Aug. 10—Pursuant to a resolution adopted by the directors of the Kentucky Revivo Battery Co. Monday, a voluntary petition in bankruptcy was filed for the concern July 25, the action being taken by J. T. Gathright, the president. Liabilities, according to the petition, aggregate $3,692.43, while assets total $4,934.37.

Acason Truck in New Factory

DETROIT, Aug. 14—The Acason Motor Truck Co. has taken possession of a new factory at 429 Brooklyn Street.

Simplex Moves to Fifth Avenue

NEW YORK, Aug. 12—The Simplex Automobile Co. has rented for a term of 5 years the store and basement of the new building at the southeast corner of Fifth Avenue and Fifty-eighth Street, and will establish there its local salesroom.

The New York and metropolitan sales of the company have heretofore been handled through a dealer, John G. Dale, 240 West Fifty-ninth Street, but the company has recently taken over this business and will operate this branch itself.

From Everywhere

North Tonawanda, N. Y.—Three hundred and fifty employees of the Herschell-Spillman Co. attended the company's outing at Niagara Beach, Saturday, Aug. 12.

Milwaukee—The A. O. Smith Co. entertained more than 6000 persons at its annual outing at Waukesha Beach Aug. 12.

Oshawa, Ont.—The Chevrolet Motor Co. plans to build a $50,000 factory here.

Walkerville, Ont.—The Motor Products Corp. will build a factory here. W. C. Rand, president of the Rand Mfg. Co., is president.

Chillicothe, Ohio—The Arbenz Motor Car Co. has been incorporated at $1,000,000 to manufacture motor trucks. The concern will take over the factory formerly operated under the name of the Arbenz Car Co., install additional machinery and start the manufacture of trucks on a more extended scale. The incorporators are M. F. McFadden, E. C. Spader, M. C. Hayes, W. J. Purcell and R. I. Pillars.

Flint, Mich.—The Buick Motor Co. has promoted the following men: W. J. Browne, who had charge of the assembling plants, is now plant manager of factories No. 1 and 4, succeeding Mr. Durham; P. J. Moohn has been made manager of assembling plants, succeeding Mr. Browne; R. E. Benner, who has been research engineer of the company, is promoted to the position of general superintendent; C. B. Durham, who had charge of factory No. 1, has been made general master mechanic of all Buick plants.

Chicago—Beginning Sept. 1, the manufacture of Warner Auto-Meters will be carried on in the new additions to the Chicago plant of the Stewart-Warner Corp., and the Beloit plant will be devoted exclusively to foundry operations connected with the production of Stewart-Warner products. Plans have been made to double the size of the Beloit plant.

Jackson, Mich.—The Central Auto & Supply Co. has distributed checks to its employees in pursuance to its profit-sharing plan inaugurated 1 year ago. The checks are based on the length of service and wages earned. The plan became effective Aug. 1 for another year.

Detroit—A dinner was tendered Aug. 2 to Frank N. Sealand, until recently manager of the Detroit branch of the Winton company and formerly president of the Detroit Automobile Dealers Association. Sealand goes to Cleveland as manager of the Cleveland-Cadillac Co.

Coming Events

General Events

September .....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12..... Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Races, Contests and Tours

Aug. 17.....Boise, Idaho; track race, North West Auto Assn.

Aug. 26.....Kalamazoo, Mich.; 100-mile track race.

Aug. 28-Sept. 1...Milwaukee, Wis. Booster Tour of Milwaukee Automobile Dealers.

Sept. 1-2.....New York, N. Y.; Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. I., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

Aug. 14-18.....Cedar Rapids, Iowa.

Aug. 21-25.....Bloomington, Ill.

Aug. 28-Sept. 1...Indianapolis.

Sept. 4-8.....Madison, Wis.

Shows

Aug. 7-19.....Atlantic City, N. J. First Show, Young's Pier.

Aug. 28-Sept. 1...Des Moines, Iowa, show, State Fair.

Sept. 2-9.....Cleveland, Ohio. Show, Industrial Exposition and Fair, Edgewater Park.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 4-8.....Hartford, Conn., annual automobile and truck show, under the auspices of the Connecticut Fair Assn.

Sept. 4-11.....Indianapolis, Ind., show, Indiana State Fair, Indianapolis Automobile Trade Assn.

Sept. 11-16.....Milwaukee, Wis., Second Annual Fall Show, State Fair, Machinery Hall, Milwaukee Automobile Dealers, Inc.

Sept. 25-30.....Salem, Ore., Show, State Fair.

Oct. 14-21.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 13-20.....Montreal, Can. Montreal Automobile Trade Assn.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb .....St. Louis, Mo. Show, Automobile Manufacturers & Dealers Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Motor Car Securities Quotations

	Aug. 12, 1915 Bid	Asked	Aug. 12, 1916 Bid	Asked
Ajax Rubber Co. (new)	..	..	64	66
J. I. Case T. M. Co., pfd.	70	79	85	90
Chalmers Motor Co., com.	87	90	160	175
Chalmers Motor Co., pfd.	94	97	98	102
*Chandler Motor Car Co.	..	..	165	186
Chevrolet Motor Co.	..	..	214	220
Fisk Rubber Co., com.	..	..	130	160
Fisk Rubber Co., 1st pfd.	..	..	112	120
Fisk Rubber Co., 2nd pfd.	..	..	120	..
Firestone Tire & Rubber Co., com.	510	515	915	930
Firestone Tire & Rubber Co., pfd.	111	..	112	114
*General Motors Co., com.	218	220	560	580
*General Motors Co., pfd.	107	110	118½	119¼
*B. F. Goodrich Co., com.	58	59	71⅝	72⅝
*B. F. Goodrich Co., pfd.	107½	108	113½	114½
Goodyear Tire & Rubber Co., com.	263	270	233	238
Goodyear Tire & Rubber Co., pfd.	107	108½	106¾	107
Grant Motor Car Co.	..	..	7½	8
Hupp Motor Car Co., com.	..	..	6½	6¾
Hupp Motor Car Co., pfd.	..	..	99	100
International Motor Co., com.	25½	26½	5	7½
International Motor Co., pfd.	48½	49	17	22
*Kelly-Spfld. Tire & Rubber, com.	184	185	70	70¾
*Kelly-Spfld. Tire & Rubber, 1st pfd.	86	88	96	97
*Lee Rubber & Tire Corp.	..	..	45¾	46
*Maxwell Motor Co., com.	40	42	81¾	82
*Maxwell Motor Co., 1st pfd.	86½	87½	85	86½
*Maxwell Motor Co., 2nd pfd.	34½	35½	55¾	57½
Miller Rubber Co., com.	..	195	225	235
Miller Rubber Co., pfd.	107	107½	104	106
Packard Motor Car Co., com.	..	120	165	175
Packard Motor Car Co., pfd.	97½	100½	100	104
Paige-Detroit Motor Car Co.	..	..	45	50
Peerless Truck & Motor Corp.	..	..	21½	22½
Portage Rubber Co., com.	42	..	115	118
Portage Rubber Co., pfd.	92	94	115	118
Regal Motor Car Co., pfd.	..	..	17	22
†Reo Motor Truck Co.	17¼	18	36	37
†Reo Motor Car Co.	33¾	34½	41½	42½
Saxon Motor Car Co.	..	..	71	73
Standard Motor Co.	..	..	5½	6
Stewart-Warner Speed. Corp., com.	66	68	102	103
Stewart-Warner Speed. Corp., pfd.	105	107	..	..
*Studebaker Corp., com.	99	100	128½	129
*Studebaker Corp., pfd.	103	104½	109	110½
Swinehart Tire & Rubber Co.	85	90	100	105
United Motor Corp.	..	..	66¼	66½
*U. S. Rubber Co., com.	47½	48	55¾	55½
*U. S. Rubber Co., pfd.	104	105	109½	109¾
White Motor Co. (new)	..	..	52¼	53
*Willys-Overland Co., com.	184	186	514	517
*Willys-Overland Co., pfd.	103	105	103¾	105

*At close Aug. 12, 1916—Listed N. Y. Stock Exchange.
†Par value $10.

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MICHELIN

Highest Quality Tires at Low Prices

The Michelin Dealer not only makes customers easily but he *holds* them.

He does **not** offer low-grade tires at cheap prices—a proposition which results in dissatisfied customers and a constantly changing trade.

He does **not** offer high grade tires at high prices—a proposition which limits sales to the few purchasers who are not particular about price.

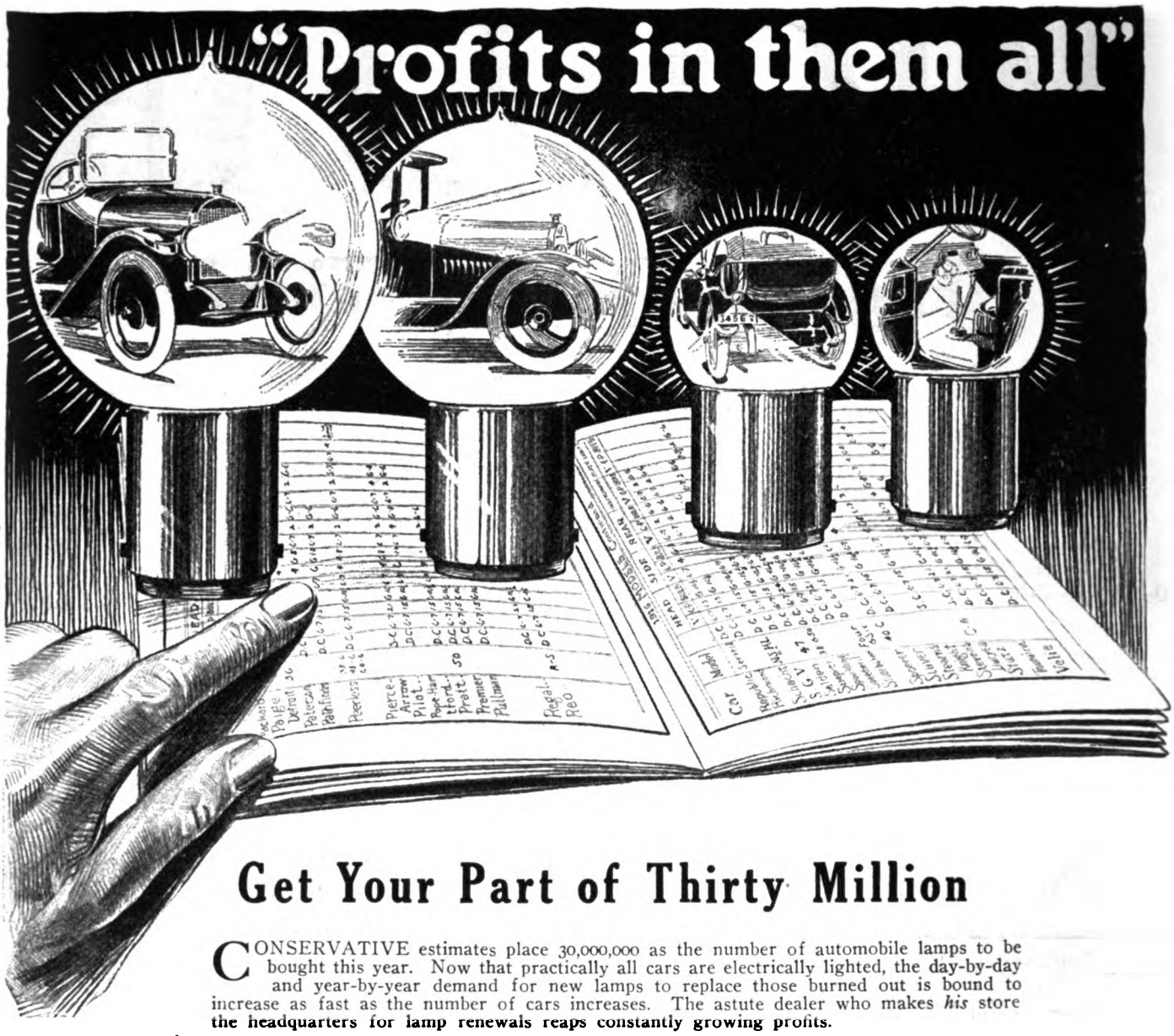
The Michelin Dealer sells tires of unsurpassed quality at moderate prices that appeal to all motorists. He does a healthy and rapidly growing business. Write for the Michelin Proposition.

MICHELIN TIRE CO. **Milltown, N. J.**

UNIVERSAL TREAD CASINGS AND RED TUBES			
Inch Sizes	Q. D. Straight Side	Q. D. Clincher	Red Inner Tubes
32x3½	$18.30	.....	$3.55
32x4	24.90	$24.90	4.65
33	25.65	25.65	4.25
34	25.95	25.95	5.00
36	27.95	27.95	5.30
34x4½	33.00	33.00	6.55
35	34.75	34.75	5.90
36	35.70	35.70	6.90
37	.....	36.60	6.30
35x5	40.50	40.50	6.55
37	41.90	41.90	8.35
Also made in soft bead clincher size 31x4, price $22.25			



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Get Your Part of Thirty Million

CONSERVATIVE estimates place 30,000,000 as the number of automobile lamps to be bought this year. Now that practically all cars are electrically lighted, the day-by-day and year-by-year demand for new lamps to replace those burned out is bound to increase as fast as the number of cars increases. The astute dealer who makes *his* store the headquarters for lamp renewals reaps constantly growing profits.

Small Stock Moreover the initial investment is so small that anyone can put on his counter the lamp assortment with enough selected sizes and types of lamps to supply all needs. Reordering to keep this stock complete is so simple as to be almost automatic.

Easy Terms With our little booklet as a guide, any clerk can instantly supply the right lamp for any car—the name and year of the car being the only information needed. Another helpful sales aid is the lamp chest, in which the car owner can carry a set of six spare lamps for his car. With this chest, it's easy to sell six lamps at once, as the lamps are specially selected to fit the customer's car.

Write Now No matter how many or few auto accessories you may have handled, write us for full particulars. If you think you can also handle flashlight lamps to advantage, write also for complete information on the flashlight Assortment, another lamp renewal proposition as full of profit possibilities as the auto lamp assortment. The sooner you get your assortment of lamps the quicker you'll be prepared to take advantage of your share of the big fall renewal business.

EDISON LAMP WORKS
of General Electric Company
Harrison, N. J.

EDISON MAZDA LAMPS

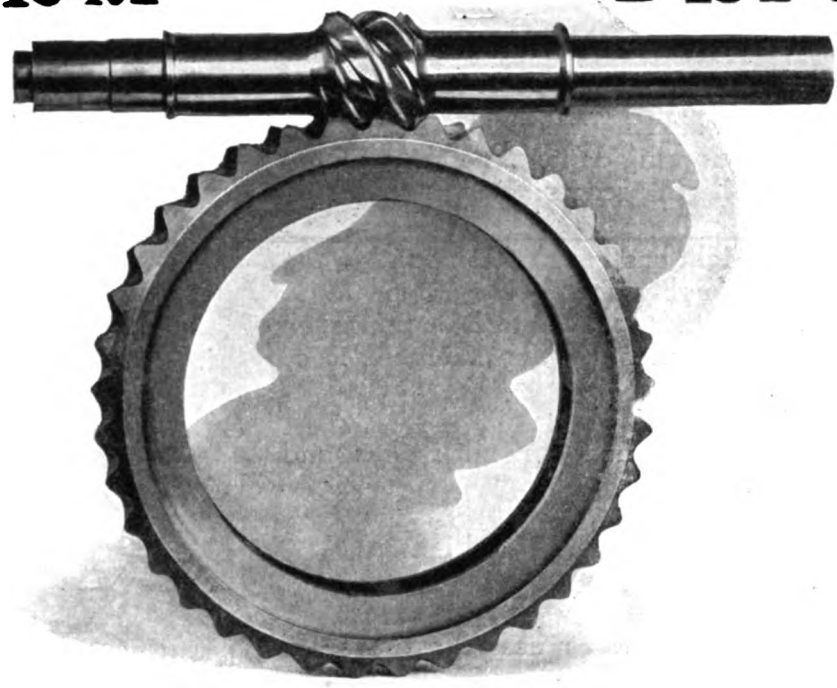
Made in U. S. A. and backed by MAZDA Service

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BAUSH

WORM DRIVE



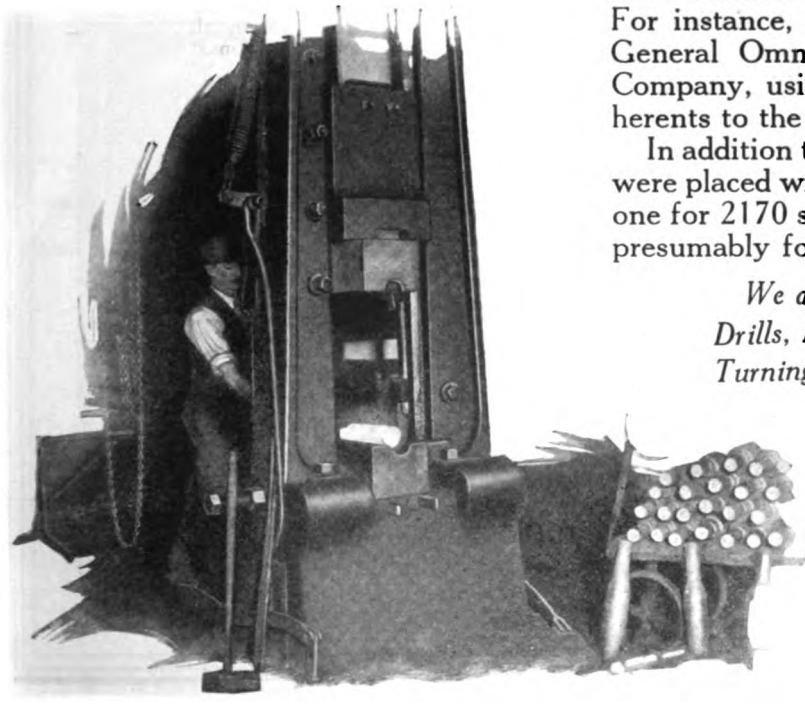
Ninety-one Truck makers Use Worm Drive

From nothing to over 50% in three years

NOT only are worm gear driven trucks rapidly replacing all other types of drive in this country, but abroad, after many more years of usage than they have enjoyed in this country, the percentage increase is still in favor of the worm, and is growing. Even under war conditions, when the European countries were glad to get anything that rolled, the output of worm gears has maintained its dominant position.

It is interesting to note also that not only have the individual truck makers shown their preference for worm drive the world over, but the most prominent users of trucks have verified the judgment of the manufacturers. For instance, such traffic concerns as the London General Omnibus and the Fifth Avenue Coach Company, using thousands of trucks, are firm adherents to the worm drive.

In addition to this situation, two enormous orders were placed within the past few weeks from France, one for 2170 sets of worms and another for 3500—presumably for Governmental use.



We are also manufacturers of Multiple Spindle Drills, Radial Drills, Lassiter Stay Bolt and Bolt Turning Machines.

Baush Machine Tool Company

Springfield Mass.

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FOSTER
OWL LIGHT

WHEREVER quality cars congregate—wherever discrimination has been exercised in choosing de luxe motoring equipment—the Owl-Light predominates.

No other searchlight has the handsome finish, the aristocratic, thoroughly distinguished appearance of the Owl. No other searchlight is so powerful, nor so versatile in meeting the emergencies of night driving.

Owl-Lights are furnished for all makes and models of cars.

In ordering, state make, model and battery voltage of car.

Booklet illustrating various uses for the Owl-Light sent on request.

THOROUGHLY HIGH GRADE DEALERS WANTED

C. H. Foster Accessories Co.
2303 Michigan Boulevard **Chicago**

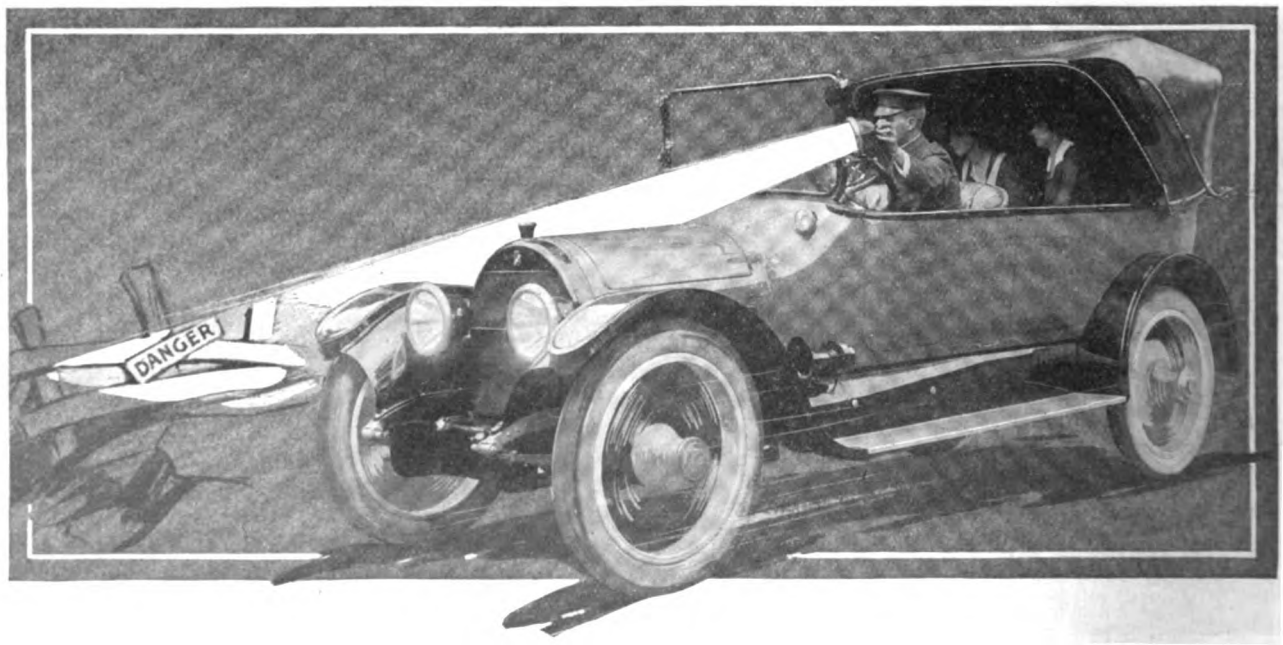
DEALERS—WIRE or WRITE-TO-DAY



NOW ONLY

$5

Better Than Ever



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Across the Continent in 5 Days–18½ Hours



MARMON 34

Establishes a Transcontinental Record New York to San Francisco–3476 miles

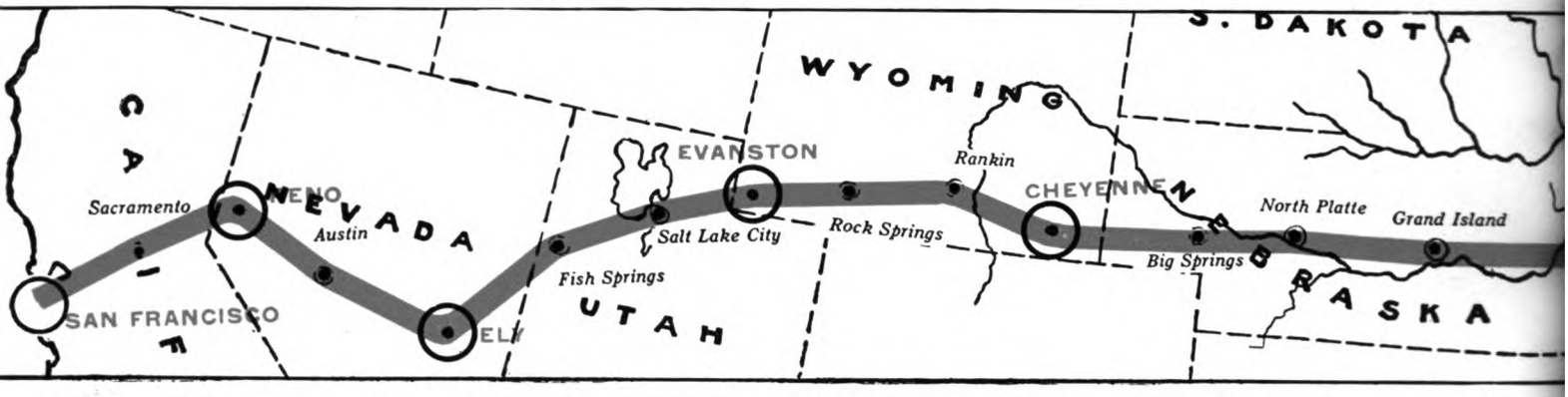
S. B. STEVENS, a millionaire sportsman of Rome, New York, driving a Marmon 34, arrived at Third and Market Streets, San Francisco, at five o'clock, Saturday afternoon, July 29, just 5 days, 18½ hours after the car had left Columbus Circle, New York City, 3476 miles away.

This completed the most remarkable and fastest journey ever made across the United States in a motor car—the average rate of speed being almost equal to the schedule of the fast transcontinental railroad trains.

The car was a Marmon 34 touring car of regular production and was driven by Mr. Stevens and other amateurs under the auspices of the American Defense Society to demonstrate the possible speed and reliability of motor transportation across the continent. This epoch-making run by the Marmon 34 demonstrates again the soundness of its advanced scientific construction—the extensive use of aluminum, the deep section frame, the new rear spring suspension, the self-oiling chassis lubrication system and other features.

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The Fastest Coast to Coast Jo



First Day

Start, New York 1:30 a. m. Monday, July 24. Syracuse, 10:30 a. m. Monday, 295 miles, average 34 m.p.h. Cleveland, 7:55 p.m. Monday, 647 miles, average 34 m.p.h.

THE start was made at 1:30 a. m., Monday, July 24, from Columbus Circle, New York City. Fred Barbour, of New York, drove the first leg of the trip. Two hundred and ninety-five miles from New York to Syracuse were covered in nine hours, the car arriving at 10:30 a. m.

Stevens took the wheel at Syracuse and drove to Cleveland, by way of Batavia, Buffalo, and Erie, arriving in Cleveland, 647 miles from New York, at 7:30 p. m. Monday night. There was some delay in Cleveland on account of the car getting caught in a parade and bad luck at railroad crossings. At one crossing the car was held twelve minutes.

Second Day

Merrillville, Ind. (near Chicago) 6:45 a. m. Tuesday, 977 miles, average 33.3 m.p.h. Cedar Rapids, 3:45 p. m. Tuesday, 1235 miles, average 33 m.p.h.

AT Cleveland, William Binz, of Chicago, took the wheel and drove during the night 330 miles to the next station which was Merrillville, Indiana, near Chicago. The time made on this stretch was limited to the time which could be made by Stevens in getting from Cleveland to Merrillville by train. The train stop near Merrillville is Gary, and it was impossible for Stevens to get to Gary until 6:45 a. m. Tuesday morning.

The Marmon car reached Merrillville exactly on time and after taking on supplies another car flashed over the hill, bearing Stevens, the driver, who was to take the car to Omaha. The car left the station as per schedule at 7:00 a. m. On this leg the car passed through Elyria, Norwalk, Fremont, Bryan, and South Bend.

Third Day

Omaha, 1:05 a.m. Wednesday, 1536 miles, average 33 m.p.h. Cheyenne, 4:50 p.m. Wednesday, 2113 miles, average 32.3 m.p.h.

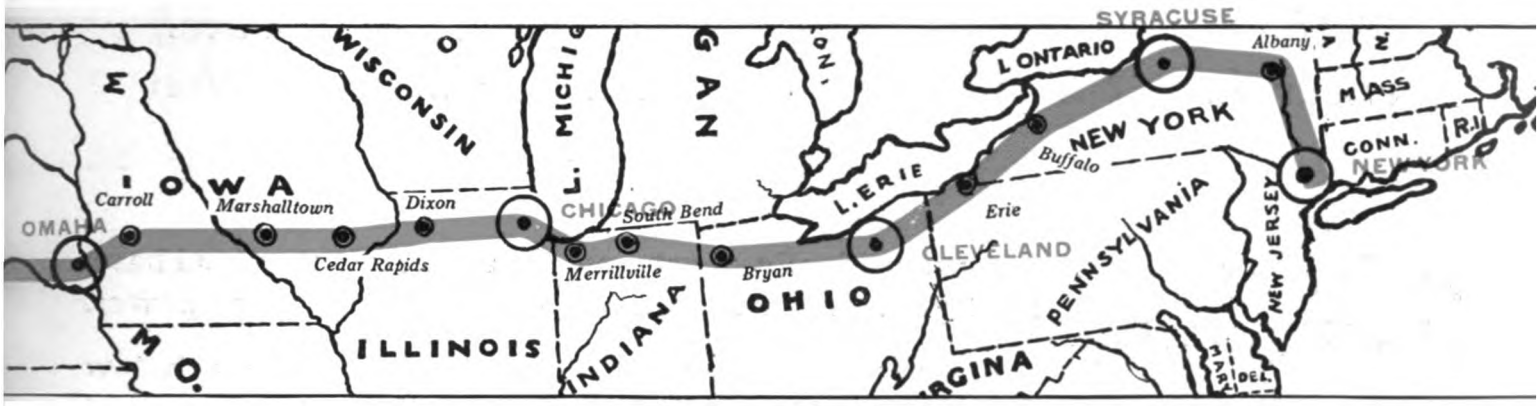
UPON leaving Merrillville the car sped through Aurora, Dixon, Clinton, Cedar Rapids, Marshalltown, Ames, Grand Junction, and Carroll into Omaha, arriving on schedule at 1:05 a. m. Wednesday morning. At Omaha the car was turned over to Fred Barbour while Stevens took the train for Cheyenne, Wyo.

From Omaha the tourists dipped down to Kearney, going by way of Fremont, Columbus, and Grand Island. After leaving Kearney, they passed through North Platte, Big Springs, Sidney, Kimball, Pine Bluffs, Wyo., into Cheyenne, arriving there at 4:50 p. m. and stopping for thirty minutes. At Cheyenne they were about thirty minutes ahead of their schedule.

Marmon 34 starts from New York M

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ney ever made in a Motor Car



STEVENS was driving from Cheyenne to Evanston, a distance of 407 miles. He encountered about 20 miles of muddy roads during the last hundred miles and arrived at Rawlings at 1:10 a. m. Between Cheyenne and Rawlings the car had to be driven up the long Sherman hill, reaching an approximate elevation of 8,000 feet and crossing the Great Continental Divide. At Evanston, Stevens wired:

"Delay on account of much rain. Roads muddy. Car in best of condition."

Heavy rains in Utah reported by Salt Lake papers as cloud-bursts, made the trip across Utah dangerous and slow. Walter Bieling drove the car from Evanston, to Ely, Nev., passing through Salt Lake City, County Well, Fish Springs, and over the Shelbourne Pass, crossing through the great American Desert, which was one of the worst parts of the trip. The heavy rains in Utah had put the roads in bad condition and caused numerous washouts. Three hours were lost west of Salt Lake City because the pilot became confused in the route through the desert.

Fourth Day

Evanston, Wyoming, 11:30 a.m. Thursday, 2529 miles, average 30.1 m.p.h.

AT Ely, the car was turned over to Robert Creighton, who drove to Reno. Here again road conditions were very bad. The trails over the Nevada desert were in terrible shape. The transcontinental car, however, was in fine condition. Creighton passed through Austin, Alpine Ranch, and Fallon. Aside from being delayed by the rough trails, a short circuit left him without lights. He located the trouble, however, and remedied it so that delay from this source was not considerable. Breaking through a bridge several miles out of Fallon caused a further delay of 3½ hours.

At Reno, Stevens was again waiting to take the car. He left Reno at 5:40 a. m., going by way of Truckee and Colfax, arriving at Sacramento at 12:22 Saturday afternoon, and thence to Vallejo, arriving at 3:10 p. m. Here a special boat was waiting to take the victorious car to San Francisco, and at 5 o'clock p. m. the car was officially checked at Third and Market Streets.

Fifth Day

Ely, Nevada, 7:55 a. m. Friday, 2890 miles, average 27.6 m.p.h. Reno, 5:31 a.m. Saturday, 3240 miles, average 25.7 m.p.h. Finish, San Francisco, 5 p. m. Saturday, 3476 miles, average 25.1 m.p.h.

[redacted], arrives San Francisco Saturd-

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This is Final Proof

of the soundness of the advanced principles which enter into the Marmon 34 scientific construction

A few of the Principles

A scientifically constructed car of 136-inch wheel base, 1100 pounds lighter than cars of equal size and power.

A perfectly balanced car—easily handled—with low center of gravity and a minimum of unsprung weight which eliminates body sway at high speeds.

The new Marmon frame construction with side members 10 inches deep and steel running boards an integral part.

The cross cantilever rear spring construction which protects the car from road shocks and insures exceptional riding comfort.

The Marmon system of chassis self-lubrication, which eliminates all but four grease cups on the entire car.

A powerful, rapid accelerating, six-cylinder, overhead-valve motor, and many other advanced features.

TWO VITAL FACTORS

in making this record were Lynite Aluminum monoblock motor casting and Lynite Aluminum pistons.

LYNITE ALUMINUM

For 1917 This Remarkable Car Will Remain Unchanged

THE Marmon 34 will not be different in 1917—save perhaps a few refinements in minor detail such as are likely to be made at any time during a season's production.

This new car of scientific design, in which aluminum plays an important part, is still far ahead in its advanced and distinctive features. Hundreds of these cars, in regular service in the hands of private owners, have proven conclusively that the Marmon 34 has *more* than lived up to every claim that we have made for it.

Light, easy riding, powerful, and flexible, and finished in perfect taste, the Marmon 34 is without doubt the car of most advanced and practical design of the season.

Nordyke & Marmon Company

Established 1851

Indianapolis, Indiana

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The MARMON Car

In its Record-Breaking Performance between New York and San Francisco Used

MONOGRAM OIL

Exclusively

There were absolutely no lubricating troubles from start to finish At the end of the run the car could have made the return trip without a single adjustment, the motor, which was sealed, running as smoothly and sweetly as at the start

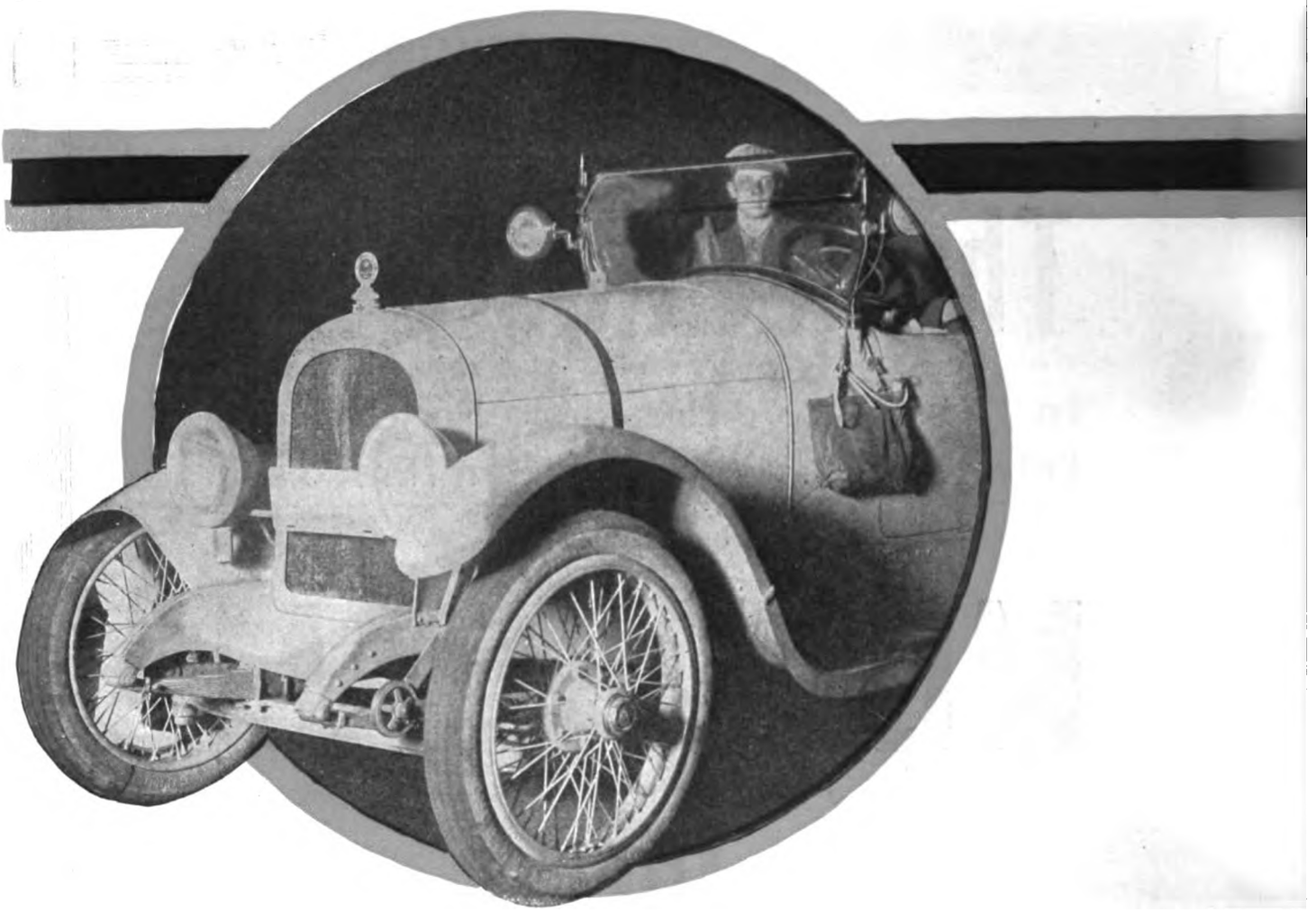
MONOGRAM OILS

are used and endorsed by more automobile manufacturers than any other oil on the market

New York Lubricating Oil Co.

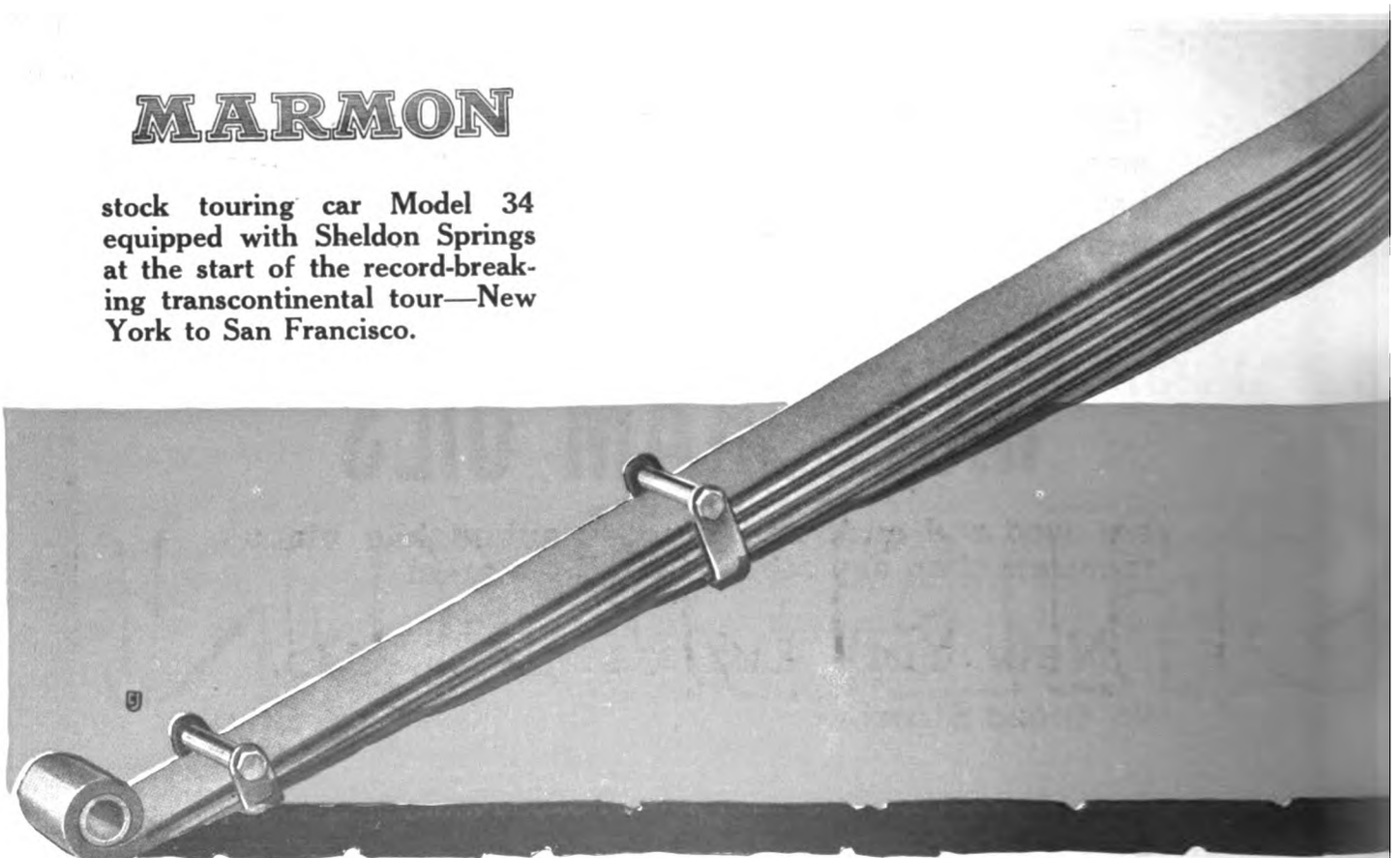
116 Broad Street New York City

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MARMON

stock touring car Model 34 equipped with Sheldon Springs at the start of the record-breaking transcontinental tour—New York to San Francisco.



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Perfect Spring Performance

Stock Sheldon Springs equipped the Marmon 34 which established a new Transcontinental record Saturday, July 29—when the Marmon 34 completed the trip from New York to San Francisco, 3406 miles, in 5 days, 18 hours and 30 minutes.

That this Marmon car should complete this gruelling test without the slightest attention being paid to the Sheldon Springs, and without any spring trouble whatsoever, is no surprise to the makers of Sheldon Springs, for Sheldon Springs are made to perform just this way all the time.

And yet we submit that to drive this distance continuously over the roads encountered and at so high a speed average is surely an unusual tribute to the quality and character of Sheldon Springs.

The Sheldon Axle and Spring Company, WILKES-BARRE PENNSYLVANIA

SHELDON

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The New York-San Francisco Record by Marmon Car

Time: 5 Days; 18 Hours; 30 Minutes



Spark Plug Used:

AC



Previous transcontinental records were held by AC.

All leading quality car makers use AC Plugs. Why? Because they are the most reliable.

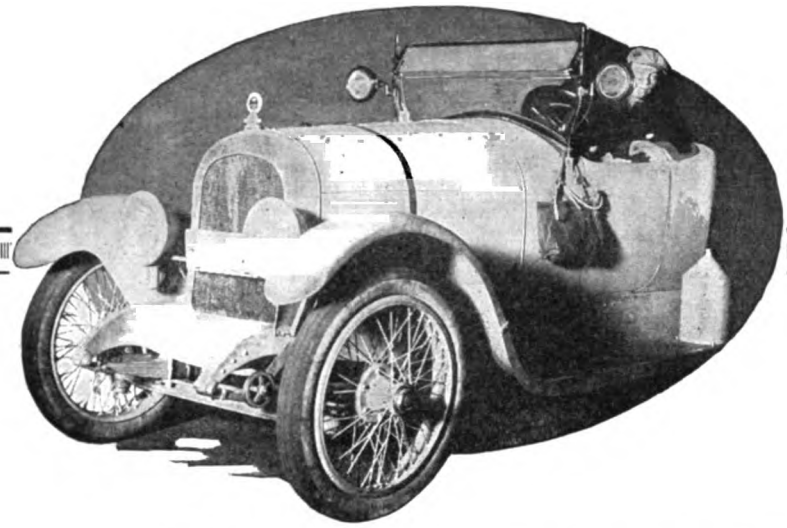
Their endorsement and these long distance records prove it.

If your car is not equipped with AC, you are not getting the best performance out of your motor.

Try AC *The Standard Spark Plug of America*

CHAMPION IGNITION COMPANY, FLINT, MICHIGAN

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In 1907, that great old Panic year, I called on Mr. Howard Marmon, showed him some fractures of NON-GRAN Bronze (it's only by looking into the inside of a piece of bronze that you can tell anything about it) and told Mr. Marmon what my company was going to do to maintain the uniformity of that wonderful knit structure—that remarkable molecular cohesion.

Before I had returned to Berwyn, Mr. Marmon's order had arrived calling for 26 piston pin bushing castings. He wanted to see, for himself, just what this remarkable molecular cohesion would accomplish. A year's test was enough. Orders then arrived for the Marmon Company's complete piston pin bushing equipment. Then a test of NON-GRAN for some other part—then another and another, all through the car.

This picture of the freight car shown below, taken last month, nine years after my first meeting with Mr. Marmon, will tell whether or not my company has made good its promise to maintain uniformity in this wear-resisting, cohesive, molecular structure of NON-GRAN.

HIGH SPEED
NON-GRAN
BEARING BRONZE

Good design and good workmanship make a car a good performer. Back these qualities with NON-GRAN in the vital wear-subjected parts and a car also becomes a **permanently** good performer.

(*Signed*)



President.

AMERICAN BRONZE COMPANY

BERWYN, PENNSYLVANIA



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Another World's Record On SILVERTOWNS!



New York to San Francisco in 5 days, 18 hours and 30 minutes! Breaking every transcontinental auto record—and bringing San Francisco TWO WHOLE DAYS nearer the Eastern Coast.

That's the record Goodrich SILVERTOWN Cord Tires made on the sensational Marmon run—held under the auspieces of the American Defense Society and with Gen. Wood's sanction—to show Americans the possibility of transcontinental mobilization independent of railroads.

They left New York City July 24th and officially checked in at San Francisco July 29th.

Mr. S. V. Stevens, who drove, has the warmest of praise for the wonderful performance of Silvertowns on this gruelling test. He says: "I have toured across the Continent probably more times at good speed than any amateur driver. Since 1900 I have used all standard makes of tires, but none can hold a candle to your Silvertown Cable Cords. They are the most resilient, fastest and strongest in the world."

This is the tire, remember, that holds all world's records for Speed and Endurance—that has won every important auto race since 1914!

Follow the example of the big drivers, the big engineers and the men who KNOW Tires—

PUT
SILVERTOWNS
ON YOUR CAR

Patented and Made only by

THE B. F. GOODRICH COMPANY - - AKRON, OHIO

Branches and Dealers Everywhere

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Stromberg Equipped Marmon Breaks Coast to Coast Record



by 2 Days!

A stupendous feat!—indisputable proof of the wonderful serviceability of the New Stromberg Carburetor!

S. B. Stevens, millionaire motor enthusiast of Rome, N. Y., and Chairman of the American Defense Society, with his Stromberg-equipped Marmon 34, broke the coast to coast record by two days.

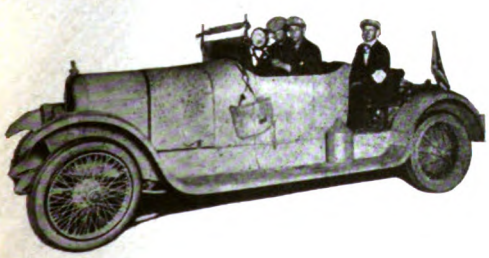
It required just 5 days, 18 hrs., 30 minutes, from New York City to San Francisco—a distance of 3,476 miles.

3,476 miles of constant grind across the continent—through sand and mud, across creeks and over rutty mountain roads—with the thermometer always around the boiling point of 100 degrees.

That's the kind of test which shows **again** the remarkable serviceability and reliability of the New Stromberg Carburetor.

Hundreds of thousands of car owners are getting maximum economy, speed, power, acceleration and service from the New Stromberg Carburetor.

We want to show you how the New Stromberg will make **yours** a better car. Write today! State name, model and year of your car.



STROMBERG MOTOR DEVICES CO.

Dept. K, 64 E. 25th Street, CHICAGO

New STROMBERG Does it!
CARBURETOR

Digitized by Google

Phillips D. Ketchum, all of Boston, are named as incorporators.

—

Marmon Coast-to-Coast Record

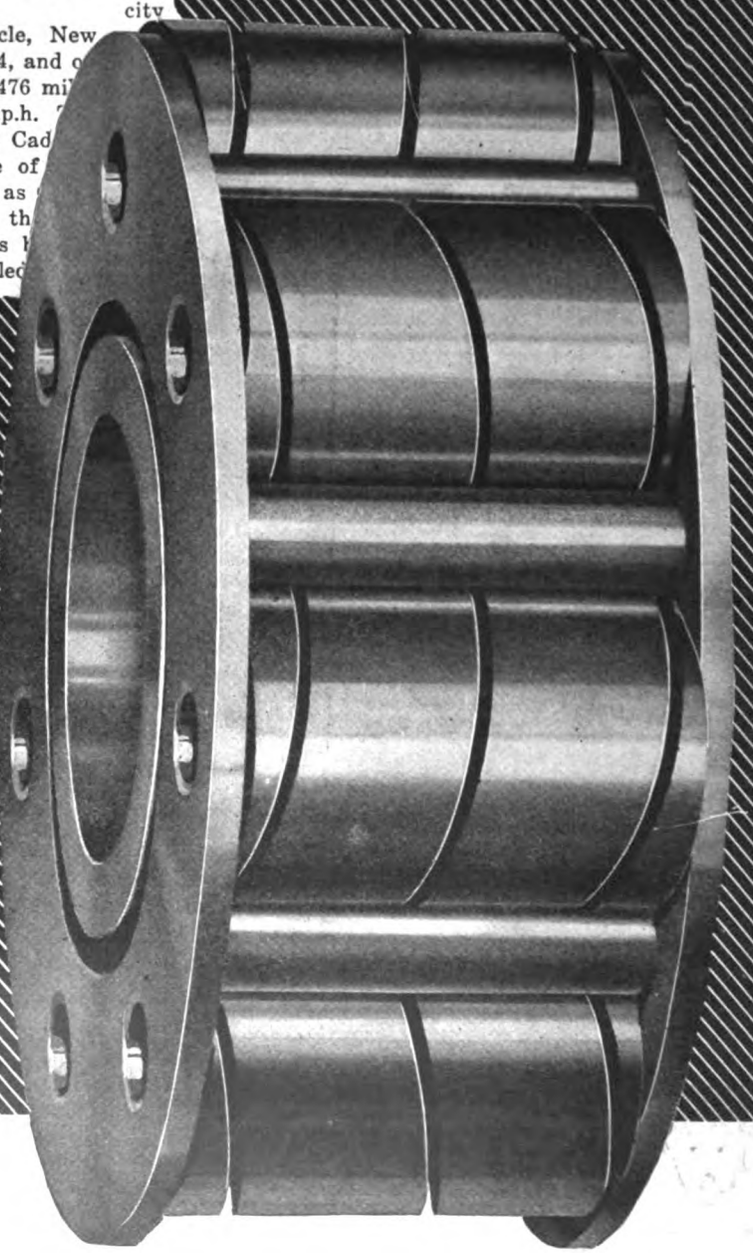
—

S. B. Stevens Covers Distance in 5 Days, 18 Hr. and 30 Min.

SAN FRANCISCO, CAL., July 29—A Marmon car driven by S. B. Stevens, well known in motoring circles around New York, reached San Francisco to-day, having crossed the continent in the record time of 5 days, 18 hr. and 30 min. This is a gain of more than 41 hr. over the record established by the Cadillac eight last May.

The car left Columbus Circle, New York City, at 1.30 a. m. July 24, and o its trip covered a distance of 3476 mi at an average speed of 25.1 m.p.h. record made by Baker in the Cad was established at an average of m.p.h. The car traveled as far as enne at an average of better th m.p.h., but owing to bad roads that point its average was pulled to nearly 25

—again HYATTS help!



In the transmission, at the differential, and in the self-starter, the Hyatt Quiet Bearings in this Marmon 34 gave perfect service and required no attention during the record-breaking trip.

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THAT REMARKABLE

MARMON

which traveled over the give-and-take roads between the Atlantic and the Pacific, in the fastest long distance cross country run ever made —a remarkable record, a wonderful test—

New York to 'Frisco

3476 Miles—5 Days 18½ Hrs.

USED

BOSCH

PRODUCTS

OF COURSE

For Ignition - - - - - A Bosch Magneto
For Lighting - - - - - A Bosch Dynamo
For Starting - - - - - A Bosch Starter

Never did the electrical units of a car receive such a cruel test, but there was no trouble, just complete efficiency.

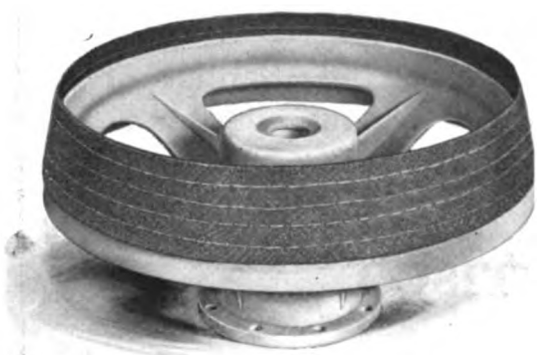
Be Satisfied Catalogs of Ignition, Lighting, Starting Units sent on request **Specify Bosch**

BOSCH MAGNETO COMPANY, 224 West 46th St., New York

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Thermoid

Never Fails To Do Its Part



Thermoid Cone Clutch Facing



THERMOID BRAKE LINING

Mr. S. B. Stevens' New York to San Francisco speed record of 5 days, 18½ hours in his

MARMON 34

proves the grit and cleverness of Mr. Stevens and the reliability of every part of his wonderful car.

The engineers who worked out the specifications and supervised the building of the marvelous Marmon 34 made no mistake when they specified Thermoid facing for the cone clutch and Thermoid 100% lining for the brakes.

Both these parts have stood all sorts of factory and service tests. This wonderful record is one more proof of Thermoid reliability.

POSTAL TELEGRAPH – COMMERCIAL CABLES

TELEGRAM

148NYZ 51 5P 5

R M INDIANAPOLIS IND AUG 12-16.

THERMOID RUBBER COMPANY, TRENTON, N.J.

THERMOID CLUTCH AND BRAKE FACING WENT THROUGH WHOLE TRIP AND REPORTED TO BE IN EXCELLENT CONDITION AT END OF JOURNEY.

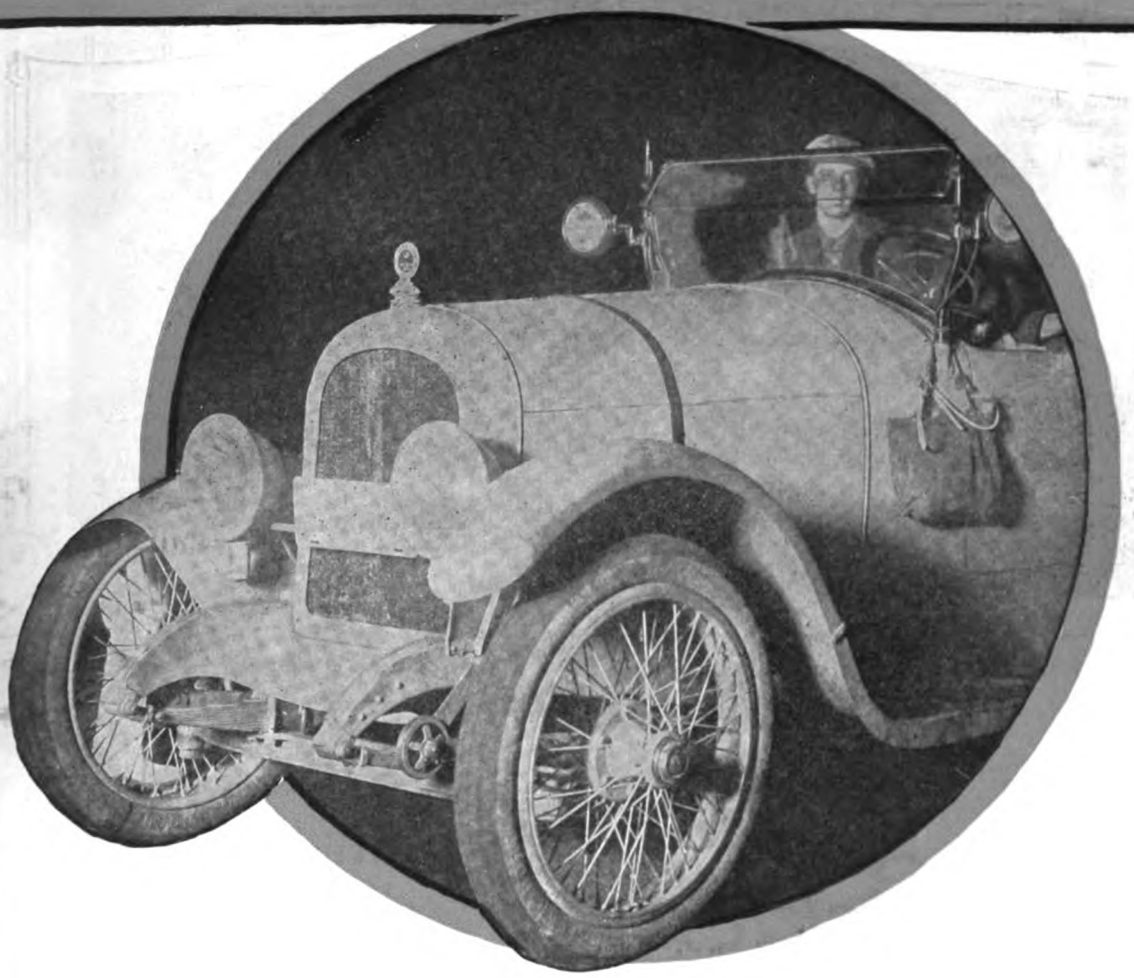
NORDYKE & MARMON CO. INC.

Thermoid Rubber Company

Trenton, New Jersey

When writing advertisers please mention Motor World

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HOUK
QUICK CHANGE
WIRE WHEELS

WHENEVER REAL RECORD BREAKING events take place you will find Houk Wire Wheels play a very important part in them.

The latest demonstration of this was Mr. Stevens' record-breaking trip across the continent in his Marmon car—equipped with HOUK WIRE WHEELS.

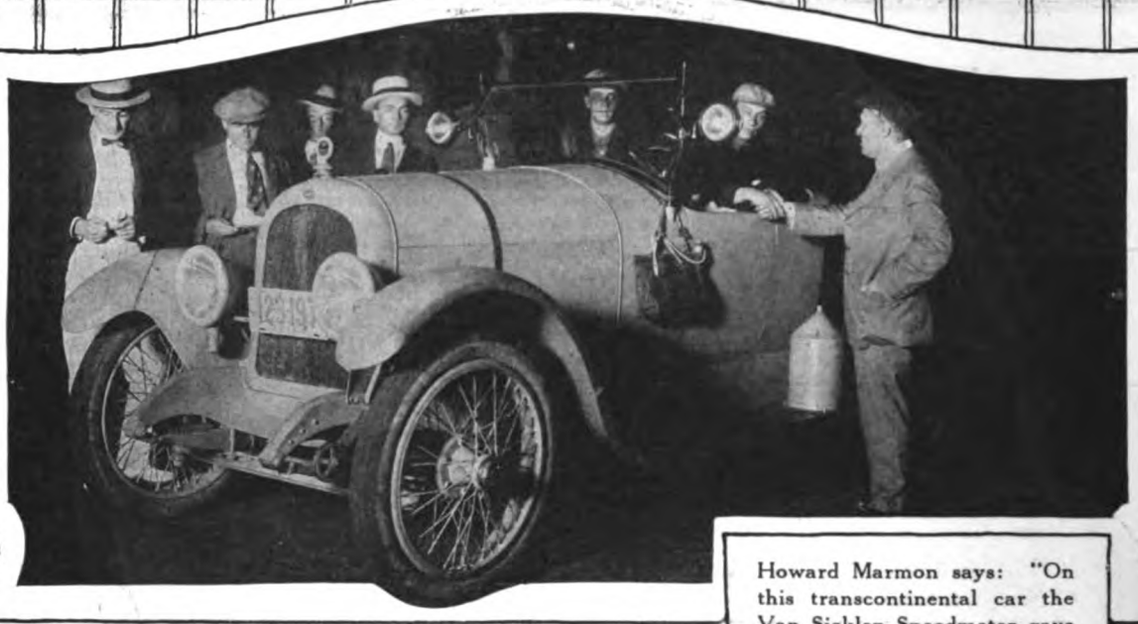
Houk Manufacturing Company
BUFFALO, N. Y.

1794 Broadway,	New York, N. Y.
1092 Commonwealth Ave.,	Boston, Mass.
1243 Van Ness Ave.,	San Francisco, Cal.
2337 Michigan Ave., S.,	Chicago, Ill.
786-788 Woodward Ave.,	Detroit, Mich.
328 North Broad St.,	Philadelphia, Pa.



When writing advertisers please mention Motor World

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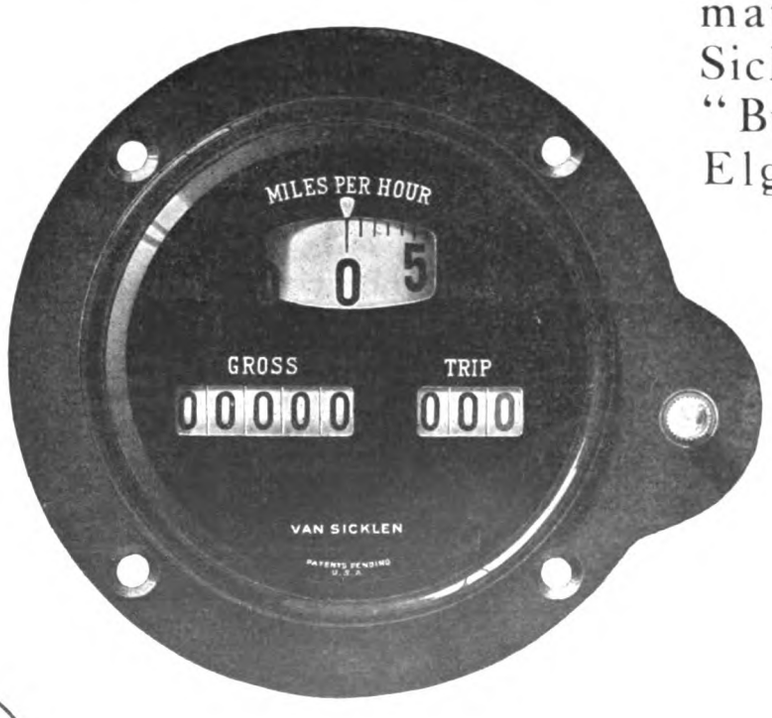


Howard Marmon says: "On this transcontinental car the Van Sicklen Speedmeter gave entirely satisfactory results."

Van Sicklen SPEEDMETERS

"Built Like a Watch by Elgin Watchmakers"

TO maintain a perfect schedule of miles per hour, the drivers of the record breaking Marmon 34 relied on the pneumatic principle Van Sicklen Speedmeter—"Built Like a Watch by Elgin Watchmakers."



The VAN SICKLEN COMPANY
ELGIN • ILLINOIS

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WALLS THAT SHOUT!

For every barren space in your store we have a card, a poster or a sign. Hang them up and they will shout

GOLDEN GIANT

to every man who walks into your store

This is the sort of dealer-co-operation that you get with an order for Golden Giant Spark Plugs. It works while you sleep and in your waking hours is on the job pounding into the minds of motorists the story of the Plug they need.

Send your jobber—any jobber—a sample order. Write two words at the bottom of it, "Come on." This is the pass-word that tells us it is time to breathe the breath of life into your business.

We will go to it like trench-diggers under fire. We'll show you how to increase your Spark Plug sales—how to increase your Spark Plug profits—and how to add satisfied customers to your business.

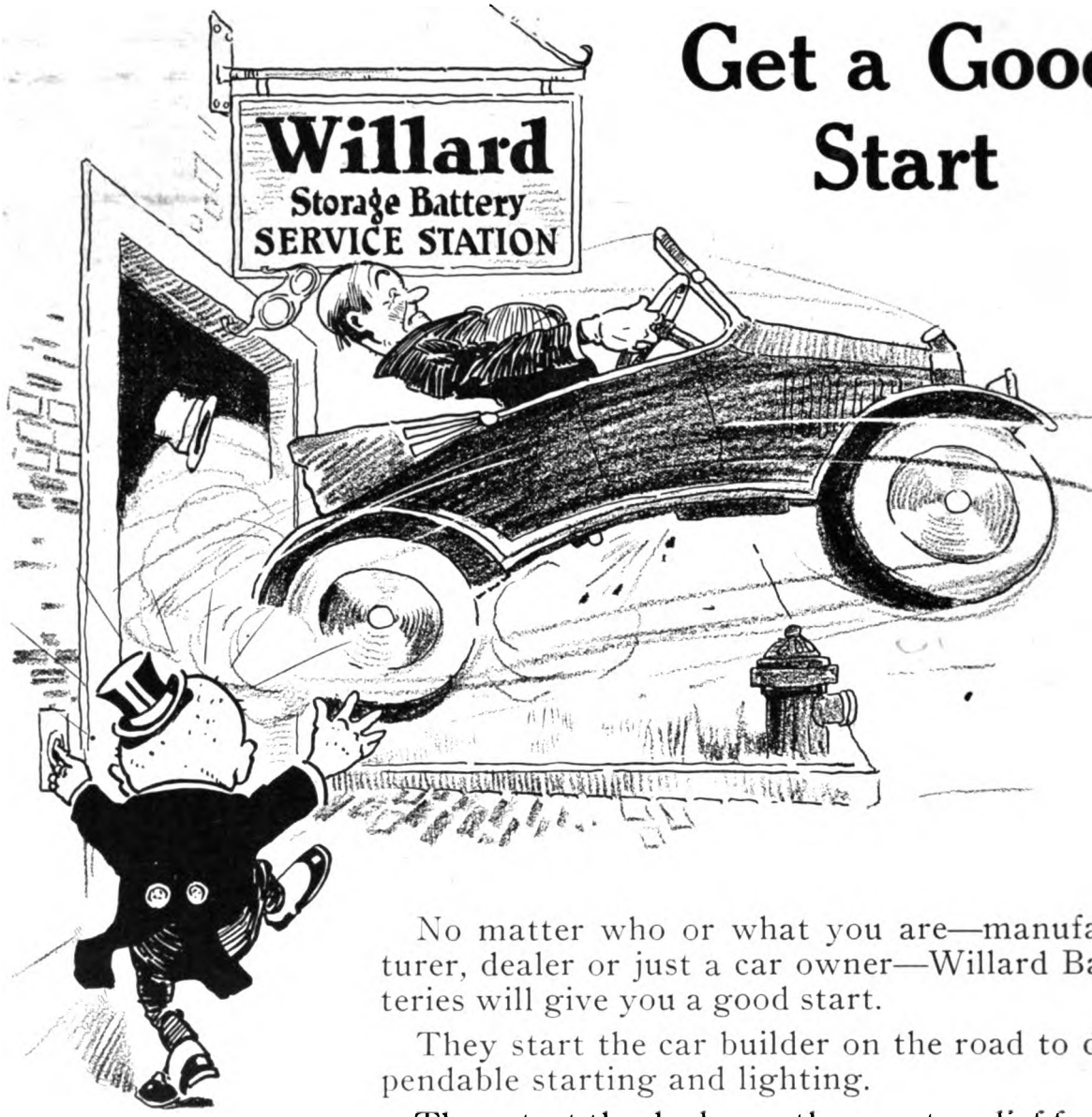
Say the word—and say it now.



BENFORD MFG. CO.

MT. VERNON **NEW YORK**

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Get a Good Start

No matter who or what you are—manufacturer, dealer or just a car owner—Willard Batteries will give you a good start.

They start the car builder on the road to dependable starting and lighting.

They start the dealer on the way to relief from battery complaints.

And they start the owner's car wherever it may be, day after day, month after month.

There's a lot in having over 750 Willard Service Stations to help you out of a tight place, too.

Write for a list of service stations and booklets P-1 and P-2.

Willard STORAGE BATTERY

Willard Storage Battery Company

Cleveland, Ohio

New York: 228-230 W. 58th St.
Chicago: 2524-34 So. Wabash Ave.
Atlanta, Ga.: 8-10 East Cain Street
Detroit: 736-38-40 Woodward Ave.
San Francisco: 1433 Bush Street
Indianapolis: 316-318 No. Illinois St.
Minneapolis: 36-38-40 So. 10th St.

Direct Factory Representatives in Philadelphia, Boston, Dallas, Kansas City, Omaha, Seattle. Service Stations in All Principal Cities in the United States and Canada.

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"New Tops for Old"



THOUSANDS of automobile owners all over the country who are using Johnson's Prepared Wax and Johnson's Cleaner with such wonderful results will want to use our new product—

JOHNSON'S BLACK-LAC

It is unequalled for touching up **leather cushions—side curtains—tire covers—auto trunks—pantasote and mohair tops and linings.** One coat of Johnson's Black-Lac gives a rich, black surface just like new. It is easy to apply—dries in fifteen minutes—does not rub off on the hands or clothing—is permanent—water-proof and inexpensive.

It is splendid for blackening **fenders—rims—running boards—hoods—radiators—guards—lamps**—and in fact all worn metal parts. Prevents rust and keeps your car in a high state of repair.

Nationally Advertised

Our advertising campaign on **Johnson's Black-Lac** has already started. We will use half-pages in Saturday Evening Post—also large space in practically every motor paper. There is bound to be a large demand and we hope you will stock immediately. Automobile owners who have been in the habit of purchasing **Johnson's Cleaner** and **Johnson's Prepared Wax** from you will naturally turn to you for this new product.

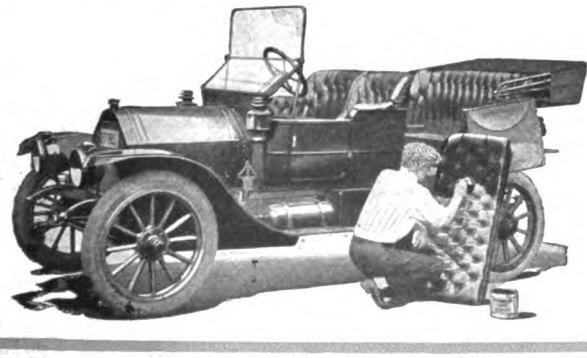
It is no longer necessary to stock three or four different articles for dressing up automobiles. Johnson's Black-Lac is six products in one:

1—It is a mohair top dressing. 4—It is a cushion dressing.
2—It is a leather top dressing. 5—It is a metal enamel.
3—It is a lining dye. 6—It is a rim paint.

Johnson's Black-Lac is put up and listed as follows:

Quarts	**$ 1.10**	**Half-pints**	**$ .40**
Pints	**.65**	**Also in gallons for large users.**	

Liberal dealers' discount. Mail coupon for further information.



MW8

Use This Coupon for Pint Sample Free

S. C. JOHNSON & SON, Racine, Wis.

I am interested in stocking Johnson's Black-Lac. Please send me a pint by prepaid express without charge—also discount and names of jobbers in this locality from whom I can purchase.

Name .....

Address .....

City and State .....

My Jobber is .....

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

The Mitchell Creed

We believe that the light Six, with small bore and long stroke, is the ultimate type of motor.

This we say after building all types, from Ones to Eights, and for 13 years.

We believe that this type must be so built as to give maximum economy.

That is why we use drilled pistons, why we conserve the heat, and why we use an extra-cost carburetor. The result is from 16 to 21 miles per gallon with a big, powerful car.

We believe in factory efficiency, which means production of a fine car at the lowest cost.

That is why we brought John W. Bate to this plant—the great efficiency engineer. We gave him free hand. He has built and equipped here the model automobile plant.

He has cut our factory costs in two. He is producing the Mitchell car for one-fifth less than any other plant could do it. He is building 98 per cent of the car in this plant. Even the bodies are built here.

We believe in lifetime cars.

John W. Bate has worked to that end for years. He has made in the Mitchell 700 improvements. He has perfected it part by part. Castings have been almost displaced in it. Now 440 parts are drop-forged or steel stamped.

He uses a wealth of Chrome-Vanadium steel. His margins of safety are at least 50 per cent. Mitchell cars in the building get hundreds of tests and inspections.

One Mitchell car has run 218,734 miles. Six have averaged 164,372 miles each, or over 30 years of ordinary service.

We stand for complete cars.

In the Mitchell we include 26 extra features, most of which all other cars omit.

We stand for up-to-dateness.

The Mid-Year Mitchell—our second this-year model—brought out 73 new conceptions. And more have been added since. Our experts examined 257 new models before completing this one.

We believe in attractions.

It is little things which often decide the car. So we include every beauty, comfort and luxury we know.

We use shock-absorbing springs. We add a power tire pump. We put a light in the tonneau, a locked compartment in front. An engine primer at the driver's hand. We use a 22-coat finish, deep springs, French-finished leather—all the outer things that count.

We believe in advertising.

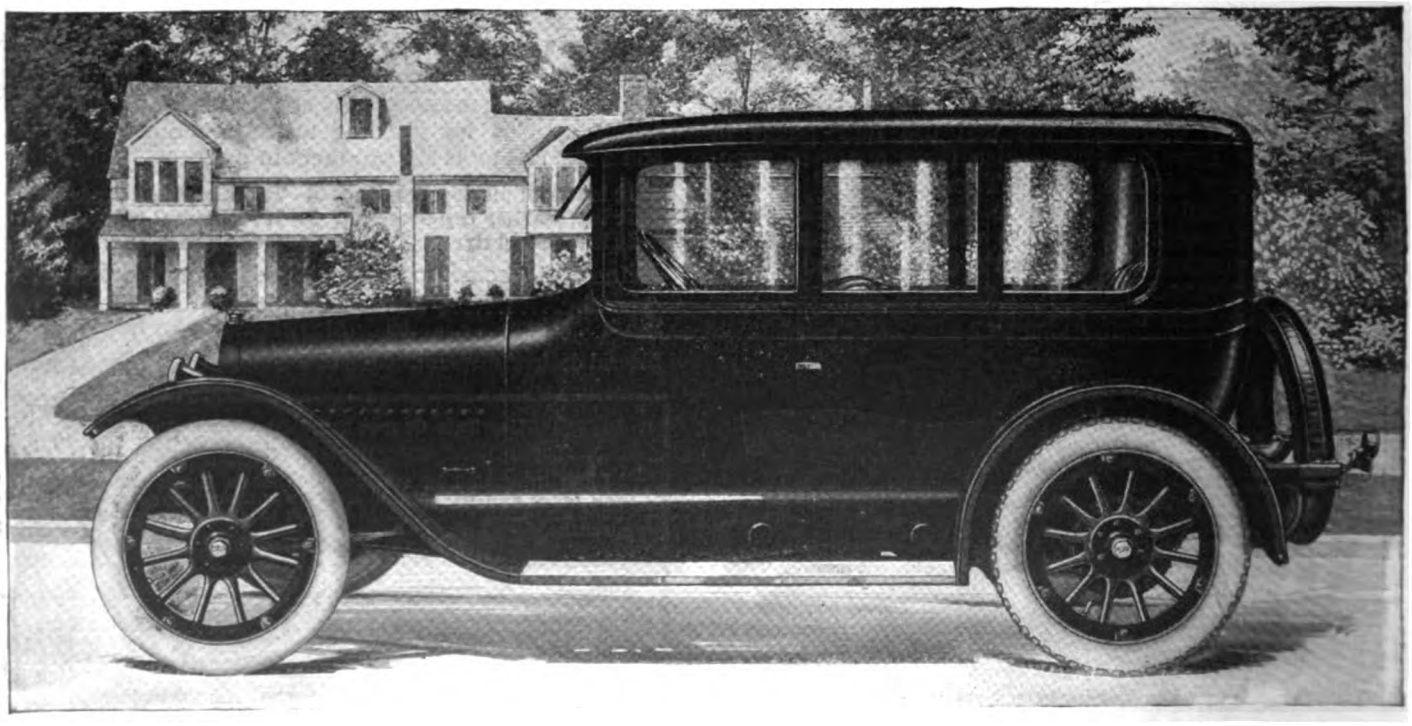
This season alone we spend on the Mitchell $500,000. We are letting men know where the Mitchell excels. We are creating respect for the car and our methods. We are bringing buyers by the thousands, half-converted to the car.

There are still many sections where we are looking for dealers who believe in the Mitchell creed.

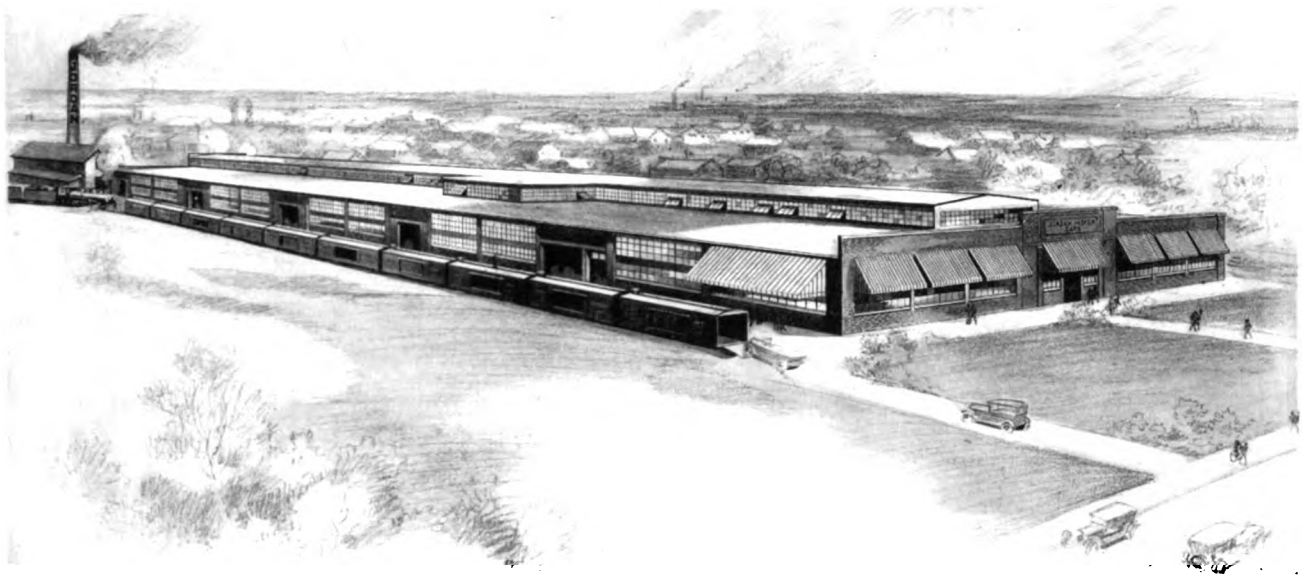
$1325 F. o. b. Racine
For 5-Passenger Touring Car or 3-Passenger Roadster
7-Passenger Touring Body, $35 Extra

High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features. Also five types of closed bodies.

Mitchell Motors Company, Inc.
Successor to Mitchell-Lewis Motor Co.
Racine, Wis., U. S. A. (116)



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The Jordan Motor Car Plant

THE JORDAN ORGANIZATION

THE Jordan organization is composed of a group of men, each one of whom has for the past ten years devoted all of his energies to the successful conduct of his own specialized department of the motor car business. Each one of these men is imbued with the ideal of the founder of the company, which is to build a car of finished mechanical excellence, to be equipped with a series of custom style bodies, to be sold by dealers of established integrity and business ability, to people who appreciate a car of distinctive individuality.

JORDAN

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Edward S. Jordan — Edward S. Jordan, President, was for many years an executive in the organization of the Thomas B. Jeffery Company, holding the position of Secretary and General Sales Manager.

P. H. Withington — P. H. Withington, Vice President of the Jordan Company, is also president of the Sparks Withington Company and a director in the American Fork and Hoe Company.

Paul Zens — Paul Zens, Secretary, was with the Thomas B. Jeffery Company for thirteen years and had entire charge of purchases for the past six years.

Russell S. Begg — Russell S. Begg, Engineer, was formerly with the Packard, Hudson, Thomas, and Jeffery Companies.

W. B. Riley — W. B. Riley, Sales Manager, was with the Jeffery Company for the past seven years.

J. L. Davidson — J. L. Davidson, Production Manager, was formerly Works Manager for the Studebaker Corporation.

F. G. Tyler — F. G. Tyler, Accountant, has had twenty years' experience in finance, cost accounting, bookkeeping, and general office management.

The Jordan Company — The Jordan Company was organized in January, 1916, and counts among its friends a very large number of the most substantial men in the motor car and accessory manufacturing departments of the industry.

The Plant — The plant is most modern in its equipment and is organized for the efficient production of the Jordan car. Accuracy in building and thoroughness of inspection constitute the Jordan ideal.

Only one hundred well established dealers will be authorized to sell the Jordan car as it is the purpose of the Company to assure deliveries to those who have qualified to do business in accordance with these principles.

It is the aim of the Jordan organization to earn the good will and to command the confidence and respect of the dealer, the salesman, and the owner, by conducting its business in accordance with the best business principles and to make certain its own success by contributing to the success of those who are associated with it.

JORDAN

JORDAN MOTOR CAR COMPANY

CLEVELAND OHIO

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ARNING

C BISSELL JENKINS, PRESIDENT
H B BARKLEY, VICE-PRESIDENT

ALL AGREEMENTS CONTINGENT UPON STRIKES OR DELAYS UNAVOIDABLE OR BEYOND OUR CONTROL
QUOTATIONS SUBJECT TO CHANGE WITHOUT NOTICE

C BISSELL JENKINS, JR, SALES MANAGER
J P THOMAS, SECRETARY & TREASURER

GENERAL ASBESTOS & RUBBER COMPANY

MANUFACTURERS OF

ASBESTOS TEXTILES
CLOTH YARN AND TAPE

STEAM PACKINGS
GARCO BRAKE LINING

BRANCHES
PITTSBURGH
NEW YORK

CABLE ADDRESS
"GARCO"

MAIN OFFICES AND FACTORIES
CHARLESTON, S.C.

CHARLESTON, S.C.

June 9th, 1916.

The Singleton-Hunting Co.,
Advertising Agents,
Cleveland, Ohio.

Gentlemen:

In view of the conditions existing at the present time in the material market, we feel that it would be wholly advisable to warn our good friends, the Automobile Dealers and Repairmen, against the purchase of the so-called "cheaper" brake linings.

Crude Asbestos has more than doubled in price. Brass Wire has advanced over 300%, and the chemicals used in the manufacture of Brake Lining have advanced accordingly. Taken altogether it is absolutely necessary to increase the price of the finished brake lining if the usual quality is to be maintained.

Copy Dept. Run this! Strong ad as it is! J.H.T.

However, this necessity has been partially avoided by some manufacturers through the use of flimsy construction and the substitution of copper wire in place of brass wire. This combination makes a very inferior Brake Lining which cannot be depended on.

As one of the largest Asbestos Textile Manufacturers in the world, it stands to reason that we can manufacture brake lining as cheaply as anyone. GARCO Asbestos Brake Lining is selling for a higher price than heretofore because its quality has been maintained, and the fact that any Brake Lining sells for less is proof positive that quality has been sacrificed in its manufacture.

Kindly use this information as you think best in the preparation of an advertisement to our customers and the trade in general.

Yours very truly,

GENERAL ASBESTOS & RUBBER CO.

C Bissell Jenkins

SALES MANAGER.

CBJJr:MoD

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99 Per Cent Efficient, Say 11,000 Owners

Motor	*99.9%*	*Electrical System*	*99.5%*
Transmission	*97. %*	*Rear Axle*	*99.7%*
Clutch	*98. %*	*Frame*	*100. %*

YOU'VE heard, time and again, what a wonderful hold the Hupmobile has on its owners. Eleven thousand of them now tell you why. The net result is a tribute such as no car has ever had.

Classified and tabulated, these thousands of opinions result in a rating of 99 per cent for Hupmobile efficiency.

Until we cast up the result we did not know what a gold mine of good opinions we had uncovered.

A Gold Mine of Good Opinions

We have encouraged the owners of the present model Hupmobile—11,000 out of our total ownership—to register their criticisms, complaints and comments.

The engineering department especially sought evidence covering every unit in the car. They wanted to know any and all troubles the owner might have had.

Owners' estimates varied, of course. Some had had minor troubles in one part of the car, some in another. But the net result, out of the 11,000, was an overwhelming vote of complete satisfaction. It figured down to an exact 99 per cent of efficiency.

We never expect to come closer to the goal. No human effort can. We don't think any car other than the Hupmobile ever attained this high peak of popular approval.

Doesn't this explain why better than 50 per cent of all Hupmobile owners buy the Hupmobile year after year?

Isn't it plain why the Hupmobile public has not been won away by multi-cylinder promises?

Performance Is the Answer

Performance, of course, is the one and only answer.

In high gear work, for instance, these 11,000 owners know that the Hupmobile daily duplicates—if it doesn't actually outdo—cars that have more cylinders, or cost more money.

In pulling power, and quick getaway, they see nothing under another name that they do not have.

In flexibility, they find themselves relieved of gear-shifting to an amazing extent.

The Broadest Service System

In the Hupmobile service system, they know they are getting more than any other car offers: expert inspection, adjustment and care each month for eight months by trained Hupmobile experts at Hupmobile service stations, paid for with coupons supplied *free of cost.*

Do you wonder, then, that 11,000 owners vote the Hupmobile 99 per cent efficient? Do you wonder that Hupmobile dealers are breaking previous sales records in spite of what you might be pleased to term multi-cylinder competition?

Don't these facts make you want to know whether your territory is open?

Hupp Motor Car Corporation
DETROIT, MICH.

The Mark of Superior H *Motor Car Service*

Five Hupmobile Points to Remember

PERFORMANCE—A high-gear performer in the usual low-gear situations.

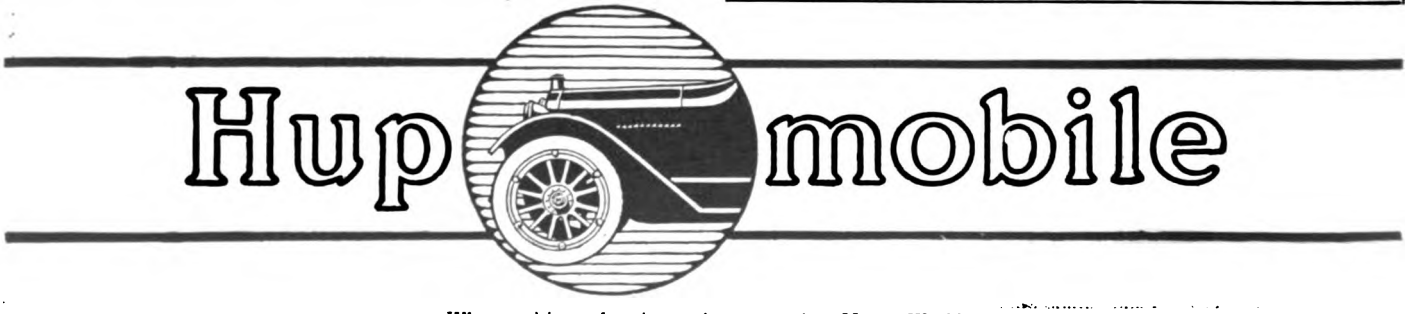
COUPON SERVICE—Regularly each month for eight months, free labor, inspections and adjustments at more than 5000 authorized Hupmobile service stations in the United States and Canada.

ECONOMY—In line with the well-known Hupmobile repair cost record of ¼ cent per mile. This is real economy—maintenance economy. Car is easy on tires, fuel and oil.

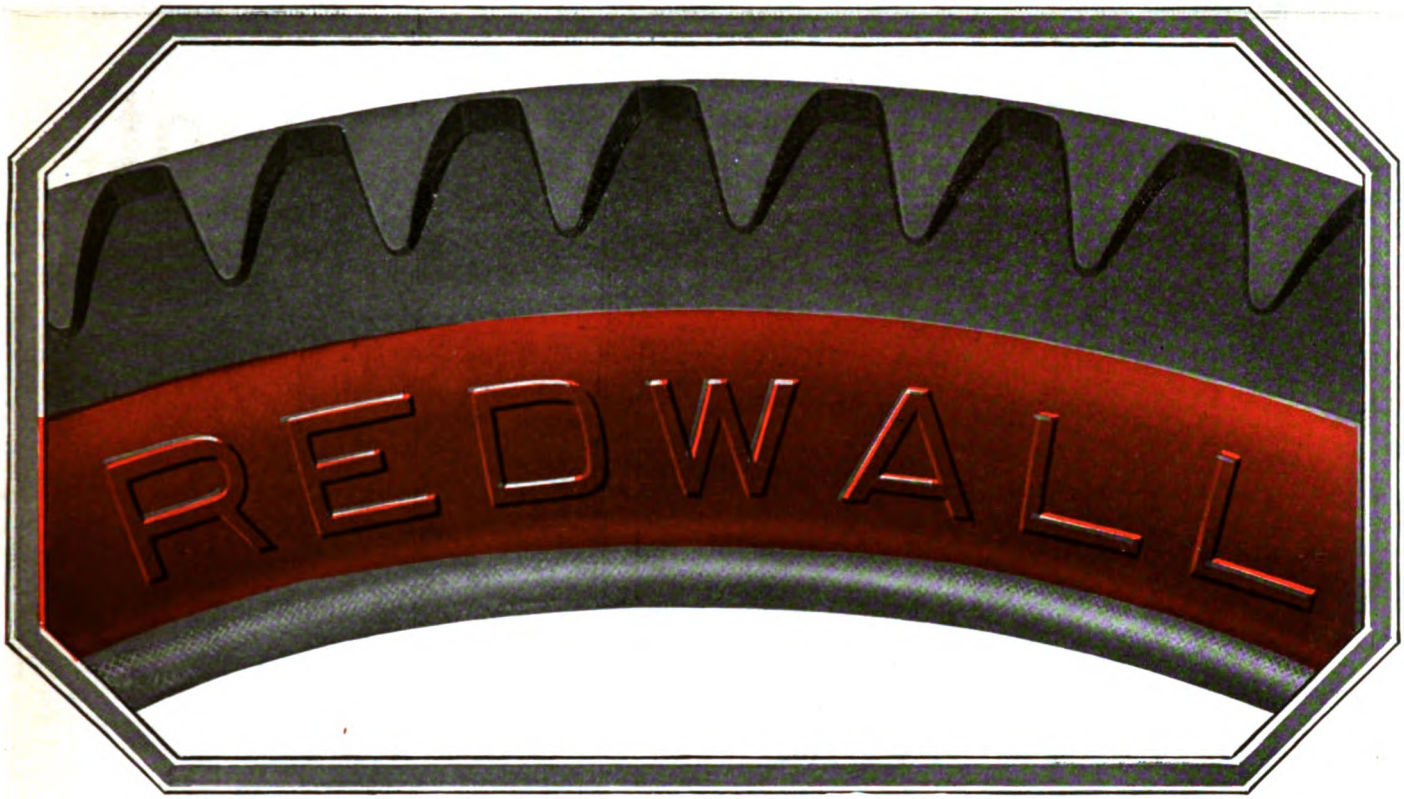
EFFICIENCY — Eleven thousand owners report the Hupmobile 99 per cent efficient.

REPEAT SALES—Fifty and eight-tenths per cent of the Hupmobile output is sold to Hupmobile owners, because they are completely satisfied with Hupmobile Performance, Service, Economy and Efficiency.

5-Pass. Touring Car $1185 Roadster $1185 7-Pass. Touring Car $1340
Prices f.o.b. Detroit



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Speedway Type TIRES

"Speedway" Tires deliver more than average mileage and successfully withstand more than average punishment *simply because they are well made of excellent materials.*

To be sure there are other tires equally well made, but there the comparison ends for such tires invariably sell for a higher price than *"Speedways."*

This is a strong statement to make. It is paramount to claiming that National REDWALL "Speedway" Tires, in spite of their price, are similar in quality and performance to tires selling for a much higher list.

Yet facts speak for themselves. Performance convincingly bears out the truth of this statement.

At no time since the introduction of this tire have we been able to supply the demand for it.

For it has all the qualifications necessary to meet the demand for tire luxury at a popular price.

It is rich and distinctive in appearance. It outstrips other tires in mileage and all round satisfaction.

It has a new type of *smooth riding* non-skid. This one feature alone is sufficient to distinguish it from all other tires selling at anywhere near the price.

For this new type of *smooth riding* non-skid has many advantages. It is extra thick, like an added or double tread. There are no lumps, nor knobs nor depressions. Inside fabric wear, such as develops in most non-skids, is impossible because of the continuous unbroken contact of the tread with the road. In this tire the tread is not its own worst enemy. It increases, rather than decreases, the natural life of the tire.

Yet these are merely extra features, to insure extra satisfaction. We repeat, the big important reason why SPEEDWAY Tires are good is *because "they are made well of excellent materials."*

TO DEALERS

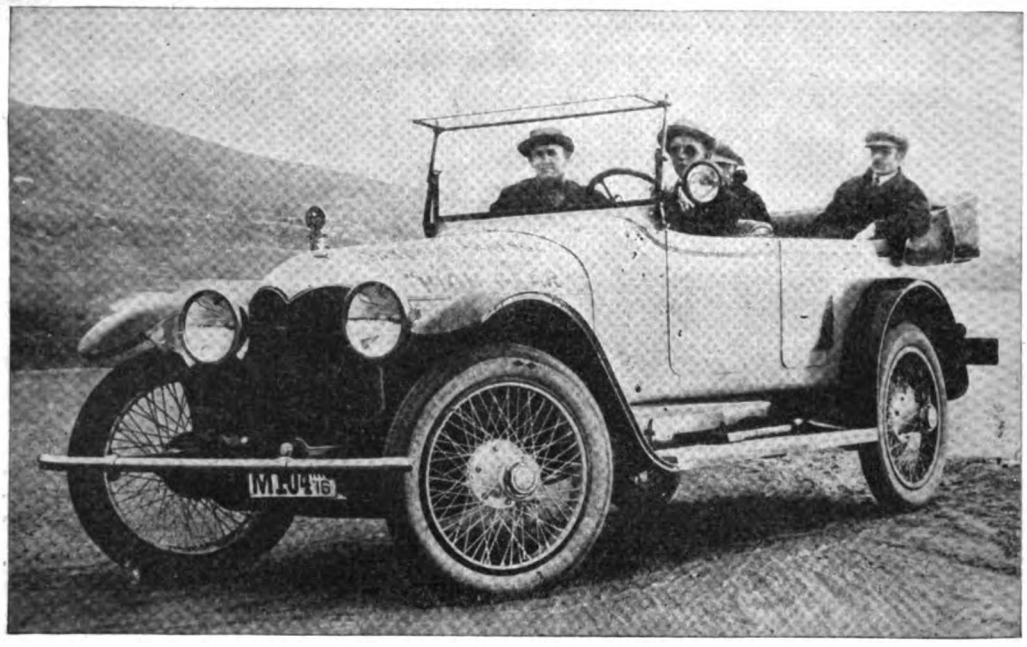
By early Fall our present capacity will be greatly increased. The big addition which we are building to our factory is all but completed and ready for operation. We will soon be in a position to handle additional quantity orders.
In the meantime, we would urge dealers and jobbers who have commenced to consider their next season's requirements to test out now a few of these tires in actual service.

Dealers and Jobbers who are looking for a high quality tire to sell at a popular price, on an exclusive territorial basis, to be backed by a generous national advertising campaign, should investigate our proposition at once.

More complete details will be forwarded upon application.

NATIONAL RUBBER COMPANY, Pottstown, Penna.

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World's Record Coast-to-Coast Pathfinder with Full Floating

AMERICAN AXLES

Equipped with Spiral Bevel Gears and Bock Taper Roller Bearings.

Read This Telegram—

POSTAL TELEGRAPH – COMMERCIAL CABLES

TELEGRAM

DELIVERY No.

RECEIVED AT BRANCH OFFICE
CLEVELAND, OHIO

DESIGN PATENT No. 43538

RECEIVED
AUG 3 1916

17 ny or 12s Nl 236a
CP NewYork Aug 2216

American Ball-Bearing Co
Cleveland O

World's Record Pathfinder 12 Coast-to-Coast high gear stock car with transmission sealed by American Automobile Association driven by Walter A.Weidaley with "American" Axles covered 4889 miles, crossing Sierra Nevada Mountains, Great Salt Lake Desert, continental divide Allegheny Mountains, arrived New York August 1st from San Diego over Lincoln Highway with Lincoln Highway supervision.
Absolute stock car certified by A A A no broken axles or adjustments, no oil added to rear axle. Tremendous strain on mountains and in sand prove strength of "American" Axle construction and materials.
Immediately on arrival car in New York, same car, same gear ratio made 60-7/10 miles under A A A sanction on Sheepshead Bay Speedway with three passengers and full transcontinental equipment.

The PATHFINDER Company

DUPLICATE OF TELEGRAM TELEPHONED
By MK At 9—

Quality Does Count!

THE AMERICAN BALL-BEARING CO. — **CLEVELAND, OHIO**

PIONEER AXLE BUILDERS OF AMERICA — LICENSED UNDER THE KARDO CO. PATENTS

Digitized by Google



Goodyear Show Case No. 3



Goodyear Show Case No. 2

Show Case *Free*

If You Stock Goodyear Accessories

Exhibit your accessories in handsome show cases in a prominent part of your store, and you will find you can make accessory sales totaling *dollars* where before you were only getting the *pennies*.

When you stock Goodyear Accessories you have your choice of four beautfully finished display cases, just as pictured in the illustrations.

Accessories bring in a nice profit when properly displayed and explained to the motorist. A *free* Goodyear Show Case will mean less selling expense and more profit for you.

On receipt of the attached coupon, we will send you the complete Free Show Case Offer with beautifully colored illustrations from actual photographs of these free Show Cases.

The Goodyear Tire & Rubber Co.
AKRON, OHIO

GOODYEAR
AKRON
Tires, Tubes, Accessories



Goodyear Show Case No. 1



Goodyear Show Case No. 4

Use this Coupon for Convenience

The Goodyear Tire & Rubber Co., Akron, Ohio
Without obligating me in any way, please send me your complete FREE Show Case Offer by return mail.

Name.....

Address.....

.....

Digitized by Google



"The Light That Failed"

Many dealers and garage owners throughout the United States have suffered defeat in business, because they did not adopt some adequate accounting system to direct them into profitable channels, and take them from the broad and too easily traveled path of loss—at the end of which was failure.

How much did you make in June?

Maybe you think so—but do you know?

How much will you make in 1916?

Does your repairshop gain or lose?

How much do you make when you charge a customer for an hour of labor?

How do your May and June collections compare?

If you don't know these things you are not on the road to business success. You should have an accurate and timely record of all parts of your business. You should have a simplified and easy to operate accounting system that will light up the dark corners of your business—that will make your business road safe to travel.

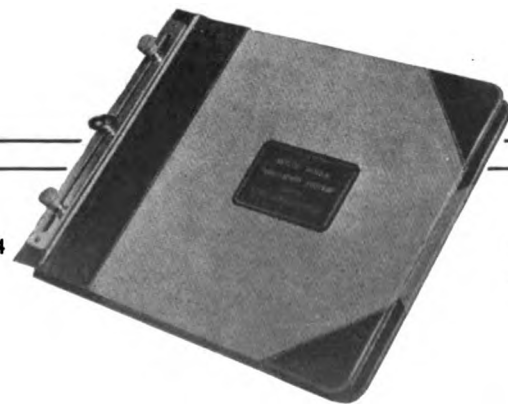
Motor World has devised such a system. It costs $12 complete. Everything in one book. We advise you to get SOME kind, whether it is Motor World's or some other. But if you want this one (which is designed by experts who have made a careful study of the various problems of YOUR business) send $12—check or money order—and plan to get started on the right track August 1st.

Booklet with a complete illustrated description of the system (price $1.00) will be sent complimentary with each system. Send your order at once. Address:

The Motor World Publishing Co.

System Department

239 West 39th Street New York City



This is the only book required—size 11 x 14 inches—canvas, leather corners.

Includes 100 income sheets—100 expense sheets—500 customers' sheets.

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JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT



When the Horse Came Before the Car

"In the hard-to-remember days," when we paid good money to bump along in the two-horse car with its long-levered, round-house brake that served to stop the car—

Even then Johns-Manville made Asbestos Brake Lining.

For years J-M Asbestos Brake Lining has played an important role in the industrial field, and today it is known as the most efficient material for use on giant cranes, mine elevators, derricks—uses that prove its fitness for motor vehicle service where wear and safety are paramount.

You run no risk as a dealer when you recommend J-M Asbestos Brake Lining as safest and most serviceable. The letters "J-M" on a strip of automobile brake lining are an assurance of satisfaction—a worth-while asset to every dealer.

Our proposition offers unusual possibilities for jobber and dealer profit. Full details may be obtained from our nearest branch.

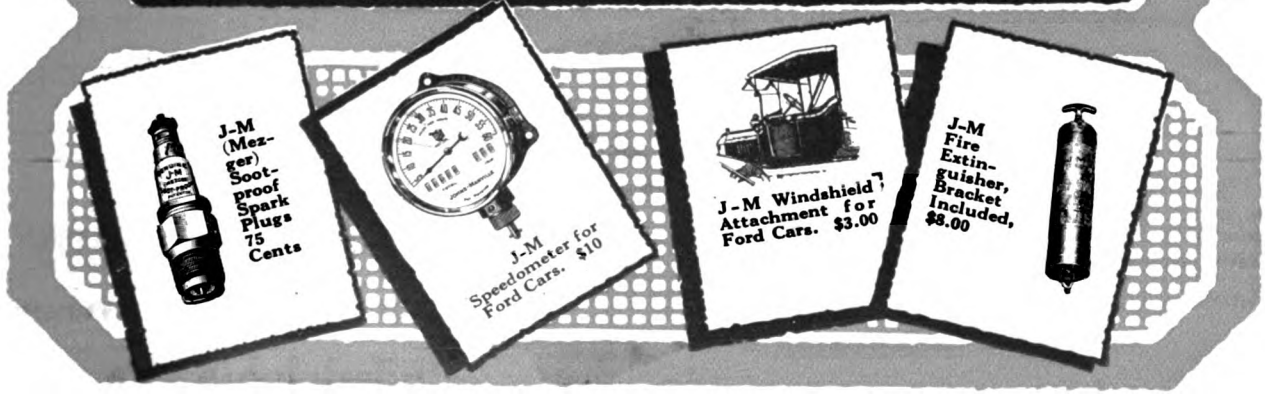
H. W. JOHNS-MANVILLE CO.

Executive Offices, 296 Madison Ave., New York City

Akron	Galveston	Pittsburgh
Albany	Havana	Portland
Atlanta	Houghton	Rochester
Baltimore	Houston	St. Louis
Birmingham	Indianapolis	St. Paul
Boston	Kansas City	Sacramento
Buffalo	Los Angeles	Salt Lake City
Chicago	Louisville	San Diego
Cincinnati	Memphis	San Francisco
Cleveland	Milwaukee	Seattle
Columbus	Minneapolis	Syracuse
Dallas	Nashville	Toledo
Dayton	Newark	Tulsa
Denver	New Orleans	Washington
Detroit	New York	Wilkesbarre
Duluth	Omaha	Youngstown
El Paso	Philadelphia	

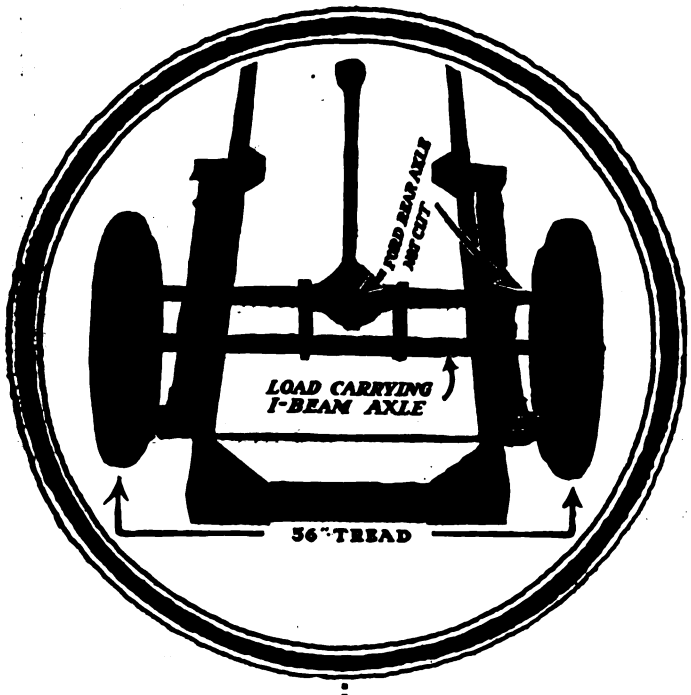
THE CANADIAN
H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver

J-M Non-Burn ASBESTOS BRAKE LINING



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A Tremendous Business



—is reported already by our dealers. And it is only *beginning!*

When you realize that we offer you exclusive territory with a commission on every sale made in that territory from the moment you order a demonstrator;

When you realize the extraordinary character of the

INTERNAL-GEARED RAYFORD

A Ford + $300

and then consider its extremely low price, you will see what an unusual chance this gives you to build a corking big business with

A Small Outlay of Money

Mail this coupon TODAY and get our full proposition. If you want your territory, better get busy right away. Allotments are going mighty fast.

FOLLOW THE DOTTED LINE

Rayford Co.,
Palethorp and Indiana Aves.,
Philadelphia, Pa.

Dear Sirs:

Please send particulars regarding agency for the Internal-Geared Rayford.

Name .....

Address .....

.....

.....

Rayford Company

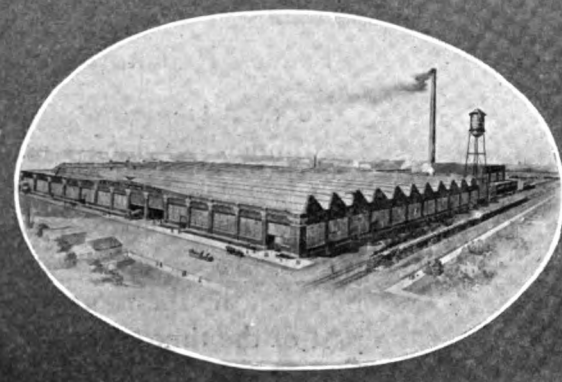
Palethorp & Indiana Avenues

Philadelphia, Pa.

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U. S.

BALL BEARINGS



Where the Quality is Built Into U. S. Ball Bearings

It is in the grinding operation that real quality is built into any ball bearing.

No matter how fine the design—no matter how high quality the materials used—unless the grinding operation be microscopically accurate, the finished bearing is but a makeshift,

So far as we are able to ascertain, there isn't a grinding department extant that is the superior of that in the U. S. Ball Bearing factory—illustrated herewith—and there are few equals.

The inherent superiority of U. S. Ball Bearing grinding machines lies in the fact that they are specially designed to do ball bearing grinding. Extra heavy and massive, they practically eliminate vibration and in this way provide the smoothest possible finish combined with microscopic accuracy—accuracy held within limits of one-ten-thousandth of an inch.

U. S. Ball Bearing Manufacturing Co.
(Conrad Patent Licensee)
Palmer St. and Kolmar Avenue, Chicago

Insert at top shows new U. S. Ball Bearing factory
General view shows part of internal grinding department

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FEDDERS RADIATORS

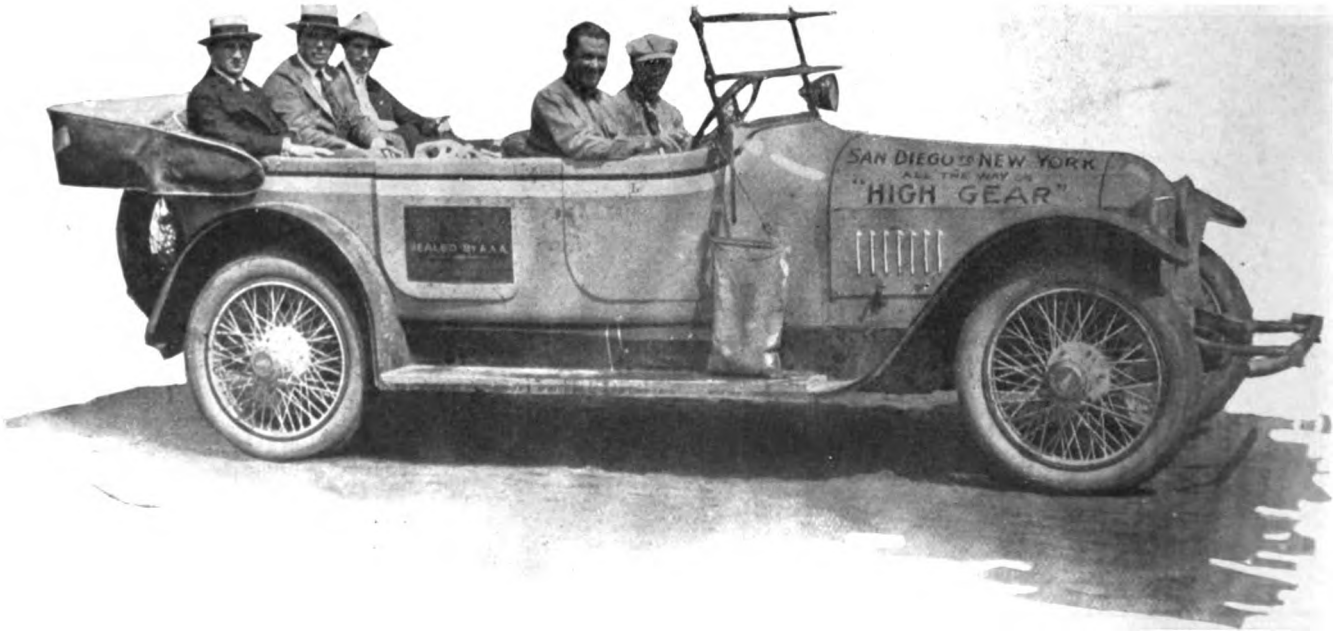
Fedders Radiators are stock equipment on Pathfinder cars.

Fedders Radiators, as usual, performed perfectly on the Pathfinder 12 which recently made the Ocean to Ocean high gear trip with transmission sealed. The trip was made without leaks or radiator troubles of any sort, and from start to finish only 24 gallons of water were used, regardless of the fact that the thermometer registered from 100 to 106 a great part of the time.

This performance again substantiates our former claims that Fedders quality compels efficient performance, regardless of running conditions.

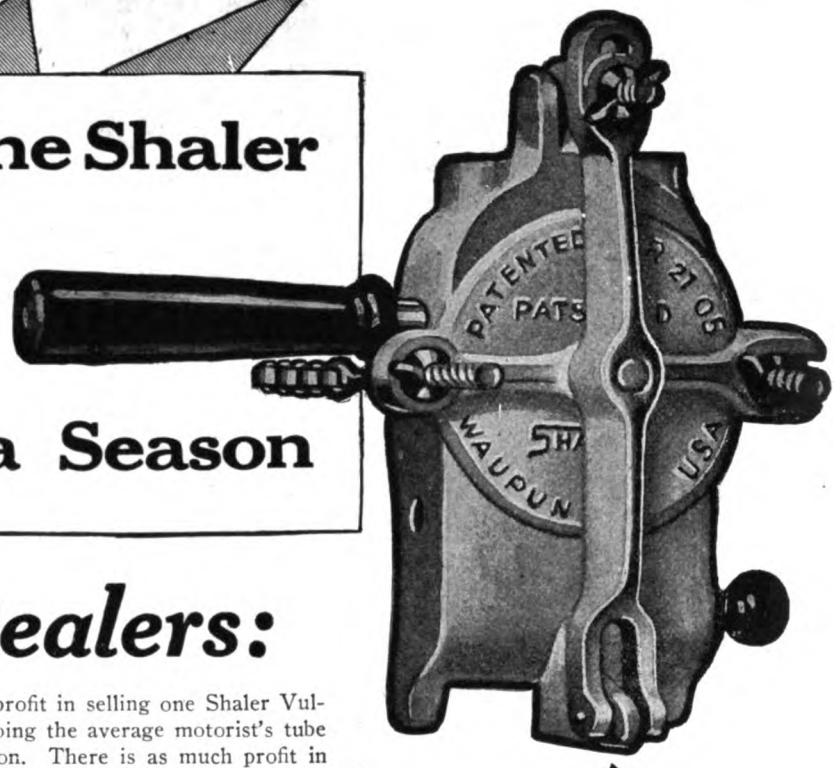
Not only do Fedders Radiators dominate both the pleasure car and truck field where quality is considered, but with this recent Pathfinder performance they have added a wonderful road performance to their long list of road and track racing victories.

FEDDERS MFG. CO., INC.
BUFFALO, N. Y.



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The Sale of One Shaler Brings More Profit Than The Tube Repairs for a Season



Dealers:

There is more profit in selling one Shaler Vulcanizer than in doing the average motorist's tube repairing all season. There is as much profit in repair rubber as in the patches and gums the dealer is selling. Some dealers have the mistaken idea that selling small vulcanizers competes with the tube patches and gums that are being sold, but it brings more profit, so the dealer is ahead in the end. Dealers who have sold dozens of small vulcanizers say that they can't see any effect on their repair business.

SHALER Vulcanizer

They can be carried with the car for making emergency and permanent tube repairs. Besides they mend small casing cuts, which, if neglected, would let in dirt and water to rot the fabric and cause blowouts. You can boost your reputation for selling good tires with every customer who cares for his tires with a Shaler. Every Shaler you sell helps you sell more because the motorist praises his success to his friends.

Shaler Vulcanizers retail from $2.00 up. There are models for every need heated by gasoline, alcohol, steam or electricity. We also make vulcanizing plants for repair shop use.

SEND TODAY FOR CATALOG AND TERMS

Send for our new complete catalog—dealers' discounts, terms, etc. It contains information about tires and tire vulcanizing.

C. A. Shaler Co.

427 Fourth Street
Waupun, Wis.

Mail Coupon for Catalog!

C. A. SHALER CO.
427 Fourth St., Waupun, Wis.

Please send me new Catalog Shaler Vulcanizers—Dealers' Prices, Terms, etc.

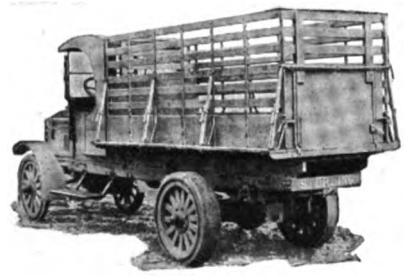
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For handling hay, straw, unthreshed grain, etc.



For transporting cattle, horses, etc.



Closed bed for hogs, sheep or poultry

The Sterling Truck —15 Bodies in One

YOU don't need to be told the advantages of a convertible truck body. You know that the ordinary fixed type of body is not adapted to handling a wide variety of products. It can't be done economically and satisfactorily.

But it's different with the Sterling. Within two minutes the Sterling Convertible Body can be adjusted to any one of the fifteen positions—changed in shape and size to properly handle the load.

The Sterling Convertible Body will help you sell more trucks—it's an absolute necessity for handling mixed loads. Built in several sizes to fit the Sterling 2, 3½ and 5-ton worm drive chassis.

Write today for open territory for Sterling Trucks, prices, terms and full information.



For loading corn on ear, harvesting potatoes, peas, etc.



Normal position—grain tight—for cereals, clover, etc.



For baled hay, boxes of fruit, vegetables, etc.



Carryall for parties or for getting gangs of laborers to fields quickly

Sterling TRUCKS

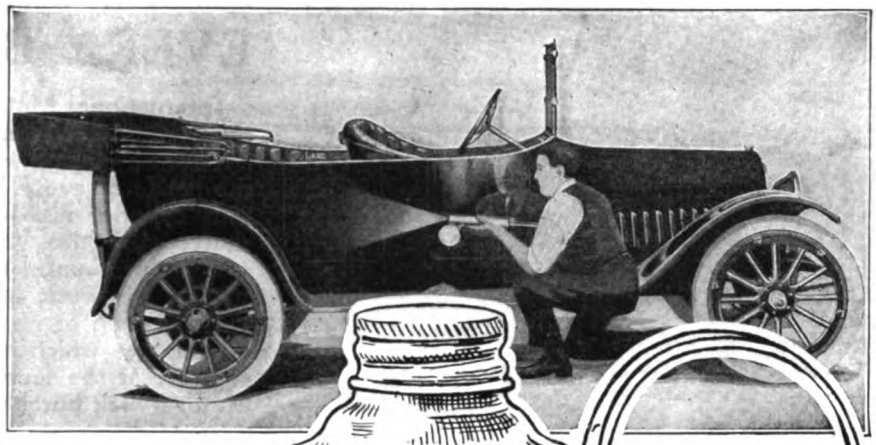
STERLING MOTOR TRUCK COMPANY

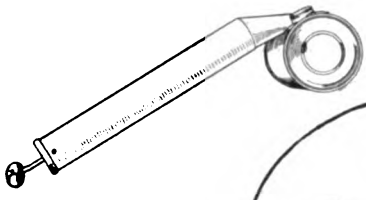
BUILDERS OF MOTOR TRUCKS EXCLUSIVELY FOR NINE YEARS

780 Rogers St., Milwaukee Wis.

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Non-Combustible Non-Inflammable Polishes an Entire Car in 15 Minutes for 5c.





ROYAL MIST

Is Ready for the Dealers

More than a year ago—before ROYAL MIST ever polished the body of an automobile—we made an investigation. We made the rounds of some of the largest supply houses and dealers and we asked: "What kind of body polish do car owners ask for?"

And every dealer told us: **"The kind that sprays."** That's why we put together the ingredients we had already prepared for our new polish into the kind that sprays. **It's the easiest for dealers to sell.**

Liberal Discounts on the Kind of Polish Motorists Call For

ROYAL MIST gives the best, most permanent polish you can get on a motor car, **even if the body is damp when applied,** because it replaces the elements of the varnish that are dried up and removed by atmospheric conditions. Not a veneer you put **on** the car, but a varnish food that becomes **part of the finish,** and stays there.
Requires no hard rubbing. Sprays on from Midget Sprayer, furnished free. Cannot injure the finish of the finest car. Gives a high polish that **does not collect dust, is easily applied and economical.** Always in solution. No shaking necessary.

ROYAL MIST was not the first polish on the market—but neither was the "12" the first motor. ROYAL MIST has profited by the faults of others. It is **ready to put over sales for you.**

Mail the coupon now for free information, details, and discounts.

H. G. FAIRCHILD & CO.
Morton Building Chicago

Midget Sprayer Furnished Free for Applying

ROYAL MIST

"The Kind that Sprays"

1 Gallon with sprayer $3

½ Gallon with sprayer $2

1 Quart with sprayer $1.25

H. G. FAIRCHILD & CO.
Morton Bldg., Chicago

Send me full information, details and discounts allowed dealers handling ROYAL MIST.

Name .....

Address .....

.....

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A STYLE FOR EVERY BUSINESS

International Motor Trucks, in three sizes, 1000, 1500 and 2000 lbs. capacity, are now furnished in styles to meet the needs of every business.. Two or four cylinder motors; chain drive, or shaft; solid tires or pneumatic; high wheels for country road driving or low wheels for work on city streets; any desired style or size of body—all the advantages which a great organization give are at the service of International Motor Truck purchasers.

New Models—Attractive Prices

M—1000 lbs. capacity, complete with express body	**$710**
E—1500 lbs. capacity, complete with express body	**950**
H—1500 lbs. capacity, internal gear drive (chassis)	**1225**
F—2000 lbs. capacity, internal gear drive (chassis)	**1500**

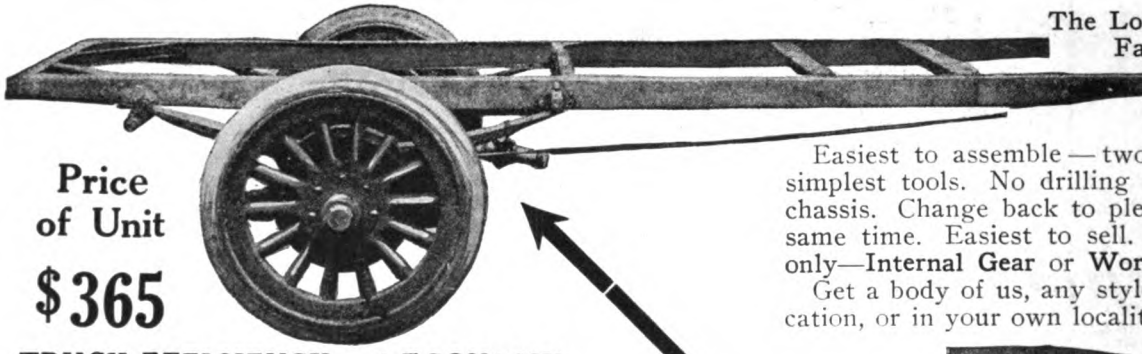
Any model can be equipped with pneumatic tires for $50 more than the above prices. All prices are cash f.o.b. factory.

International Motor Trucks may be seen at any one of the 87 completely equipped service branches scattered throughout the United States. This network of gratifying service has contributed not a little to the popularity and success of the International. Write for catalogue and any special information you may desire.

INTERNATIONAL HARVESTER COMPANY OF AMERICA

155 Harvester Building (INCORPORATED) **Chicago U S A**

KELLEY CONVERTIBLE AUTO-TRUCK



The Lowest Priced, Fastest Selling Truck Unit Made

Price of Unit $365

Easiest to assemble—two hours' job, simplest tools. No drilling holes in car chassis. Change back to pleasure car in same time. Easiest to sell. **Shaft drive only—Internal Gear or Worm Drive.**

Get a body of us, any style, on specification, or in your own locality.

TRUCK EFFICIENCY and ECONOMY

For simplicity of construction and attachment, strength, and utility unequaled by any other rear system.

Makes a **One-Ton Truck** (with capacity of 50 per cent overload) of any light pleasure car—Ford, Maxwell, Chevrolet, and a number of others. Also larger cars on special order.

Our Dealers Make Big Money!

Territory to responsible agents. Write for details.

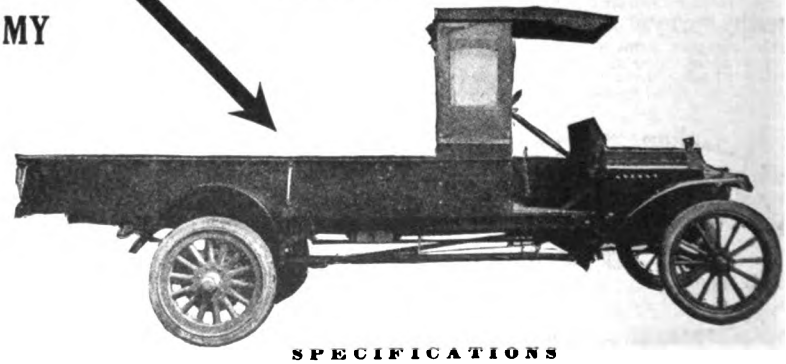
Kelley Convertible Auto-Truck Co.

NOT INC.

Sales and Executive Offices:

332 Michigan Ave. Chicago, Ill.

Factories: Joliet, Ill.



SPECIFICATIONS

Carrying capacity, 3000 lbs. Carrying space—regular 9 feet, more if desired; wheelbase, 127 inches, more if desired; tires, 32x3½ inch solid; speed, 15 to 25 miles per hour; gear ratio can be adapted to any conditions under which truck is to be used; brake on rear wheel, 1⅞-inch face, 16-inch drum; tread, standard 56 inch.

Digitized by Google

84,628,590 Sparks Without a Miss!

This is the remarkable achievement of

HERZ PLUGS

"Bougie Mercedes"

The Pathfinder Twelve stock touring Car which recently completed the remarkable Coast to Coast High Gear Run, from San Diego to New York, used HERZ "Bougie Mercedes" PLUGS. This statement sums up their performance:

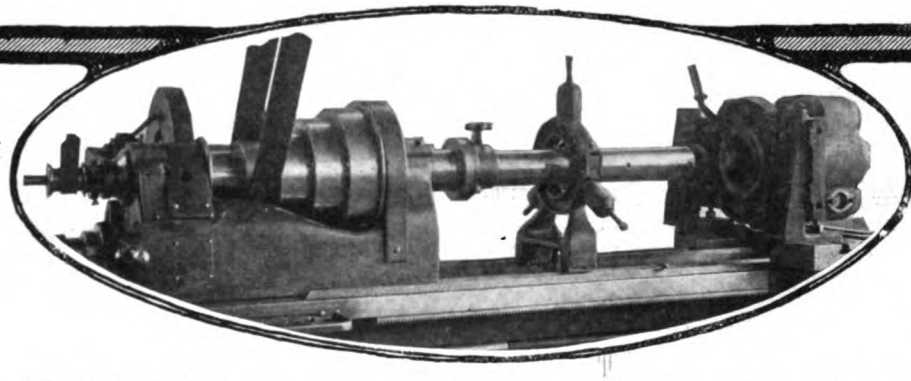
"This car was equipped with Bougie Mercedes Plugs and I am pleased to say that the motor fired perfectly, and we made no adjustment on any of the Spark Plugs on the entire trip. At the conclusion of the trip, the Spark Plugs were in perfect condition."

(Signed) WALTER A. WEIDELY.

These were stock plugs. You can have their duplicates in your own motor. It's the Clover Leaf Electrode that accounts for the sure sparking of HERZ PLUGS, the Unbreakable Double Stone Insulation that accounts for their durability. Put them in your motor; then forget spark plug troubles. Your dealer or

HERZ & CO., 245 W. 55th Street, New York

Get the Big Good Paying Cylinder-Grinding Business in Your Locality



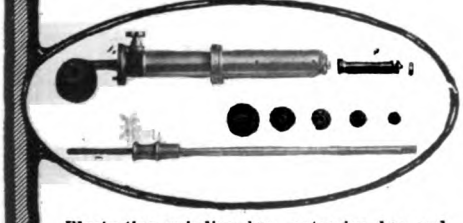
Make Your Garage or Repair Shop the Most Up-to-Date in Town

Complete Your Equipment and Increase Your Profits with the

PERFECTION CYLINDER GRINDER

Unequaled for regrinding automobile cylinders and small tractor cylinders up to 6½" in diameter. Can be used with any hollow spindle lathe with a 14" swing or over.

The perfection grinder attachment includes one grinding bar, one grinding bar extension for grinding 1¼" cylinders, one bar and pulley for driving through the hollow spindle, five emery wheels and one rough flange casting.

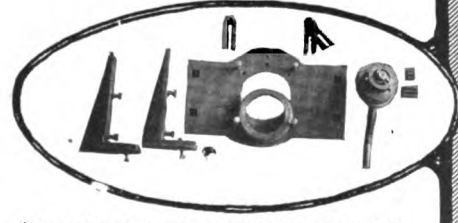


Illustrating grinding bar, extension bar and pulley, five emery wheels and rough flange casting.



This pulley hanger is included with Perfection Equipment.

The grinder attachment also includes one lathe face plate and face plate ring, two angle plates, one centering chuck for centering cylinders to the face plate, three sets of pins, four U clamps for attaching cylinders to the face plate, one counter shaft, one emery wheel dresser and all necessary bolt and cap screws for attachment.



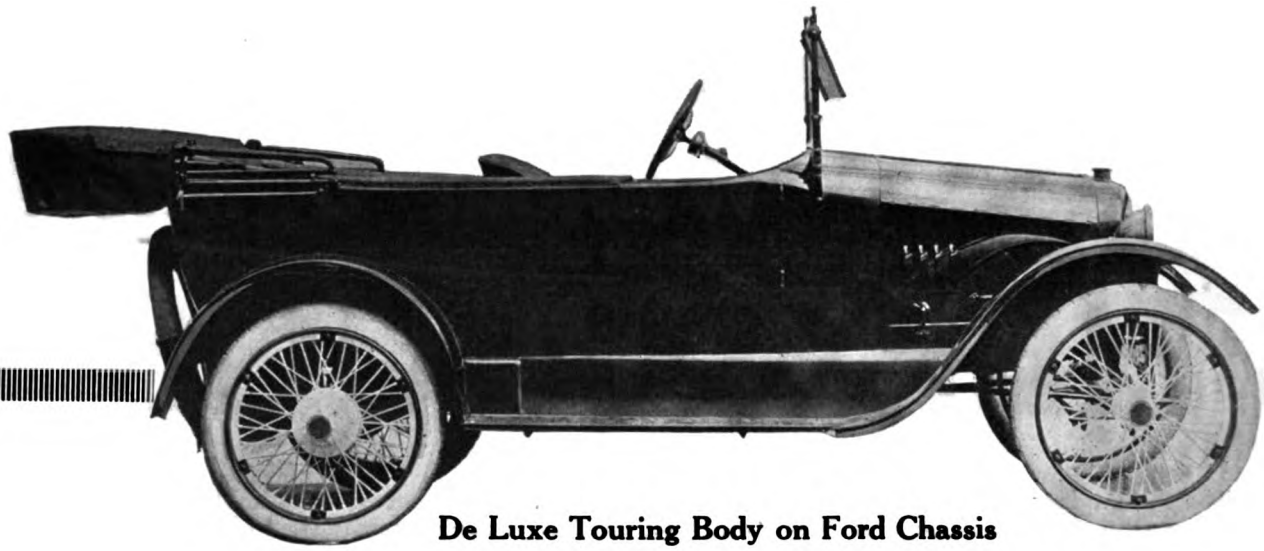
Illustrating lathe face plate, face plate ring, two angle plates, centering chuck, etc.

The Perfection lathe grinder attachment is patented in every detail of construction. Price complete $200.00 F.O.B. Great Falls. For full information address

WOOD & SAFFORD MACHINE WORKS

109-111 Sixth St., South Great Falls, Mont.

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De Luxe Touring Body on Ford Chassis

Build Your Ford Into One Of These Beautiful Cars

Touring Car Specifications

Steel body—upholstered with genuine hair. Divided front seats—adjustable, revolving, removable. Radiator—"V" type. One-man top—black mohair. Crown fenders—9 inches wide. Sloping hood. Windshield—clear vision, ventilating. Foot accelerator. Tire carrier. Stewart Vacuum gasoline system. Standard finish—beaver brown. Other colors $10.00 extra. Price complete $260.00 f.o.b. Detroit. Four wire wheels, demountable rims, one extra rim, $35.00 extra. ROADSTER—$197.50 f.o.b. Detroit. Standard finish, Peerless gray. Specifications same as above except gasoline system and tire carrier.

Picture yourself in your Ford car equipped with one of these beautiful De Luxe bodies.

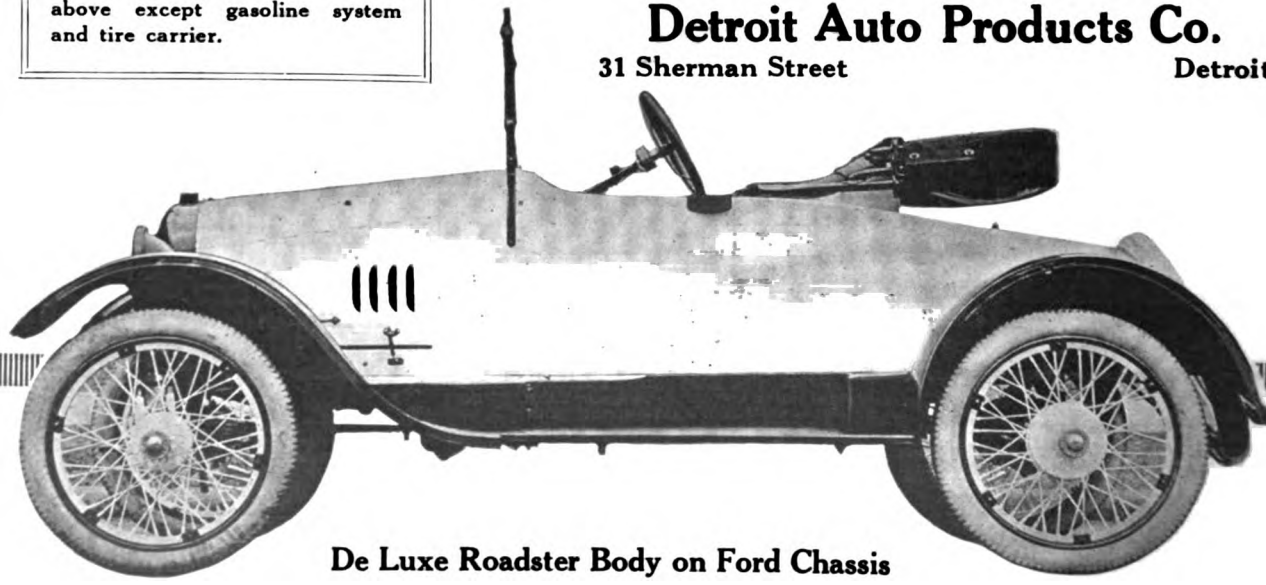
How much greater would be your satisfaction, and your enjoyment of your Ford if it had this appearance!

You can have it—on either old or new Fords. Instead of being one of the "million" you can have the class and beauty of the highest priced cars. And you'll ride 50% easier in a DeLuxe equipped Ford. There's a reason—in the cushions.

DEALERS: We have some open territory. Write us and we will show you a sales plan that will put dollars in your bank account.

Send for free booklet.

Detroit Auto Products Co.
31 Sherman Street **Detroit**



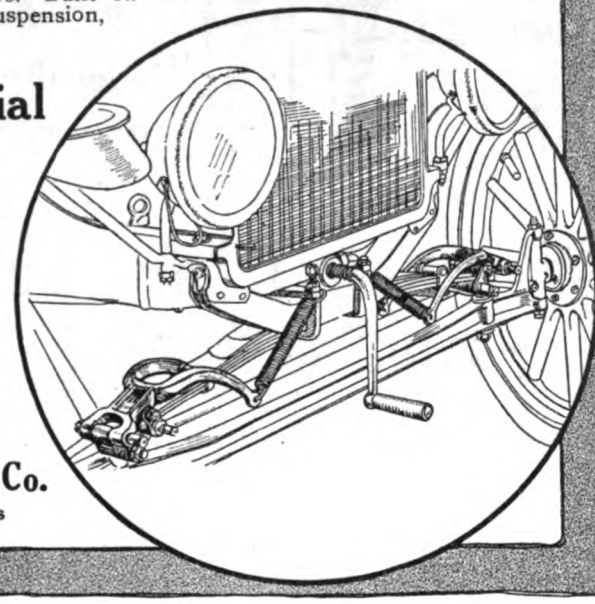
De Luxe Roadster Body on Ford Chassis

When writing advertisers please mention Motor World

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Your Ford Will Take This Road as smoothly as a big car if equipped with W & C Double Arm Shock Absorbers for Fords

W & C Shock Absorbers on your Ford car ease the short choppy jolts from a road full of holes into even swells without noticeable beginning or end. Absolutely free from the snap, jar and recoil of old-time springs and shock absorbers. Built on the accepted principle of **cantilever spring suspension,** in use on easiest-riding high-priced cars.



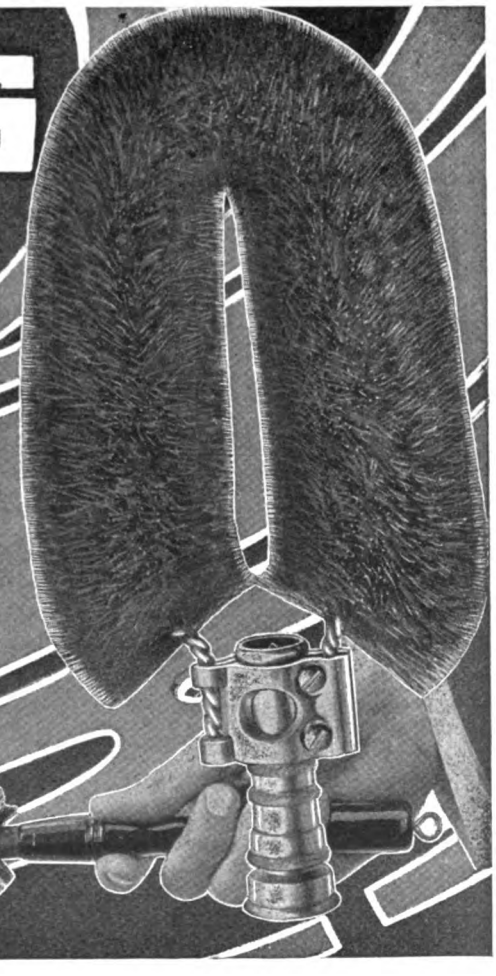
Sold on 10-days' Trial

W & C is the original double arm shock absorber—in use by more than 25,000 satisfied Ford owners. Not extra equipment to hinder the springs or throw the car off balance, but a **built-in Easy Rider** that makes car and tires last longer, and minimizes mechanical troubles. Price $10 per set of 4. Less expensive than others, due to greater output. Order through you dealer, or direct.

Selling W & C Shock Absorbers is profitable and easy for dealers. Write or wire for special proposition.

Philip H. Webber & Co.
Hoopeston, Illinois

PEERLESS



WITH THIS BRUSH ATTACHED TO AN ORDINARY GARDEN HOSE

you can easily reach and thoroughly cleanse inaccessible parts of your car.
It serves as sprinkler, wash rag and sponge combined, and can be used on the most delicate surfaces without danger of scratching or marring them. The

PEERLESS AUTO WASHER BRUSH

is especially good for rinsing wire wheels and saves wear and tear on your chamois skin.
You can regulate the pressure at nozzle and get a spray, stream or heavy flow, as desired, right through the brush. The brush itself (best grade mule hair) is soft and pliable and will wear from one to three years—the metal parts are rust-proof and practically indestructible.
Ask your dealer—or order direct from the

MACK MANUFACTURING CO., Harrisburg, Pa.

$3.50 with Grease Brush→

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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.
1042 N. Capitol Ave., Indianapolis, Ind.

Haywood Tire & Equipment Co.,
1042 N. Capitol Ave., Indianapolis, Ind.

Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

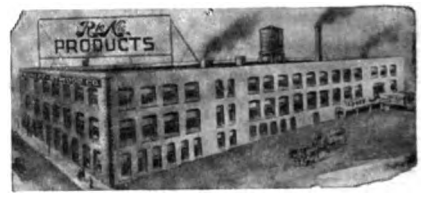
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The Home of Rie Nie Products

Every Rie Nie Product Bears The Absolute Assurance of



Perfect Satisfaction To The Agent And The User

Completeness and Quality



One of the Forty-Five Numbers

JUST ONE TABLESPOONFUL is all that is necessary to permanently mend any ordinary leak in the radiator or cooliug system. Works quickly, mends permanently, will not clog.



Price 75 Cents

The Result—
Satisfaction
Reputation
and
Popularity

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Order through your jobber — Accept no substitute

Hotel Marie Antoinette

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NEW YORK CITY

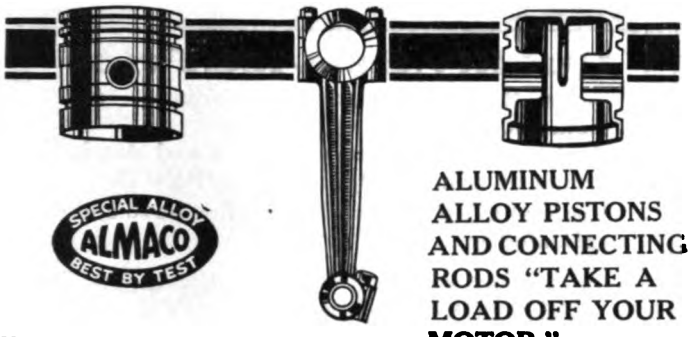
SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

Restaurant of Unusual Excellence

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Managing Director

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SPECIAL ALLOY ALMACO BEST BY TEST

ALUMINUM ALLOY PISTONS AND CONNECTING RODS "TAKE A LOAD OFF YOUR MOTOR."

We Guarantee This Alloy to Contain No Zinc.

Makes a Four Run Like a Six.

Any Size for Any Make Car.

ALMACO Aluminum Alloy Pistons and Connecting Rods have the following advantages over cast iron or steel: they carry one-third the weight—one-half the friction—and reduce the carbonization to practically nothing.

Almaco Pistons and Connecting Rods pay for themselves in short order—save lubricating oil and gasoline—give more speed—more miles per gallon of gasoline, and quicker acceleration—deaden the noise from motor—reduce vibration and friction and insure maximum efficiency in every way. Ask your dealer or write us for full details and descriptive literature. DEALERS—ask your jobber.

ALUMINUM MANUFACTURING CO.
DES MOINES, IOWA







Those Wonderful Twins, Kid Care and Hi Quality—Do You Know Them, Mr. Dealer?

Of all the spirits in the factory here at Batavia, New York, the hardest workers are these two—Kid Care and Hi Quality. Long before

BATAVIA
SECURITY NON-SKID TIRES

get to the designing stage, these two faithful little spirits are at work—working for your reputation and ours with your customers.

Hard at work they are from dawn to dusk searching the rubber field for staunch, sound materials—slow to jump at a novelty but ready to accept anything new if it shows better—longer-life results—corresponding with rubber-growers, talking to dealers and motorists—interviewing extra good workmen who come naturally to Batavia because it's their kind of place.

We couldn't do business without these twins—you couldn't do better than let them act as your inspectors.

If you're bothered by needless adjustments—if you've wanted to connect with a tire maker who wants to help you make your tire line more profitable and pleasant to handle, use the coupon.

BATAVIA SECURITY TIRES

Next advertisement tells about the *team-work* of the Batavia Boys. Watch for it, but meantime—quick! The coupon!

The Batavia Rubber Co.. Batavia, N. Y



MAIL THIS TODAY

THE BATAVIA RUBBER CO.,
Batavia, New York.

SEND me your proposition to dealers—and tell me what experience other dealers have had with them.

Name .....

Address .....

When writing advertisers please mention Motor World

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Keeps your Motor free from Carbon



THE Wegmann Automatic Decarbonizer will remove every trace of carbon from your motor, no matter how choked up it may be, and absolutely prevent any further carbon from accumulating. It is an automatic device, attached to intake manifold and to water supply pipe or water jacket, which injects a fine spray of steam into combustion chambers with mixture from carburetor. This principle of steam scavenging is well known and is used in all Diesel and Semi-Diesel type motors. Its application to the automobile motor is now made possible by this ingenious, automatic device. The

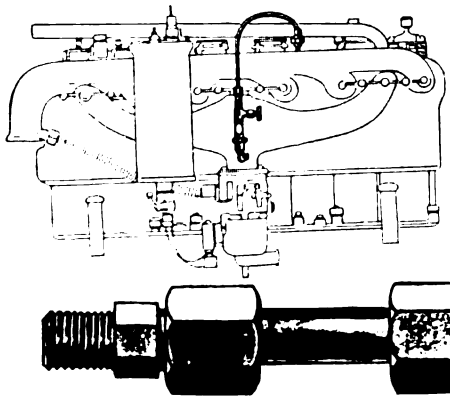
WEGMANN AUTOMATIC DECARBONIZER

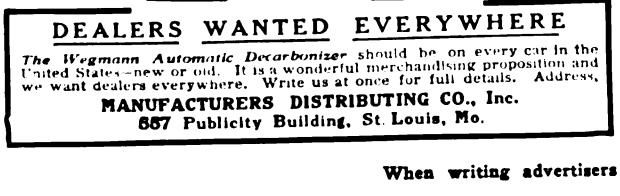
not only acts as a permanent carbon remover and preventor, but causes a more perfect combustion, which adds 10% to 20% more power, and cuts down the gasoline and lubricating oil consumption. It is easily attached, simply adjusted by needle-valve and fed by automatic ball check-valve which *closes when motor stops and opens in relation to speed of motor.* Instrument is made of polished brass, with two-piece strainer, glass sight-feed, needle-valve, automatic ball check-valve and leak-proof compression couplings.

PRICE, complete, ready to install, $5
(GUARANTEED FOR LIFE)

Special Introductory Offer:
The Wegmann Automatic Decarbonizer is really a self-demonstrator, and in order to create a quick demand we will, for a short time, accept a limited number of mail orders direct from car owners, at the above price, postpaid, with the understanding that if Decarbonizer is not satisfactory after 30 days actual trial it may be returned and money will be refunded.

Manufacturers Distributing Co., Inc.
557 Publicity Building, ST. LOUIS, MO.





DEALERS WANTED EVERYWHERE

The Wegmann Automatic Decarbonizer should be on every car in the United States—new or old. It is a wonderful merchandising proposition and we want dealers everywhere. Write us at once for full details. Address,
MANUFACTURERS DISTRIBUTING CO., Inc.
557 Publicity Building, St. Louis, Mo.

Quality, Service, Price

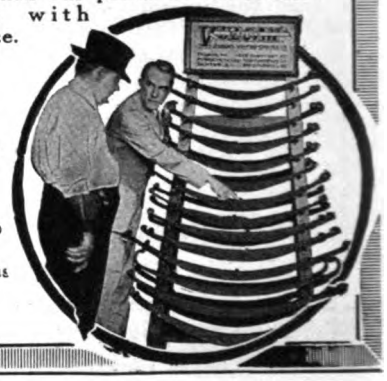
—are the distinguishing features of our methods, as well as our output.
Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.
Years of steady, unremitting effort have concentrated in

VULCAN QUALITY

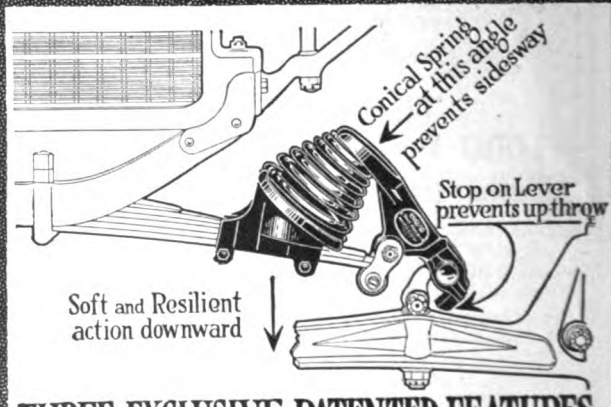
SPRINGS a Quality of material and workmanship seldom equalled.
Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.
Our determination to divide fairly with dealer and consumer alike has fixed our prices at the lowest level commensurate with good business practice.

Write us today for liberal proposition in territory still open.

Jenkins Vulcan Spring Co.
1402 Chestnut St., St. Lou s, Mo
708 Commerce St., Fort Worth, Texas
29 Caldwell St., Sumter, S. C.



HASSLER Shock Absorber
For FORD Cars



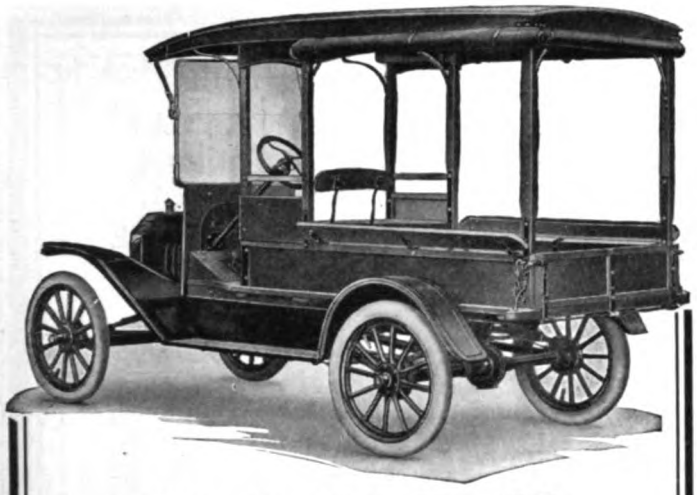
THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"
— 100,000 FORD OWNERS RECOMMEND IT —
WRITE FOR DEALERS TRIAL SET PROPOSITION

Robert H. Hassler, Inc.
Indianapolis, Ind.

$15 for a Set of Four

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PARRY

Standardized Commercial Bodies for Fords and Maxwells

Handsomely finished, sturdy, light and easily attached. Convert a Ford or Maxwell chasis into a splendid commercial vehicle, with ample carrying capacity and very economical in up-keep.

PARRY Trailers are light and economical

Makes your automobile pay for its up-keep. Two and four wheel models. Capacities up to 1500 pounds.

Dealers—Write for Catalogue F covering complete line, and profitable dealer proposition.

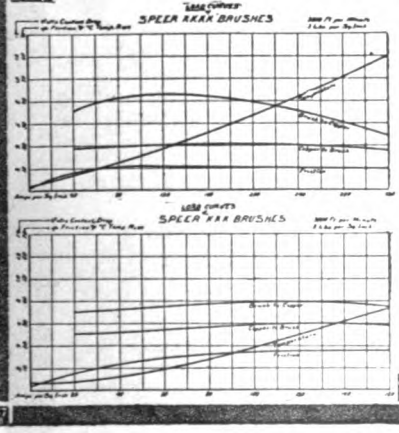
PARRY MFG. CO.
310 Parry Ave., Indianapolis, Ind.
"The World's Largest Automobile Equipment Factory"

HIGH CONDUCTIVITY BRUSHES

SPEER Composition-Metallic Brushes have compelled recognition of a carrying capacity far above the limits of carbons and graphites with the minimum of brush and commutator wear.

Our grades KKK and KKKK have a range between 6 and 40 volts and are capable of 110 and 150 amperes respectively per square inch.

Grade Metal B is composed almost wholly of metal and represents the highest attainment in the production of a composition-metallic brush. This brush stands alone in the sphere of electric starters and is capable of current densities as high as 200 amperes on continuous load and will take care of 100 per cent overloads on intermittent service.



These brushes are a necessary factor in obtaining the highest efficiency in generators and motors for high speeds and high current densities.

Speer Carbon Co.
St. Marys, Pa.

AKRON-WILLIAMS

Tire Repair Equipment



Developed by the Leading Tire Companies

EACH and every piece of Akron-Williams Tire Repair Equipment has been designed and brought to perfection with the active aid and co-operation of experts employed by the Akron Tire Factories—the largest in the world. These engineers work side by side with us to develop the most efficient Tire Repair Outfits, firstly, to use in their own factories and, secondly, to sell and recommend to their dealers and agents throughout the country.



As a result, Akron-Williams Tire Repair Equipment is always the latest and most improved. The Repair Outfit we offer you is the same in every way as used, sold and recommended by more than 60 leading Tire Manufacturers.

An Akron-Williams Tire Repair Outfit is built to turn out a large quantity of high-grade work. There's a big profit for you on every job and the cheerful recommendation of your customers is bound to boom your business from the start.

Get Into the Tire Repair Business

Over three million cars will be in use this year; one hundred million dollars is a conservative estimate of the sum that owners will pay for tire repairs. Tire Repairing is your best chance for big money, either as a separate business or as a department of a garage. Your success depends absolutely on the equipment you choose.

Grasp this opportunity NOW. Write us for copy of free Booklet 45 telling of possibilities in Tire Repairing for the man with small capital.

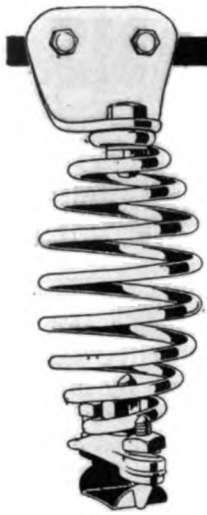
"Everything for the Tire Repair Man"

Just out—our new catalog illustrating full and complete line of tire repair machinery, equipment, tools, etc., for every size shop. Brimful of new time and labor-saving devices. Write for it today.

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EXCLUSIVE DISTRIBUTORS FOR CALIFORNIA
The Waterhouse & Lester Company, San Francisco

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Certain Profits

await those dealers who now stock up with the **only** shock absorber that can help Cantilever Springs.

Three-quarters of a million cars built this year are equipped with Cantilever Springs and the

SAGER Equalizing SPRING

is the only bounce-eliminator that will fit them.

Stock up now—we have them to fit any car—ready for immediate delivery.

J. H. SAGER COMPANY
33 South Water Street, Rochester, N. Y.





MANLEY "QUICK ACTION" PORTABLE BENCH

Are you moving the big car to your work-bench or are you moving the light, portable Manley bench to your car?

By using this "Quick Action" bench you can finish a job in the time it takes to move the car.

This bench is specially made to hold exactly the tools needed. Wheels can be locked, making bench immovable when using vise. It is just the right size to slip between cars and get anywhere in the place easily, quickly and conveniently. It is invaluable when tearing down a car, to keep all parts together.

A glance at this illustration tells you where the right tools are kept, convenient to the hand at all times.

A convenience no garage should be without, it is sold at a price to justify its purchase for any shop.

Top 13 x 44 inches. Height, 33 inches.
Bottom Width 22 inches.
Price, $27.50; with vise, $31.50

The United Engine & Mfg. Co.
"Pioneers in Garage Equipment"
Hanover, Penn.

THE Manley EQUIPMENT

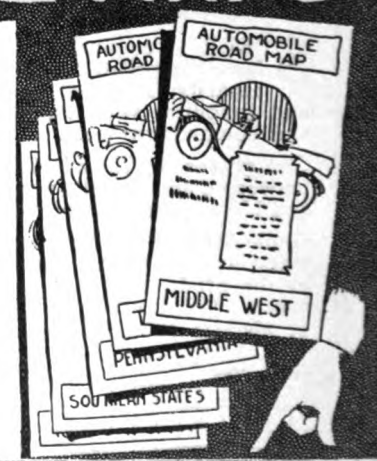
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Check Maps desired and mail to

GULF REFINING COMPANY

Dept. 1879
Frick Annex

Pittsburgh, Pa.



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Gulf Refining Co., Frick Annex, Pittsburg, Pa.—Gentlemen: Please mail me FREE as per your special offer the maps as I have checked:

- ☐ Middle West
- ☐ Transcontinental
- ☐ New England
- ☐ New Jersey
- ☐ Pittsburg to Philadelphia
- ☐ Pittsburg-Buffalo
- ☐ Southern States
- ☐ Pennsylvania
- ☐ Texas
- ☐ Allegheny County

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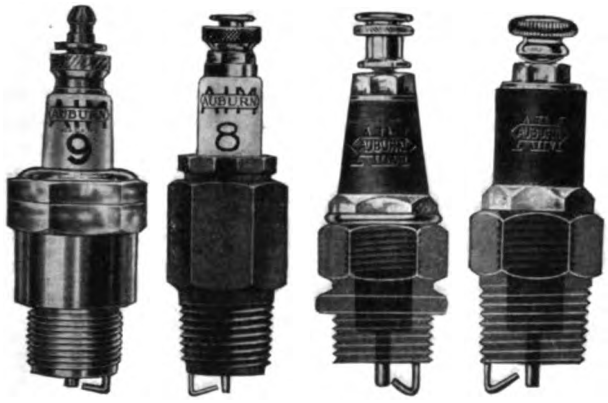
SPARK PLUGS AUBURN AIM REG. U.S. PAT. VALVE LIFTERS

LOOK FOR THE AIM BEHIND THE NAME

AUBURN VALVE LIFTER

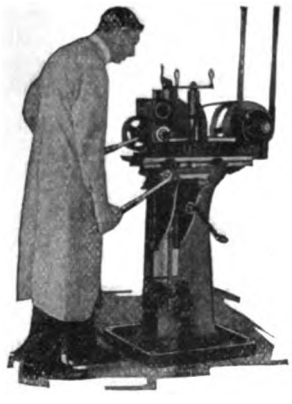


Price 75 Cents Each



BLAZER	AUBURN	AUBURN	AUBURN
Pirate Insulation	Porcelain	Motorcycle	Mica
Price $1.00	75 Cents	Price $1.00	Price $1.00

Auburn Ignition Mfg. Co.
Auburn, N. Y., U. S. A.



Here's What You Need in Your Garage or Repair Shop

because it is an all-around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling where small cutters and high speeds are necessary.

Simply drop a postal for our Miller Bulletin.

The Whitney Mfg. Co. Hartford, Conn.

Chains—Keys—Hand Milling Machines.

Hidden away within the mechanism of the Marmon "34"

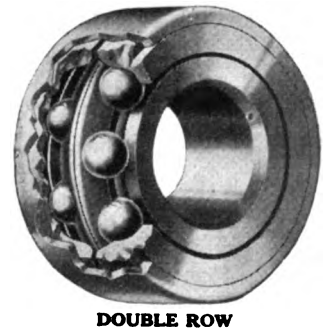
NEW DEPARTURE BALL BEARINGS



SINGLE ROW

establish a wonderful record for reliability and consistent performance.

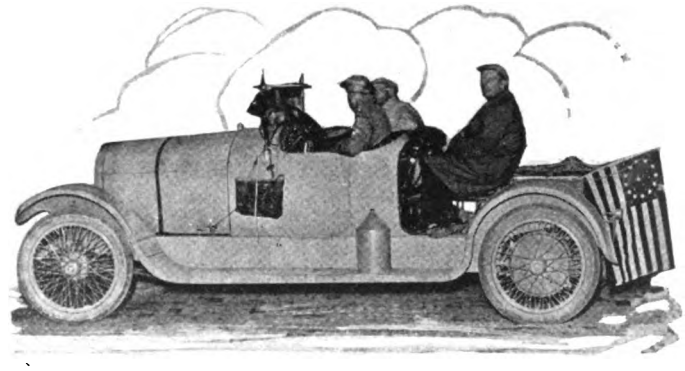
This epoch-making run of 3,476 miles, in 5 days, 18 hours and 30 minutes—



DOUBLE ROW

not only brings San Francisco two whole days nearer New York, but, what is of far greater moment to the industry and to motorists everywhere, it conclusively vindicates the use of New Departure Ball Bearings in wheel hubs, transmission and differential; in the power plant auxiliaries, wherever bearings must reduce friction, withstand the heaviest loads and meet the tremendous strains and stresses of the road as you find it.

Ask us for the "Brown Book"



The New Departure Mfg. Co.
Bristol, Conn., U. S. A

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FREE





A handsome spark plug case and a spark plug wrench . . Free

With four spark plugs that will outlast your engine . . $4

Mail us a $4 check or money order for four Splitdorf Spark Plugs (the plug with the Green Hex Jacket). We will forward you the plugs, carriage prepaid, and with them we will send you, free, a highly polished spark plug case and a spark plug wrench, complete with detachable handle. The case is handsomely finished, and fitted with recesses for four plugs. Keeps your "extras" handy and compact. The wrench is one of the most convenient tools you can have.



These plugs are practically indestructible. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned.

Made in all sizes and in types to suit every car, motor cycle, motor truck, motor boat, aeroplane, tractor and stationary gasoline engine.

When ordering, be sure to state size desired or name of engine.

SPLITDORF ELECTRICAL CO., Newark, N.J.

REPAIRMEN

What Is Your Answer to This Statement?

My motor uses too much oil and gasolene, the plugs foul, valves require grinding frequently, has excessive carbon, lacks power and life.

Your Answer Should Be the Same as Ours.

REGRIND THE CYLINDERS AND FIT NEW PISTONS AND RINGS

This is our Specialty. Strictly Quality Work.

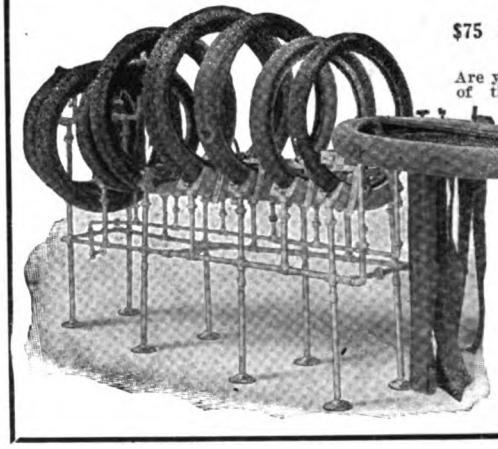
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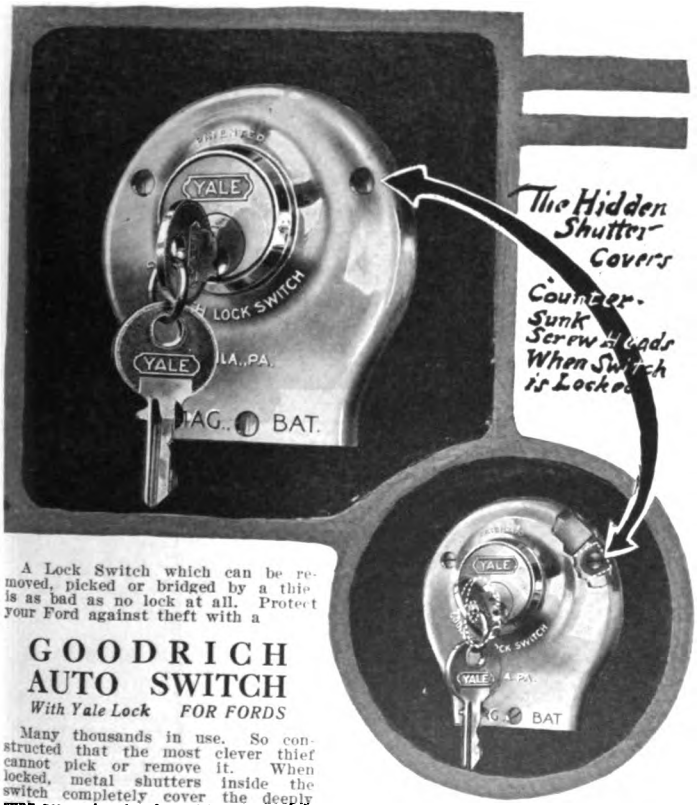
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For those who prefer "Quality First" in material and workmanship.



Priming Cups

All brass, ground in, absolutely tight. This one has 13/16 in. cup, ⅜, 7/16 or ⅞ in. shank, ⅛ or ¼ in. pipe thread.

This model is made with ¾ in. cup; shank and thread measurements same as above. In both these models, as well as 3 others that we carry, a substantial spring takes up any wear.

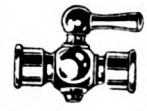


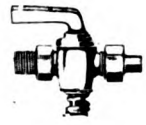


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Strictly high grade, all brass, keys ground in. This pattern can be had (No. 37) ⅛ in. or (No. 38) ¼ in. pipe thread.

Here is another style (No. 63) ⅛ in. or (No. 64) ¼ in. pipe thread. We also carry several other patterns.





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All brass, keys ground in, made with spring, lock washers fastened with cotter pins. No. 72 has ⅛ in., No. 73 ¼ in. pipe threads.





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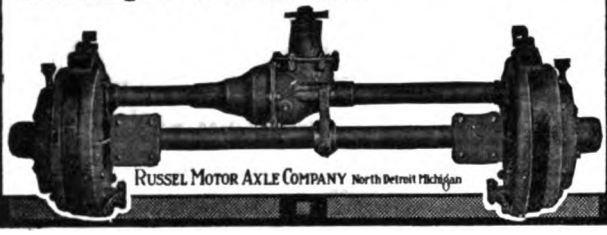
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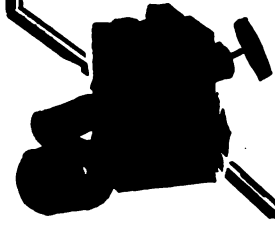


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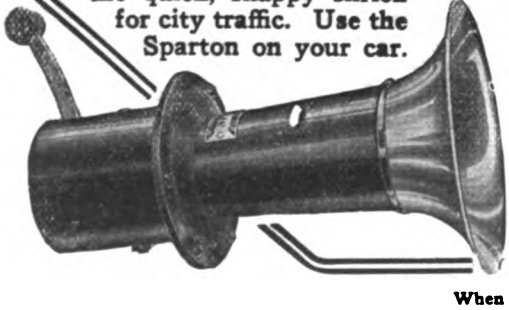
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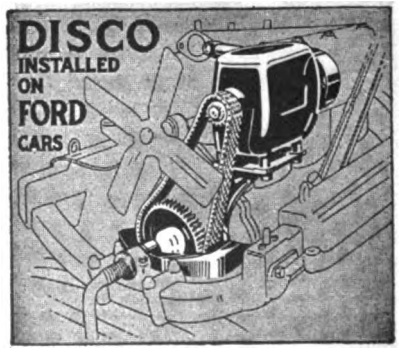
Have the far-reaching call for country roads—the quick, snappy shriek for city traffic. Use the Sparton on your car.



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Finish in satin black and nickel or all black.

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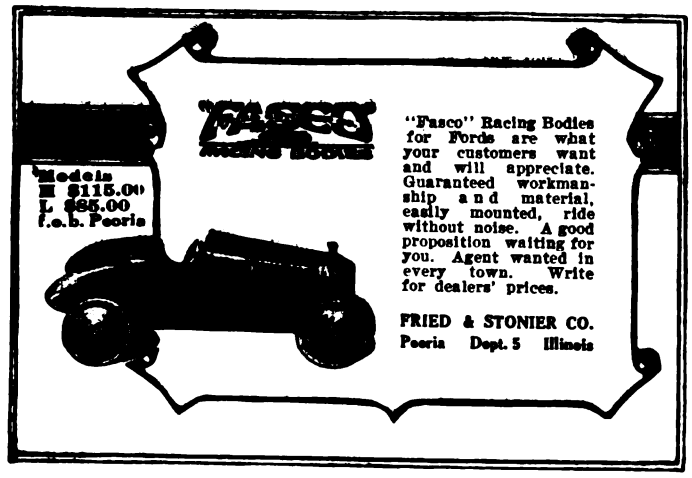
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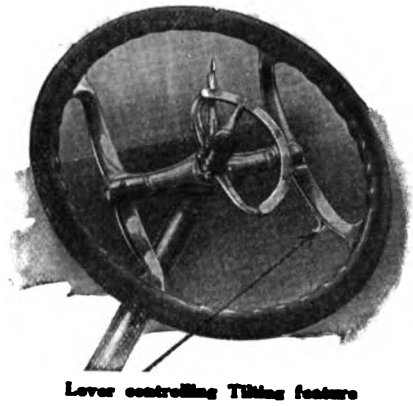
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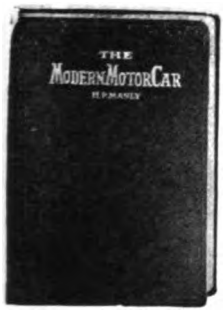
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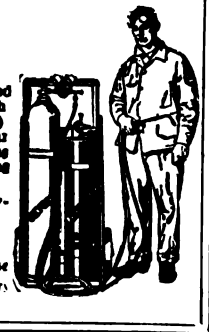
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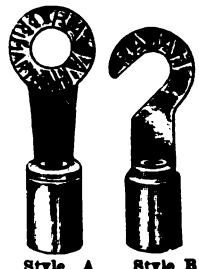
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Wing Clip for quick attachment any size cable.

Collars supplied with Clip Terminals to use with any plug.



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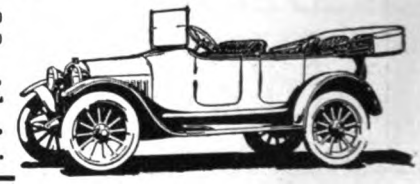
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Red Head SPARK PLUG

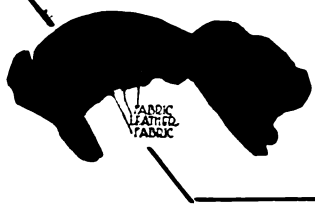


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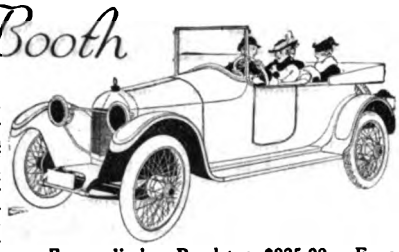
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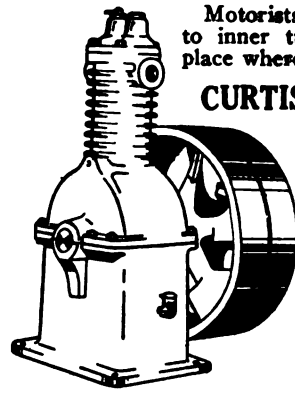
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RED
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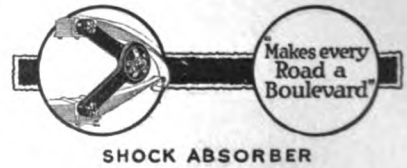
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34x3½	9.50	2.65	36x4½	17.50	4.25
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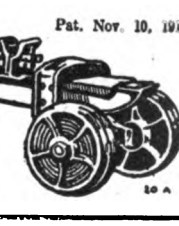
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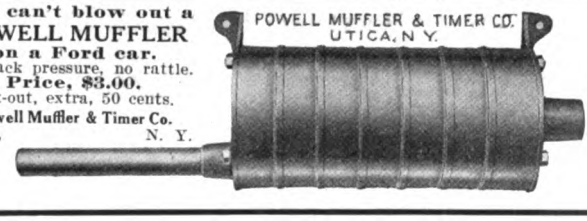
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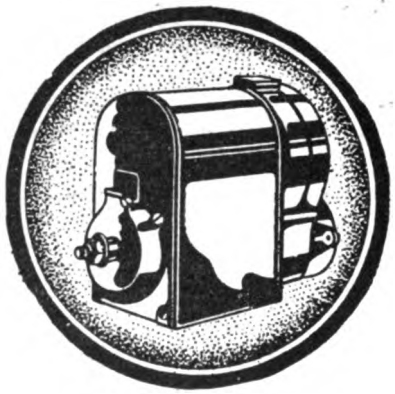
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Advertisers' Index

A
Ahlberg Bearing Co. 107
Aluminum Mfg. Co. 89
American Ball Bearing Co. 74
American Bronze Co. 57
Ames Co., F. A. ..... Back Cover
Atwater Kent Mfg. Works 98
Auburn Ignition Mfg. Co. 93

B
Batavia Tire Co. 89
Battle Creek Vulcanizing Eq. Co. 94
Baush Machine Tool Co. 47
Benford Manufacturing Co. 65
Bosch Magneto Co. 61
Brown-Lipe-Chapin Co. 97
Brugan Co. 99
Burnley Battery & Mfg. Co. 94
Butler Mfg. Co. 94

C
Cassidy, E. A. 98
Chalmers Motor Company 110
Champion Ignition Co. 56
Chicago Auto Supply House 107
Combination Rubber Mfg. Co. 98
Connecticut Tel. & Elec. Co. 100
Craven Co., E. T. 96
Curtis Pneumatic Mchy. Co. 100

D
Dearborn Motor Truck Co. 2
Detroit Auto Products Co. 86
Disco Electric Starter Corp. 96
Durkee-Atwood Co. 88

E
Eisemann Magneto Co. 108
Empire Rubber & Tire Co. 100
Engineering and Tube Bending Co. 107
Evapco Mfg. Co. 99

F
Fairchild & Co., H. G. 83
Faw, J. H. 96
Fedders Mfg. Co. 80
Firestone Tire & Rubber Co. 94
Fitzgerald Mfg. Co. 99
Ford Motor Co. 100
Foster Accessories Co. 48
Fried & Stonier Co. 97
Fulton Co. 99

G
General Asbestos & Rubber Co. 71
General Electric Co. 46
Gibson-Hollister Mfg. Co. 94
Goodrich Accessories Corp. 95
Goodrich Co., B. F. 58
Goodyear Tire & Rubber Co. 75
Grossman Mfg. Co., Emil 98
Gulf Refining Co. 92

H
Hampton-Campbell Co. 98
Hartford, E. V. 100
Hassler, Inc., Robt. H. 90
Haywood Tire & Equip. Co. 88
Herz & Co. 85
Holmes & Bros., Robt. 107
Hotel Marie Antoinette 88
Houk Mfg. Co. 63
Hudson Motor Car Co. ..... Front Cover
Hupp Motor Car Co. 72
Hyatt Roller Bearing Co. 60

I
International Harvester Co. of America 84
Inter-State Motor Co. 98

J
Johns-Manville Co. 77
Johnson & Sons, S. C. 67
Jenkins Vulcan Spring Co. 90
Jordan Motor Car Co. 69, 70

Digitized by Google

Advertisers' Index

K

Kelley Convertible Auto Truck Co. ... 84
Krembs & Co. ... 96

L

Laird & Lee. ... 97

M

Mack Mfg. Co. ... 87
Manufacturers' Distributing Co. ... 90
Michelin Tire Co. ... 45
Michigan Auto Trailer Co. ... 107
Mitchell Motors Co., Inc. ... 68
Mosler & Co., A. R. ... 99

N

National Rubber Co. ... 73
New Departure Mfg. Co. ... 93
New Era Spring & Specialty Co. ... 107
New Process Gear Corp. ... 99
N. J. Car Spring & Rubber Co. ... 98
N. Y. Lubricating Oil Co. ... 53
Nordyke & Marmon Co. ... 49, 50, 51, 52
Norma Co. of America. ... 3

O

Oakes Co. ... 94
O-So-Ezy Products Co. ... 99

P

Parry Mfg. Co. ... 91
Pittsburgh Electric Specialties Co. ... 100
Pittsfield Spark Coil Co. ... 109
Pouvailsmith Corp. ... 97
Powell Muffler & Timer Co. ... 107
Prest-O-Lite Co. ... 97

Q

Quaker City Rubber Co. ... 99

R

Rajah Auto Supply Co. ... 98
Rayford Co. ... 78
Russell Motor Axle Co. ... 96

S

Sager Co., J. H. ... 92
Scripps-Booth Co. ... 100
Shaler Co., C. A. ... 81
Sheldon Axle & Spring Co. ... 54, 55
Sheridan Commercial Car Co. ... 89
Silvex Co. ... 107
Sparks-Withington Co. ... 96
Speer Carbon Co. ... 91
Splitdorf Electrical Co. ... 94
Standard Thermometer Co. ... 96
Standard Woven Fabric Co. ... 3rd Cover
Sterling Motor Truck Co. ... 82
Stevens & Co. ... 95
Stewart-Warner Speedometer Co. ... 2nd Cover
Stromberg Motor Devices Co. ... 59
Studebaker Corp. ... 1
Svensgaard Sales Corp., H. ... 100
Swinehart Tire & Rubber Co. ... 97

T

Tay-Miller Co. ... 109
Thermoid Rubber Co. ... 62

U

United Eng. & Mfg. Co. ... 92
U. S. Ball Bearing Mfg. Co. ... 79

V

Van Cleef Bros. ... 95
Van Sicklen Co. ... 64

W

Warner Auto Top Co. ... 97
Webber & Co., P. H. ... 87
Whitney Mfg. Co. ... 93
Willard Storage Battery Co. ... 66
Williams Foundry & Mach. Co. ... 91
Willys-Overland Co. ... 4
Wonder-Mist Co. ... 96
Wood-Stafford Machine Works. ... 85

Z

Zenith Carbureter Co. ... 97





Every Car-owner or Driver should own a

HAND-I-WASH COMBINATION Price Complete **$1.00** Prepaid

HAND-I-WASH consists of a tube of specially prepared liquid requiring no water and roll of best quality absorbent paper towels.

Instantly removes dirt, grease, and oil without injury to the most delicate skin. Leaves skin soft and clean without odor or stickiness. Compact—can be stowed in tool kit. Weighs 29 ozs. Size 11" x 3½".

Refillers complete, towel, roll and tube of liquid for 50c. Antiseptic and Sanitary.

DEALERS. *Write for Discounts.*

TAY-MILLER MFG. CO., Inc.

Mfg. Chemist, 1712 Cherry Street, PHILADELPHIA, PA.

Special terms to dealers and agents. Write or wire for territory.





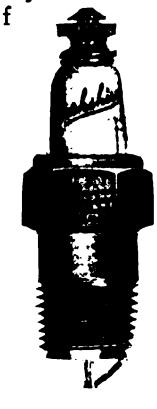
Pittsfield "Micatite" Spark Plug



wears the *Blue Ribbon* in the Combination Plug class. It *does not leak compression.* Electrodes practically carbon proof. Composition top heat-proof, cold-proof, water-proof, gas-tight, difficult to break and never works loose. *Meteor Sparking Wires.* Easily cleaned by removal of check nut.

PITTSFIELD P TRADE MARK

Here is the BERKSHIRE 96b for Fords



It has an *extra long shell,* and the *specially imported Kaolin Porcelain* used in this plug was fired at extreme heat to *insure extraordinary durability.* Same *self-cleaning* design as standard plugs. Meteor wire, the highest grade alloy known for this duty, is used for sparking points.

PITTSFIELD SPARK COIL CO.

PITTSFIELD **MASS., U. S. A.**

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Quality First

Hitting the Prospects Where They Live

During July, August and September, Chalmers advertising will be directed at the smaller cities and towns, because that is where buying is most active in the summer months.

Starting July 20th we are running a rapid-fire campaign—two ads a week in the newspapers of every town under 50,000 in the United States where there is a Chalmers dealer.

This is a part of the Chalmers plan of intelligent co-operation with dealers.

There are some additional towns where we would run this big advertising campaign if we had dealers.

Maybe you are the man we are looking for in one of those towns.

Chalmers Motor Company, Detroit

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BACK OF THE DEALER

When you, as a Dealer, have back of you the Reputation, the Customers, the real satisfying, money-making ability of

MULTIBESTOS

you can feel certain of holding and enlarging your brake-lining trade.

You cannot give your customers any better brake lining—and you cannot give yourself any better business proposition.

It is our policy to help YOU, THE DEALER, all we possibly can. Upon you we depend for proper treatment of MULTIBESTOS buyers and you can depend upon us to deal squarely with YOU.

If not convinced of this by a cordial relationship already established with us, write **NOW** and find out what we do for you.

It will give you a new light on the brake-lining business, put **extra** dollars in your pocket and new customers in your stores.

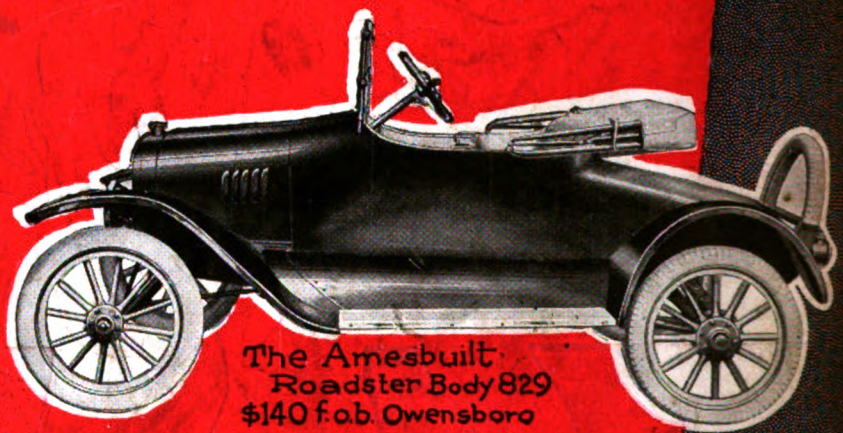
STANDARD WOVEN FABRIC COMPANY, Walpole, Mass.

New York Branch and Export Office, 1779 Broadway
BOSTON.....175 Massachusetts Ave.
CHICAGO.....1432 Michigan Boulevard
PHILADELPHIA.....1309 Race Street
ATLANTA.....6 West Harris Street

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Two's Company

And, *some* company, too, you are with when in this classy streamline Roadster Body on your Ford chassis. Lots o' leg room. Full streamline equipment, crown fenders, bull nose radiator shell, one-man silk mohair top and dust cover, Jiffy curtains, clear vision windshield, etc., with all attachments ready to mount on your Model T chassis. Makes a classy, restful, up-to-date riding car. It's *value* thru and thru.

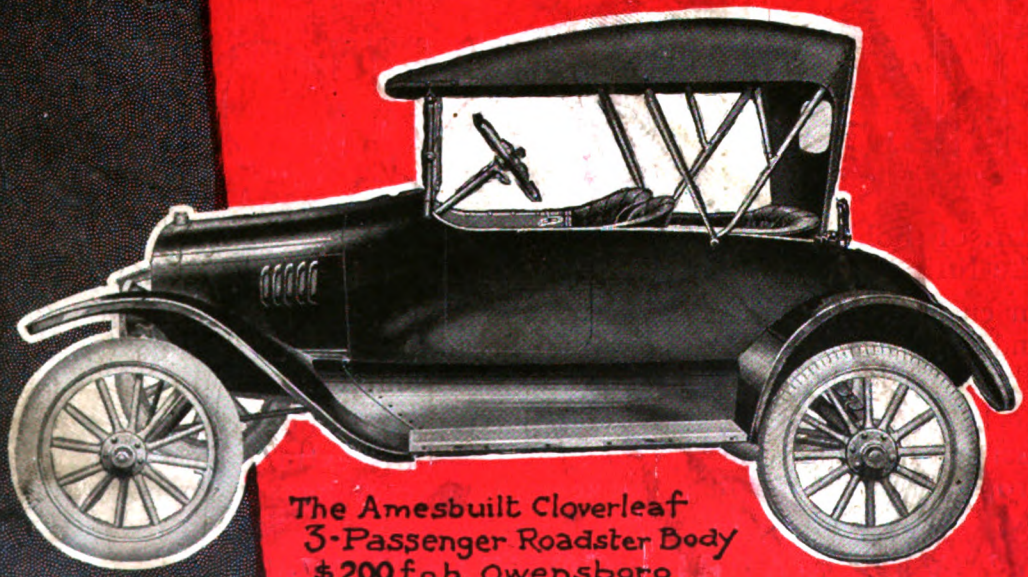


The Amesbuilt Roadster Body 829 $140 f.o.b. Owensboro

Three's a Crowd-

(SOMETIMES)

But There's Crowded Value in Both of These Amesbuilt Bodies for Fords



The Amesbuilt Cloverleaf 3-Passenger Roadster Body $200 f.o.b. Owensboro.

The AMESBUILT Cloverleaf 3-passenger Roadster Body puts your Ford in the class of exquisitely designed cars worth double or more. Complete, with heavy crown fenders, fender irons, skirt hiding rear axle, side skirts, streamline hood, bull nose radiator shell, clear vision divided windshield, one-man silk mohair top, dust cover, linoleum covered aluminum bound running board, special gas tank filler cap—everything—all ready to attach to Ford chassis, $200 f.o.b. Owensboro, Ky.

The F. A. Ames Co.

INCORPORATED

Owensboro, Ky.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 8

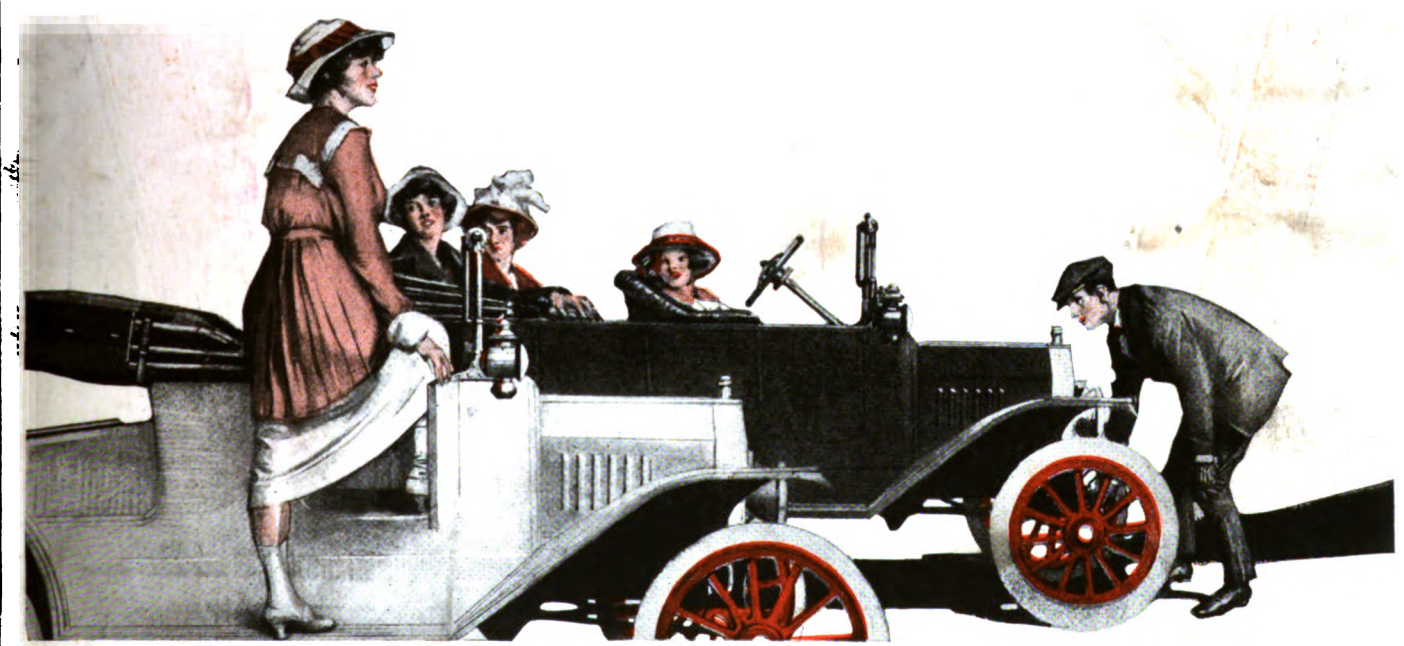
New York, August 23, 1916

Ten cents a copy
Two dollars a year

SHAFT-DRIVE

Genemotor

TRADE MARK



Why don't you get a Genemotor?

Genemotor matches the Ford in excellence.

It's the product of the General Electric Company, world's greatest specialists in electric motors.

Just like the Ford car, it is light, simple and strong. It is shaft driven and that means still greater simplicity, 12 pounds less weight and more power. Weighs 42 pounds, complete.

Built to form a perfect auxiliary to the Ford engine.

Charges the battery at low speed. "U S L" Battery standard equipment.

It is the universal starter for the Universal Car.

Price $85 f.o.b. Lynn, Mass.
Sold Everywhere.

A. J. PICKARD & COMPANY
General Distributors
1720-1722 BROADWAY, NEW YORK

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Stewart is to the speedometer what Kodak is to photography, Victrola is to talking machines, Singer is to sewing machines, and Ivory is to soap.

It's the world's standard.

"It will pay you to see that the car you buy is equipped with Stewart Products"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

Stewart

Speedometer



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Studebaker

Opportunities



Another in Kentucky

IT'S the second largest city in the state, located on the Ohio River and connected by a suspension bridge with one of the leading cities in Ohio. In fact these two centers might easily be called "the twin cities of the South", so closely are they bound by the ties of business and friendly relationship.

In this city of over 55,000 people Studebaker has an opportunity for a "live-wire" dealer to go in with the Studebaker line and build a lasting and profitable business. Current reports indicate that this city was never more prosperous than at present.

Water and rail transportation afford excellent facilities for the development of its chief industries comprising cigar and tobacco factories, foundry, machine shops and flour and steel mills.

Rarely has Studebaker been able to offer such a splendid opportunity as this in the South. It won't "go begging" long, that's sure. If you are interested, don't delay but write for the facts immediately.

STUDEBAKER

Detroit, Michigan

South Bend, Indiana Walkerville, Ontario

Address all Correspondence to Detroit

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Buy a FISK Red Top Tire

TRADE MARK REG. U.S. PAT. OFF.



Time to Re-tire? (Buy Fisk)

The feature of this entire advertising campaign is the slogan, ***"Buy a Fisk Red Top Tire."*** *This has been displayed everywhere — in magazines, newspapers and billboards, reaching practically every tire buyer in the United States. The effect was electrical.*

The advice, ***"Buy a Fisk Red Top Tire,"*** *applies to you as well. Keep even with the demand if you would keep your trade satisfied with your service to him.*

THE reports we have already received are to the effect that Red Top advertising now running is a tremendous success.

It is not too late for you to stock Red Tops and get your share of the Fisk profits now being made.

Write at once to Dept. 23 for our Dealers' Proposition.

THE FISK RUBBER COMPANY
of N. Y.
Chicopee Falls, Mass.

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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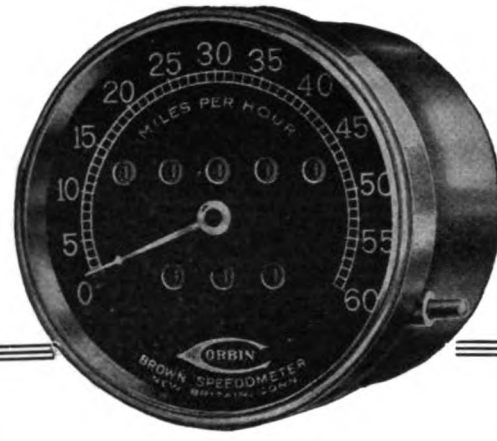
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Editorial Contents

Dealers Who Have Made Good.....6-7
This begins a new series in Motor World showing pictures and telling a story of dealers who have achieved success in the motor car business. The series tells who they are and the principles that have helped them to succeed.
The New Willys.....10
The New Cadillac Eight.....11
The New Kissel.....27
The New Ellsworth Truck..... 33
The New Ranier Truck..... 33
The New Denmo Truck..... 33
The Tractor Dealer Must Think Reliability...8-9
The farmer has been thinking in acres and has not given sufficient thought to the reliability of the tractor. This educational work is up to the dealer.
South America Needs Accessories and Men to Sell Them.....14-16
The American car has won its way into South America, but American accessories have not followed it and they are badly needed This is the fourth of a series on South America by David Beecroft, managing editor of Motor World.
The Direct Line Mind..... 13
Why the Gas War Started.....34-35
A cut in business amounting to $28 is said to have started the price war between Standard Oil and the Independents.
A Message to Ford Salesmen..... 28
Ford Salesmen Setting Up as Dealers..... 36
Pictures of the New Ford..... 36
Abbott Factory Going to Cleveland..... 38
Gasoline Still Declining..... 38
How Milwaukee Dealers Boost..... 17
System Department..... 18
Legal Department..... 19
Building Department.....20-21
Repairshop Short-Cuts.....22-23
Accessories and Supplies.....24-25
Inquiry Department..... 26
Editorial Comment..... 28
Readers' Opinions..... 29

Advertisers' Index on pages 98-99



Innocence Abroad

—particularly when accompanied by an automobile, is soft picking for the town constable. Don't be innocent. It's expensive. The man that "did not know" always has to pay.

Your dealer is ready right now to equip your car with the famous

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

By all means let him do so—not only will it save you money and keep you out of trouble, but it will also add new zest to driving. You will know exactly what you are doing and how fast you are doing it; you will gain a more intelligent idea of your trips and the country about you, and you will be able to know your car more intimately. Then there is tire wear, gas and oil consumption to be considered. The Corbin-Brown will help you to consider them and they are worth considering, because you pay money for them.

This is true talk, but investigate for yourself. Visit your dealer today. Catalog upon request.

The Corbin Screw Corporation

THE AMERICAN HARDWARE CORPORATION, Successors
NEW BRITAIN, CONN.

BRANCHES: New York Chicago Philadelphia

Makers of Corbin Duplex Coaster Brakes for Bicycles

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Overland

Elmira, N. Y., Shows Its Approval of the Overland

In 1912 the Elmira dealer sold only 150 Overland cars.

During the year ending July 15, 1916 he was shipped six times that number.

The Elmira dealer—like thousands of others—is making money by handling the Overland.

"Made in U. S. A."

The Willys-Overland Co.

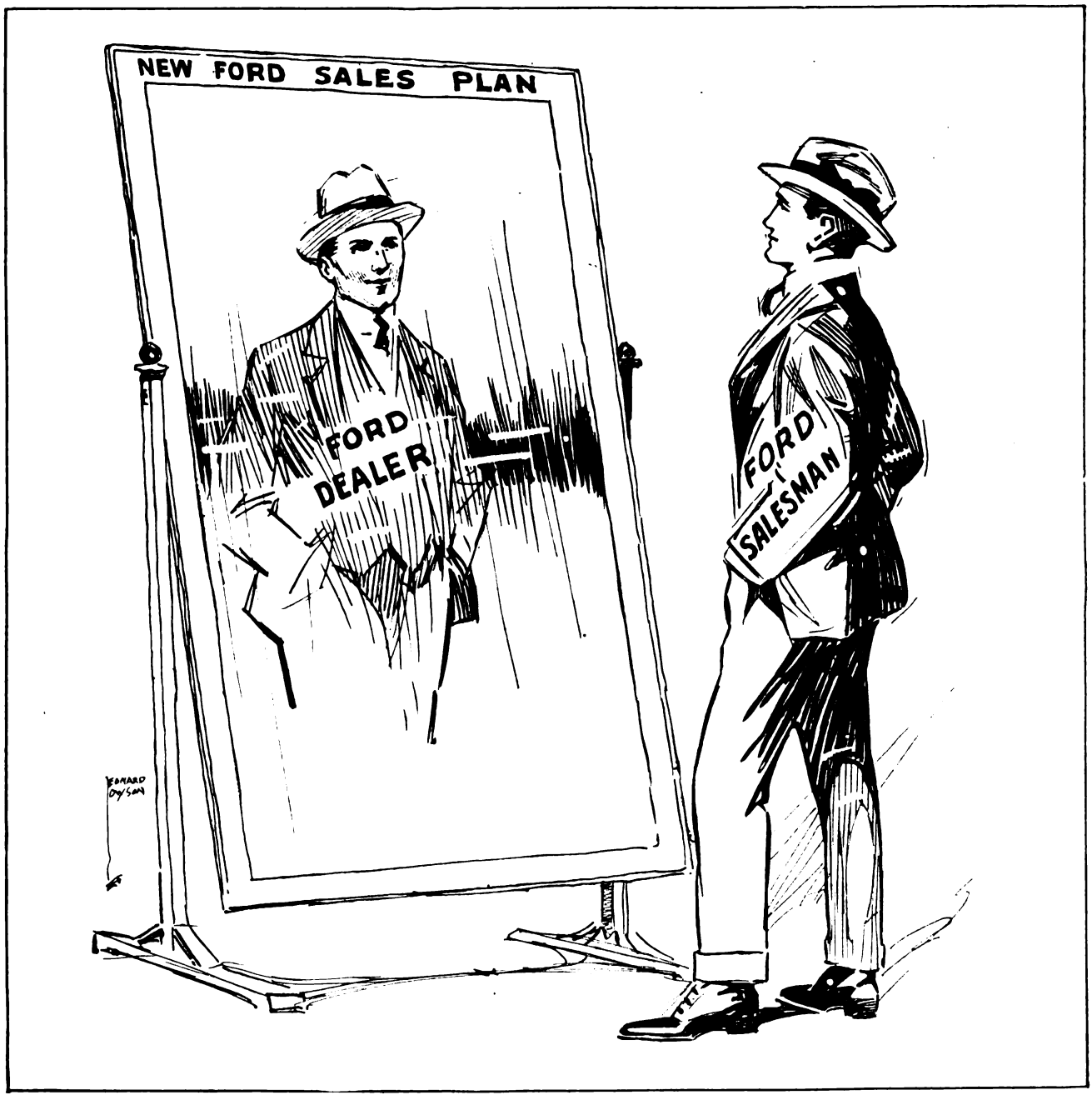
Toledo Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII New York, U. S. A., Wednesday, August 23, 1916 No. 8

Not So Bad



All the many Ford salesmen who find themselves dealers under the new merchandising plan are earnestly invited to read the editorial on page 28

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Dealers Who Have Made Good

WITH this issue, Motor World inaugurates a series on Dealers Who Have Made Good. They are men who have won their way to the top in the motor car industry's distributing division. Others will appear in succeeding issues. Each will include a picture of the man, a brief biographical story and a summary of some of the methods that have helped in his career.

Inglis Moore Uppercu

President of the
Cadillac Motor Car Co. of New York

SINCE he took over the Cadillac New York agency in 1908 he has never had a year's business that was less than that of the preceding year. With a small beginning, he now has 461 people in his organization and has branches in Bridgeport, Conn., White Plains, Newark and Brooklyn. In his New York organization are 328 employees.

Two and a half years ago he moved into a new, white building at Broadway and West Sixty-second Street.

He was born in 1875 — is 41 years old. Association with Charles E. Duryea, in Cartaret, N. J., was his first "horseless carriage" experience—in 1896—and he was ashamed to let his friends know he was "monkeying with the thing."

From 1898 to 1899 he was with the Gasmobile—ever hear of it?—in Marion, N. J., and then in 1902 he formed the Motor Car Co. of New Jersey to sell the Autocar, Cadillac and Packard in Newark. Here he remained until he bought the Cadillac New York branch in 1908.

The Why

THE telephone girl is forbidden to say: "Who is it? What do you want?" when any one asks for Mr. Uppercu. He is accessible even to his newsboy—if the latter calls on the telephone.

Entrance to his office is easy. No cold barriers exist.

Selling a high-grade car, he insists upon high-grade men. For a new man, intelligence and gentlemanliness are more essential than experience.

Selling to a high-grade public, he sells accordingly. One reason for his hold on the New York public is his special body offerings—because New York likes them.

Decisions with him are made in an instant. No wavering. The motor car industry is a business of quick decision in every phase.

He sells the Cadillac on its merits and lets his customers talk about his service afterward.

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Inglis Moore Uppercu



President of the
Cadillac Motor Car Co.
of New York

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The Dealer Must Teach the Farmer to

THINK RELIABILITY

By Stanley P. McMinn
Motor World Staff Representative with the Tractor Circuit

THIS IS THE FIFTH of a series of articles on the merchandising and service problems peculiar to the farm tractor dealer. Previous articles have discussed tractor service and the merchandising possibilities of tractor accessories. The sixth article will appear in a following issue.

AFTER performance, the most important tractor consideration to the farmer is reliability. His tractor must keep on working to be profitable. Breakdowns and wear must be minimized.

Construction is vital.

The farmer has not yet gotten to thinking this way. *Acres plowed is what he is thinking of, but he has not yet hitched reliability and acres plowed together.*

This work is up to the dealer.

The dealer must THINK tractor construction, VISUALIZE the conditions under which a machine operates and have his sales ammunition ready to shoot at the farmer.

The reliability of a tractor hinges on a great many things. One of the most important is dust. In dry weather a tractor works continuously in a cloud of fine, gritty dust. Dust is drawn through the carbureter into the cylinders and bearings. Many tractors have their working parts exposed and wear is rapid.

Too much emphasis cannot be laid upon the necessity for some device which shall effectively prevent dust getting into the cylinders. During a 1-hr. run on a two-plow tractor in Hutchinson, Kan., *exactly 1 oz. of fine dust collected in the air cleaner with which the machine is equipped.* This dust was almost entirely grit and was so fine that it would float away in the air.

Dust Wears the Rings

Under ordinary circumstances, and if there had been no air cleaner on the carbureter, this grit would have gone directly into the cylinders. *On some machines that are not equipped with air cleaners, piston rings are worn almost paper thin in as little as 6 weeks.* One manufacturer insists that his dealers agree to furnish pistons, piston pins and piston rings to purchasers at actual cost.

Fortunately, a great many tractors have air cleaners. In some cases the farmers know about them, but mostly they don't, and few of them appreciate the abrasive action of this gritty dust. The farmers need education. They need to be told that an air cleaner is a necessity.

Trend to Anti-Friction Bearings

The trend toward the use of anti-friction bearings is noticeable and the farmers have been educated up to their advantages by their motor cars. Plain bearings still are used in a great many cases, and for some uses they probably never will be replaced. But in gear-sets and drive wheels the anti-friction type is making rapid headway. Such bearings are always as nearly dustproof as it is possible to make them and last almost indefinitely.

Service Education

Because of the rugged construction of tractors and the liberal factor of safety provided, breakage of parts is not serious, and even where parts break the farmer has not yet been educated to the desirability of that brand of quick service in which the motor car dealer and garageman specialize. *However, those dealers and garagemen who have entered the tractor business are quite generally carrying stocks of spare parts and the farmer is being educated out of his way of sending direct to the manufacturer for a part and then waiting more or less patiently until it comes.*

For the most part the adjustment of the modern small tractor is a very simple matter. Parts are big, and as appearance counts for exactly nothing, nuts and bolts can be put where they will serve the most useful purpose. Hence there is plenty of room to swing a wrench and the necessity for swinging it is made plain because few adjustment points are hidden.

Approaching Simplicity

Up to about a year ago the use of low-tension magnetos and make-and-break ignition was quite general, and it was not always easy for the farmer to adjust his make-and-break mechanism so as to give the best results. Lately, however, the use of high-tension magnetos has made a great gain, and, while this has tended to cause some confusion where trouble was experienced, that confusion is rapidly subsiding because of the greater reliability of the instruments and because of the decreased number of moving parts and attention necessary.

Carburation necessarily brings up the question of burning kerosene and is something of which the farmer knows little, not being an engineer, and the dealer must know a lot.

Tractor manufacturers naturally have been talking long and loud regarding the ability of their respective machines to burn kerosene, but the farmer does not appear to be greatly interested in it as yet. It may be that he has not learned to figure his costs or that he has learned to figure them so well that he cares little which fuel he uses.

They Saw Kerosene

The farmers who visited the demonstrations saw machines of every conceivable type burning kerosene one day and gasoline the next, and apparently burning one as well as the other. They also saw some machines which were supposed to be burning kerosene, dripping kerosene all over the lot, choking up when a sudden load was put on them, and belching forth great volumes of black smoke.

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THE CEDAR RAPIDS DEMONSTRATION this week showed what the tractor can do for the thousands of prairie farmers of Iowa. This state has the price of the tractor provided it is "sold" on that machine. Great interest was displayed as the gasoline horses worked

When burning kerosene properly, a tractor will throttle well, will not choke up under a sudden load, there will be little or no odor to the exhaust to denote that kerosene is being burned and not gasoline, and there will be no smoke worth noticing.

Must Be Rightly Designed

ENGINEERS WILL TELL YOU THAT IN ORDER TO BURN KEROSENE IN THIS WAY A MOTOR MUST BE DESIGNED TO DO IT; THAT IT IS IMPOSSIBLE TO TAKE A MOTOR BUILT FOR GASOLINE AND BY MEANS OF HOT AIR ATTACHMENTS AND OTHER DEVICES MAKE IT BURN KEROSENE EFFICIENTLY.

But not all tractor engines are designed and built to burn kerosene, though most any of them will burn kerosene with every appearance of complete success—for a short time. After that short time there is excessive heating, sooty deposits and absence of lubrication, depending upon the type of lubrication system employed and the efficiency of the carbureter.

Immediately a kerosene carbureter fails to function properly, or loading up occurs—this being an engineer's way of saying that kerosene collects in the manifold due to insufficient heat or to a decrease in the speed of the gases—the liquid fuel finds its way down past the piston rings and into the crankcase, where it plays havoc with the lubricating oil.

Advocate Crankcase Draining

Most tractor manufacturers when burning kerosene strongly advocate that the crankcase be drained every night and refilled with fresh oil the next time the tractor is put to work. The farmers are being trained to know that this is necessary, BUT THEY ARE NOT DOING IT, and for this reason lubrication troubles, burned out bearings and scored cylinders frequently result.

The oil that is drained out of the crankcase still retains some lubricating qualities, though it is worthless in a motor. It can be used for oiling other parts of the tractor, such as the bull-ring gear, and can also be used on other farm implements. For the most part, however, it is merely permitted to drain away into the field.

Never a Gas Substitute

Where the lubricating oil is changed nightly, no lubricating difficulties are experienced, though the process is an expensive one. Some farmers look upon it as offsetting the advantage to be derived from burning kerosene and therefore are not greatly interested in the cheaper fuel. This applies also in the case of some manufacturers. *Others state frankly that they do not believe that anything will supplant gasoline, which is easily vaporized and burned, promotes reliability and minimizes many troubles.*

Some manufacturers advocate the wasting principle in lubrication and claim to be getting good results. In this system a small quantity of fresh lubricating oil is constantly fed into the crankcase to enrich what is there.

Is Kerosene Wrong?

But that kerosene is being burned successfully in quite a number of tractors admits of no doubt. Where a machine will operate on kerosene day in and day out without trouble, as have some of those at the demonstrations, it may be assumed that it will continue to do so after it has left the care of the manufacturer.

But where a manufacturer starts out to burn kerosene and then suddenly decides that he will switch to gasoline when advised that an 8-hr. plowing test is to be put on—as it is said some of them did at the demonstration at Enid, Okla., this spring—it may be assumed that there is something seriously wrong with the tractor as a kerosene burner.

Dallas Show to Draw 3,000,000

DALLAS, Aug. 21—So great is the demand for space at the State Fair motor show, Oct. 14-31, that a wing will be added to the show building. It is expected that 3,000,000 will attend the show. Last year nearly that many visited the fair and car exhibition.

It is also expected that this show will reveal many of the new models of cars that otherwise would not be exhibited until the New York show in January.

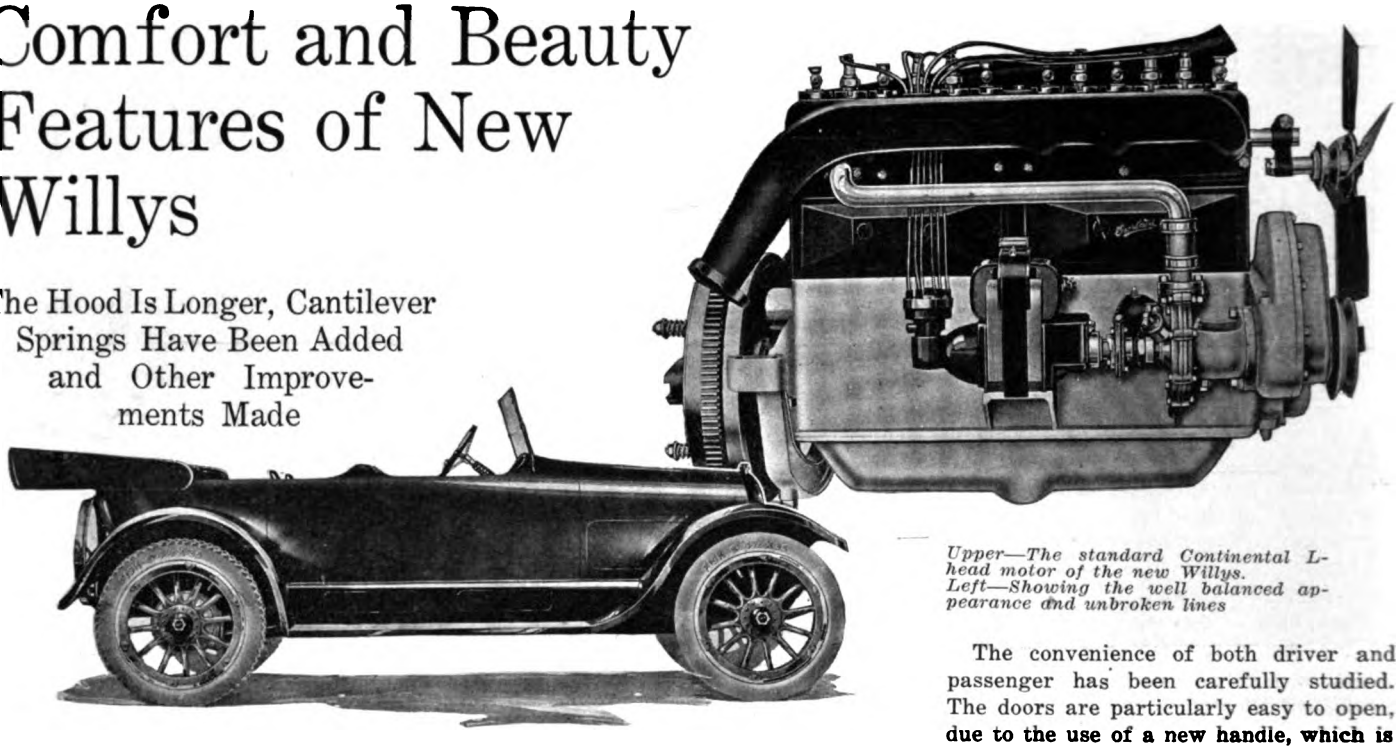
Uncle Sam Advocates System

WASHINGTON, D. C., Aug. 21—The Federal Trade Commission which was formed to better trade conditions and relations has taken a deep interest in accounting systems and has issued two pamphlets covering the principles of accounting. One pamphlet is for manufacturers and the other for retailers. These do not advocate the use of any particular system, but urge greater attention to accounting, and tell how different operations should be handled.

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Comfort and Beauty Features of New Willys

The Hood Is Longer, Cantilever Springs Have Been Added and Other Improvements Made



Upper—The standard Continental L-head motor of the new Willys. Left—Showing the well balanced appearance and unbroken lines

WITH the exception of a longer hood, the new Willys seven-passenger 88-Six at $1,325 is identical in its appearance with the Willys-Knight four recently described. Cantilever springs have been substituted for three-quarter elliptics, battery ignition made by Connecticut has taken the place of the magneto, the gearbox used on the 1916 Willys-Knight has been adopted, and the gasoline tank has been moved to the rear from under the seat, the change bringing with it the installation of a Stewart vacuum system. Continental motor, Auto-Lite starting and lighting, and the Tillotson carbureter are the same as heretofore.

Comfort and beauty are the features of the new car. The lines are unbroken from front to rear. The radiator edges are rounded, and the radiator is slightly higher, the top edge of the body is rolled in, and there is a double cowl and a tilted windshield. All these details combine to give a very attractive car.

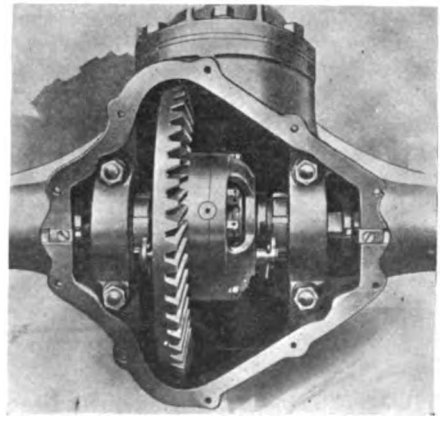
The body is dark blue with gray wheels. Metal fittings are nickel and polished aluminum, and fenders and trimmings are black enameled.

The car is comfortable. The upholstery is unusually soft, due to the use of smaller springs and because each one is in a canvas casing, which acts as an air chamber, giving a pneumatic cushion effect. The body is roomier. There is plenty of knee room when the auxiliary seats are up. Cantilever springs, 48 x 2½ in., make this the easiest riding Overland, since it also has the longest wheelbase, 125 in. Larger tires than usual, 35 x 4½, contribute to the easy riding. The springs have been attached to the axle in such a way that the tendency is for the axle to roll backward slightly, thus reducing the force of the shocks.

The Willys Six

Made by the Willys-Overland Co., Toledo, Ohio.

Price, 7-pass. touring	$1,325
Make of motor	Continental
Number of cylinders	Six
Shape	L-head
How cast	Block
Bore	3½
Stroke	5¼
S. A. E. horsepower	29.4
Maker's rating	45
Gear ratio	4 to 1
Weight	3515
Ignition, battery system	Connecticut
Fuel system	Tillotson double-jet carbureter, Stewart vacuum system, and 15-gal. tank.
Clutch	Leather-faced cone
Gearset	Three speeds on axle, annular ball and Hyatt rollers; nickel gears.
Wheelbase	125
Tires	35 x 4½, rear non-skid
Rear axle	Full-floating
Front axle	Timken bearings
Demountable rims	Standweld straightside.
Motor main bearings	Three 2½ x 3 in.



The full floating rear axle has spiral gear drive and Timken adjustable taper bearings

The convenience of both driver and passenger has been carefully studied. The doors are particularly easy to open, due to the use of a new handle, which is pulled toward the seat to close the door. This movement is easier than that required to unlock the ordinary door, especially when the door is stuck. For the sake of cleanliness and safety, rubber pads with ridges on them have been place on the runningboards under each of the four doors. They not only act as mud scrapers, but also give a firm foothold.

As in previous models, the control is very convenient. A very light pressure is required to disengage the clutch, merely the rocking of the foot on the heel being sufficient to depress the pedal. Horn button and ignition and lighting switches are placed in a box on the steering post, where they are easy to reach. Gearshift and emergency brake levers may be operated without leaning forward. The two large pedals are adjustable as to length.

The cowl board equipment is complete, including a Warner speedometer with ½-in. figures on the speed indicating cylinder and ¼-in. figures on the 100,000-mile indicator and on the 100-mile trip register. The latter may readily be set back by turning a small knob at the right. The oil gage registers up to 10 lb., and the ammeter has a range of 15-0-15 amp. A Boyce Moto-Meter relieves the driver of worry as to the condition of the cooling system.

The new motor will throttle down as low as 4 m.p.h. on high gear and still run smoothly, and will pick up quickly from this speed without any difficulty. The ability of the car may be judged from the fact that the motor is rated at 45 hp., has a gear ratio of 4 to 1, and weighs 3515 lb. with all tanks full and a spare non-skid tire and rim.

(Continued on page 12)

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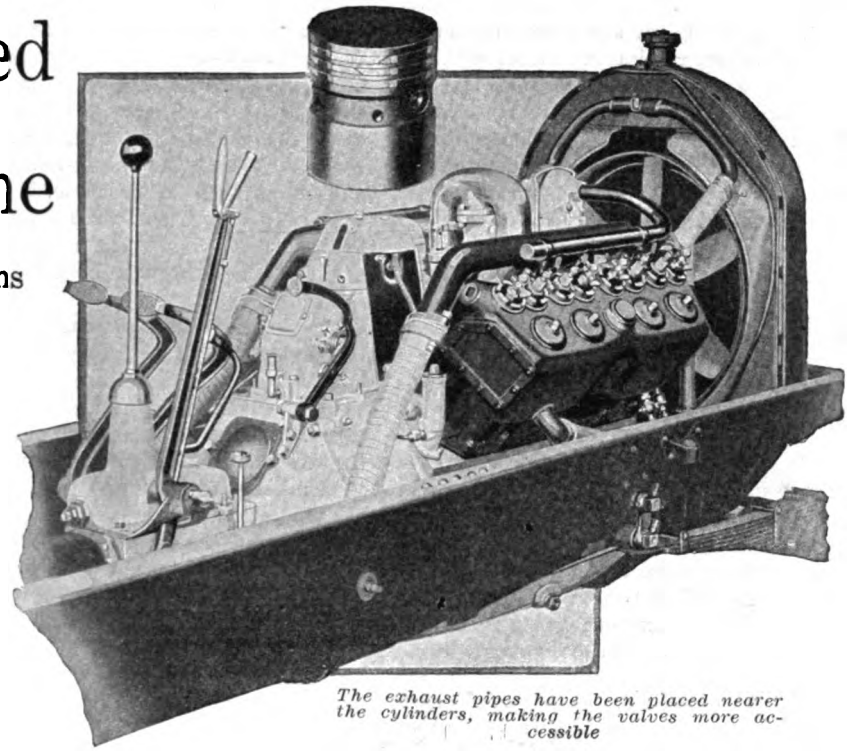
Cadillac Bettered but Price is the Same

And There Are Eleven Body Designs of which Enclosed Types Are Features

AS a luxury vehicle, the Type 55 Cadillac is much more desirable than the Type 53, which it succeeds, good though the latter was. Yet the price of the open models remains at $2,080, although the inclosed designs are somewhat higher.

Dark blue is now the standard color on the open cars, although dark green, which has been standard on all models since the first eight was announced, will still be used on the inclosed models. The appearance is enhanced by the adoption of crowned fenders, the addition of a molding around the top of the body, and new headlamps, which, in a general way, follow the shape of the coat or arms on the radiator.

Comfort is greater because of a more vibrationless motor, softer upholstery, longer wheelbase, now 125 instead of 122 in., roomier body and Gabriel no-bound snubbers.

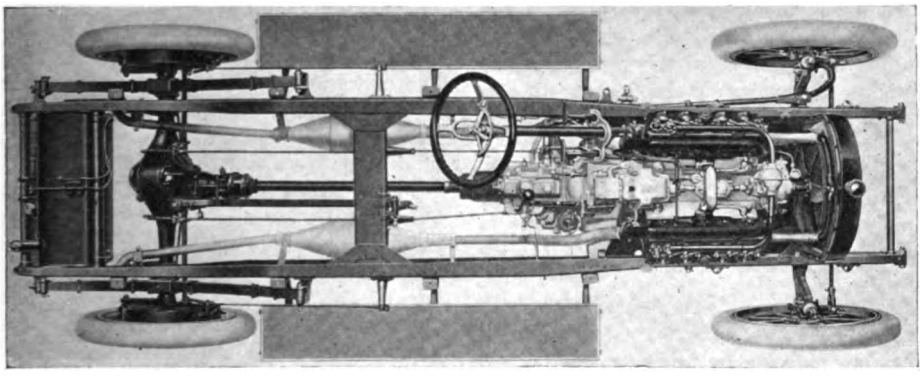


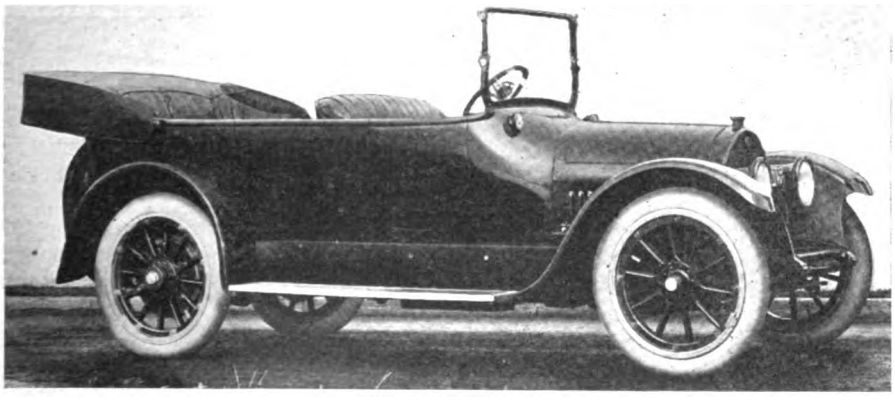
The exhaust pipes have been placed nearer the cylinders, making the valves more accessible

To meet the growing demand for variety, the number of body models has been increased to eleven, four open and seven inclosed. In the former class, in addition to the seven-passenger touring with disappearing seats, there is a four-passenger phaeton, two-four-passenger roadster with a pair of disappearing rumble seats, and a club roadster seating four, all selling for $2,080.

There are two convertible cars with permanent roofs and disappearing windows, one a four-passenger victoria at $2,550 and the other a seven-passenger at $2,675. A four-passenger coupe sells for $2,800 and a five-passenger brougham at $2,950. There are three seven-passenger cars with 132-in. wheelbase, a limousine at $3,600 and a landaulet and imperial at $3,750.

One pound has been clipped from each pair of pistons and connecting-rods. The reduction is largely due to a different design of piston, which, however, is cast-iron as heretofore. The center portion is cut away so that the piston bears against the cylinder only at each end.





The wheelbase of the new eight has been increased and lines of the body improved. Except for increased strength, the frame is unchanged

The New Cadillac 8

Made by the Cadillac Motor Car Co., Detroit

Price—	
Seven-passenger touring	$2,080
Four-passenger phaeton	2,080
Two-four-passenger roadster	2,080
Four-passenger club roadster	2,080
Four-passenger Victoria	2,550
Seven-passenger Victoria	2,675
Four-passenger coupe	2,800
Five-passenger brougham	2,950
Seven-passenger limousine	3,600
Seven-passenger landaulet	3,750
Seven-passenger imperial lim.	3,750
Color—	
Open cars	Blue
Inclosed cars	Dark green
Cylinders	L-head
Cast	Two blocks
Bore	3⅛
Stroke	5⅛
Displacement	314
S. A. E. horsepower	31.25
Starter	Delco
Ignition	Delco
Lighting system	Delco
Clutch	Mult. dry-plate
Wheelbase	125 and 132
Front tires	36 x 4½ smooth
Rear tires	36 x 4½ non-skid
Wheels	Wood
Rear axle	Floating

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Lightness and reduced friction are thus obtained, the latter since the amount of piston surface coming in contact with the cylinder walls is less.

Unfailing and adequate lubrication of the cylinder walls is assured because of the oil which gathers in this depression. At the same time, over-lubrication is prevented by the presence of several holes which run to the interior of the piston and allow the excess oil to drop to the crankcase. Along with the new piston design the wristpins have been enlarged to give longer wear.

The upholstery is softer and much more comfortable, due to a new form of spring, which is very resilient, yet is so made that it will not settle with continued use, it is said. Another improvement involving both appearance and comfort is the adoption of dull-grained leather instead of the glazed, and it is plaited instead of tufted.

Convenience, comfort and appearance have been increased in many small ways. Gearshift and emergency brake levers are easier to operate, since their length has been increased a couple of inches. A wrench is no longer required to remove the gasoline filler cap, since the threaded type has been replaced with one which locks by a hand clamp.

The gasoline gage may now be easily read at night without straining the eyes or making a light, since the taillight has been so modified that it illuminates the gage. The radiator is better protected against splashing mud by the use of a horizontal guard between the frame members instead of a slanting guard.

Accessibility of the valves is improved by a 2¼-in. wider valve alley, effected by placing each exhaust pipe 1⅛ in. closer to its cylinder block.

The frame is more rigid, partly because the depth of the channels has been increased from 6 to 8 in., but also because tubular cross-members, one at the front and two at the rear, are now used. These are both stronger and lighter.

The balancing of the torque reaction of the motor against the torque reaction of the rear wheels has been approximated by placing the torque rod at a certain point at the right of the driveshaft instead of at the left.

The thrust of the drive pinion is better taken care of by putting both bearings ahead of the pinion instead of one on each side as heretofore.

Except for the changes noted, the new chassis is the same as 1916 and not much different from the original design brought out in September, 1914. Cylinders are 3⅛ x 5⅛ in., giving a displacement of 314 cu. in. and actual horsepower of 70 and an N. A. C. C. rating of 31.25. L-head cylinders, cast in two blocks, are mounted on an aluminum crankcase, with clutch and gearcase in unit.

Camshaft and generator shaft are driven by silent chains, located at the front. A double-throw crankshaft is used, the same as in a four, each throw having two mating connecting-rods, one being attached to the crankshaft in the usual way and the other being forked and fitting over the first one.

The crankshaft has three bearings and the camshaft five. The main bearings are reinforced bronze, babbitt-lined.

Each cam operates two opposite valves. The camshaft assembly is on the under side of a plate which bolts to the top of the crankcase between the cylinder blocks. On each side is pivoted a row of eight rockers, each rocker having a cam roller; thus the motion is transmitted from cam to push rod.

Lubrication is force-feed, a gear pump driven from the crankshaft drawing oil from the reservoir in the bottom of the crankcase and forcing it through pipes to each of the main bearings; from thence the oil makes its way to the connecting-rod bearings through passages drilled in the crankshaft.

Lubrication of the camshaft bearings is taken care of by the overflow from the safety valve in the main oil line. Above a certain speed this valve opens and the excess flows through a pipe connecting to the camshaft bearings. Pistons and cylinders are lubricated by overflow from the main and connecting-rod bearings.

Cooling water temperature is still controlled by a thermostat, there being one for each block of cylinders; there is a pump for each, also. When the temperature drops below a certain amount the thermostat automatically cuts off the supply of water from the radiator, thus causing the water in the jackets to circulate and recirculate until the temperature rises.

The specifications include a multiple dry-plate clutch having fifteen carbon steel plates 7¾ in. in diameter; three-speed gearbox; floating rear axle with spiral drive and a pressed steel housing; tubular open driveshaft with two universals; platform springs in the rear; 20-gal. gasoline tank with fuel fed to the carbureter by pressure; Delco two-unit starting and lighting system and Delco ignition; power tire pump attached to the gearcase; tires 36 x 4½, smooth in front and non-skid in rear.

The New Willys

(Continued from page 10)

The bore and stroke is 3½ x 5¼, giving an S. A. E. rating of 29.14 hp. and a piston displacement of 303 cu. in.

The motor is a standard Continental model, with L-head cylinders cast in a block and mounted on a two-piece aluminum crankcase, the lower part serving as an oil reservoir and the upper carrying the three-bearing crankshaft.

Accessibility is fostered by placing the ignition distributor and the generator and the water pump in a straight line on the right side. These units do not interfere with reaching the valves. Each is mounted on a bracket on the motor and may be removed without disturbing the other.

This leaves the left side of the motor clear for the installation of the steering gear and the starting motor, access to both being easy. The oil filler opening is at the front on this side and the oil gage is plainly visible from its position at the center near the bottom of the crankcase.

Electrical equipment consists of an Auto-Lite two-unit, six-volt system, with head, tail and dash lamp, and headlight dimmers, as well as an ammeter.

The starting motor is mounted high in order to keep it away from dust and dirt, as well as to make it accessible, drive being by Bendix pinion, which meshes with teeth in the flywheel.

Back pressure is minimized by the fitting of a double exhaust pipe, there being a passage from the three front cylinders and another from the three rear ones.

Lubrication is a combination of force and splash feed, a plunger pump operated from the camshaft, sending oil under high pressure to the main crankshaft bearings, camshaft bearings and the timing gears. Troughs catch the overflow and dippers on the connecting-rod caps distribute spray to all parts of the motor.

The clutch is a cone with a leather facing, and spring actuated plungers which are equally spaced give smooth engagement by pressing out on the face. The clutch spider is held in engagement by three comparatively light springs placed near the rim, and gear-shifting is facilitated by a clutch brake.

The gearbox is mounted on the rear axle, and torque and driving strains are taken by a torque tube which terminates in yoke, which is pinned to a cross-member of the frame. The gearbox gives three speeds forward and reverse. The gears are double heat-treated nickel steel of the stub-tooth type. The main shaft is mounted on annular ball bearings and the countershaft is stationary, but the countershaft gears rotating on it have Hyatt rollers placed between them and the shaft.

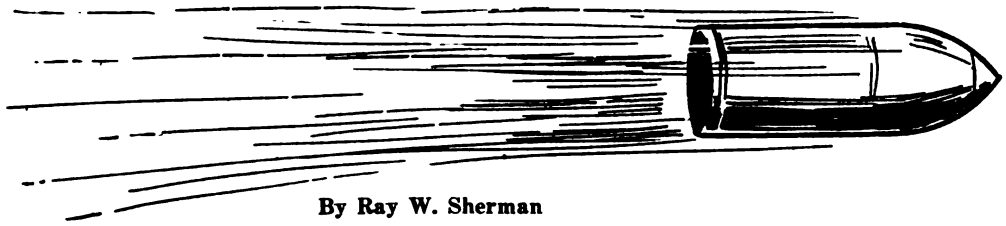
The rear axle is a full-floating type with a spiral gear drive and Timken adjustable taper roller bearings throughout.

The front axle is an I-beam drop forging, produced in one heat without welding, and the wheels have adjustable taper roller bearings.

The steering gear is a worm and full gear type of hardened steel. It is provided with ball thrust adjustable bearings.

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The Direct-Line Mind



By Ray W. Sherman

"REILLY, is it true that all advertising is only about 30 per cent efficient, only 30 per cent par value?"

Tommy Trumbull, junior salesman in the establishment of C. J. Reilly, Inc., turned from his perusal of an advertising magazine ad and shot this query at the boss.

"H'm'm," parried Reilly.

"It says here," added Tommy, "that every time a man uses an ad he gets only about 30 per cent of what he ought to get, because the ad isn't rightly written, the circulation is part waste, the product isn't up to snuff, the ad isn't followed up, and a whole lot of other things. What about it?"

How Efficient Are We?

"No doubt it's true, Tommy," replied Reilly, "but I don't see anything startling about it. How efficient do you suppose you are? How efficient do you suppose I am? How efficient is the average man?"

"I don't know. Never thought much about it."

"It's all right for us to say such-and-such things about advertising, and to make all sorts of destructive remarks, but when it comes to doing something constructive we fall down. It is true that advertising is a long way from perfect to-day, and it probably never will be perfect. No ad probably ever will be an absolute 100 per cent.

"One reason ads are not more efficient; one reason salesmanship is not more efficient, and the real, big reason why everything is not more efficient is that men —you, I and every one else—are not truly efficient. It is the human element that makes the ad, that sets the pace in selling and that guides in all endeavor—and where you find an efficient man you find his efficiency reflected in everything about him.

Some Day

"Some time, Tommy, somebody is going to produce a big thought, a big plan, that will help every man in making more out of himself, and when that time somes there will be greater efficiency in advertising, selling and everything else. But until that big thought comes it is up to you and me and the rest of us to work out our own destinies.

"And even that isn't difficult. We can all be more efficient. And this greater efficiency in ourselves will reflect itself in our work and in the results that come to us from our work. If we're in business we shall get more business, and if we work for a living we shall get a better living.

"If you want to know how efficient you are, take a look at yourself and ask yourself if you have ever tried to make yourself MORE efficient. The increase in personal efficiency isn't the doing of single big things. It is more the doing of little things, for if we are efficient in little things, it necessarily follows that we shall be efficient in the big things. We are like the dealer with a display window. He CAN'T have a slick and clean display window and a dirty garage. The two won't go together. If he keeps the window slick and clean, he will have an attack of cleanitis and clean up the garage, or else the window will degenerate into the same condition as the garage.

Making Minutes Count

"When you get up in the morning—which is the first thing you do every day —how long does it take you to dress? We all like to sleep in the morning, I surmise, and we value those early morning moments, but did you ever try to make them count? If you are anything like me at that hour of the day, you probably put on your B. V. D.'s, put on your shirt, sit down and put on your socks, stand up and put on your collar and tie, sit down and put on your shoes, and make all sorts of useless motions, just standing up and sitting down and reaching around for things, whereas you can put on nearly everything you wear while standing in one spot—and do it in less time.

Early Morning Wool-Gathering

"When you shave, you probably monkey-diddle around, dabbing the brush in the water about five times as much as necessary, and make more waste motions than in any other job of the day. And so it goes. We are inefficient in these little things, so how can we expect to be efficient in the big things when our mind is not being guided in channels of efficiency?

"We come to work in the morning with no set task for the day in mind. The result is that we sit down at our desks and spend a considerable part of the first few minutes of the day wondering what we are going to do. We paw over a lot of papers that we left lying around the night before, retrace a lot of the steps of yesterday, look at all the drawers and pigeonholes in the desk, and sit in a sort of foggy mental atmosphere where we can't see out for some time. Then the fog lifts after a while and we begin to work. Why couldn't we have gotten down to work the minute we sat down at the desk? If we are always going to waste the first half-hour, we might better come in a half-hour late—or, better yet, come in a half-hour earlier and do our daily wasting early.

The Why of Life Itself

"If the minds of all men were trained to work in a direct line, what a wonderful thing it would be. Every time we undertook a job we would brush aside all superfluous details, proceed uninterruptedly in a direct line, and get to the end in much less time than it now takes.

"This indirectness of working and thinking is why there are so many motormen and plasterers and so few really good executives. The indirect mind is always at the beck and call of the directing mind, which moves in a direct line. The directing mind sees the task and its completion and moves everything —including the less efficient minds—along that line.

"The direct mind plans work; the indirect mind works without a plan. The efficient mind takes one job, finishes it without a stop, and then takes up another. The less efficient mind may finish one job, but throughout that job it has permitted numerous detail interruptions, and at the finish it spends considerable time wondering what to do next.

Ready for the Big Job

"With the warring nations of Europe, years had been spent in efficiencyizing in details; it was years before the big job came. It's the same with you and me; if we are to do the big things right we must get into the 'right habit' and accustom ourselves to efficiency in little things. Then when a big job is handed us we will work it efficiently, because that is the natural way for us to work."

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Argentina Wants Accessories—and She Needs Men to Sell Them

By David Beecroft

THIS story is the fourth of a series on South America by David Beecroft, managing editor of Motor World, who spent ten weeks on the southern continent, investigating the possibilities there for American cars. The car of the U. S. A.—for so the Argentine calls our country—is making headway, and there is now a crying need for the U. S. A's. accessories. Even greater is the need for young men of the U. S. A. to sell them.

BUENOS AIRES, ARGENTINA, July 15—There is a very profitable field for U. S. A. accessories in the Argentine Republic. Conservative estimates place the number of motor cars of all makes in Argentina at 30,000. Of this number, fully 8000 are U. S. A. machines. Accessories are needed for all of these cars. Previous to the war, Argentina got practically all of its accessories from Europe, but to-day she cannot and *they must come from the U. S. A.*

Very few of our accessory concerns are directly represented in Argentina and SCORES OF OUR BEST ACCESSORIES CANNOT BE FOUND IN ANY OF THE LARGE ACCESSORY STORES. The majority of the accessories that have reached here have not been sent by the manufacturers in the U. S. A., but have been purchased by U. S. A. exporting houses in response to orders from Argentine dealers. As a result, you will meet with very small quantities of our best accessories, *yet you find a strong demand for them.*

Demand Is Great

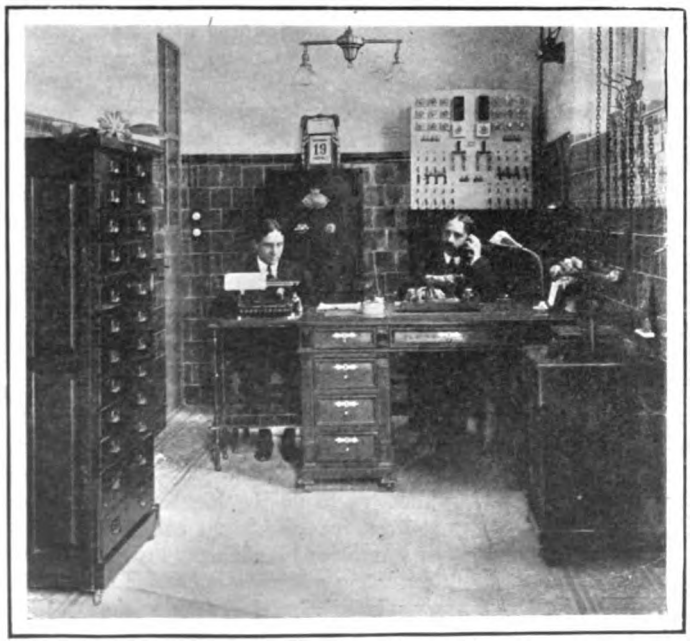
There is to-day a great need for U. S. A. accessories in Argentina, and this can also be applied to Brazil, Uruguay, Chile and other South American countries. It can also be applied to the Islands of the West Indies.

Last year we shipped a total of 6725 motor cars to all of South America; we shipped a total of 4658 to the West Indies. Here we have a total shipment of 11,383 for the fiscal year of 1916, ending on June 30. These figures give some conception of the accessory market that awaits us in Latin America. Argentine alone took 4444 U. S. A. cars in the fiscal year ending June 30.

The only arm of our accessory business that has been adequately handled to date is the tire business. Half a dozen of our leading tire makers are well established in Buenos Aires and other parts of Argentine and also in Brazil. THEY ARE ALL DOING A BIG BUSINESS. *Our tire makers have generally had to bring out special metric sizes for all Latin America, as metric measurements are standard in all of these lands. Bringing out the metric sizes delayed the business, but within the past few months our biggest makers have firmly entrenched themselves and are already getting cable repeat orders in good quantities.*

Goodrich Was First

Goodrich was first in the South American field and has been established for several years. Goodyear got under way about 6 months ago and now has a fine branch in Buenos Aires and is placing agencies all through the country. U. S. tires have a strong hold in Rio de Janeiro and are just getting into Argentina. Firestone, Fisk, Republic, and





THE OLYMPIA GARAGE, Buenos Aires, is modern in its exterior and its office

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a few other brands have had their representatives in the field for several months.

Previous to the war—and we cannot refrain from using the foregoing phrase—the tire business was largely French and Italian, with a good percentage of English. Michelin had the bulk of the trade—and still has. The war largely stopped European shipments and the U. S. A. got its chance.

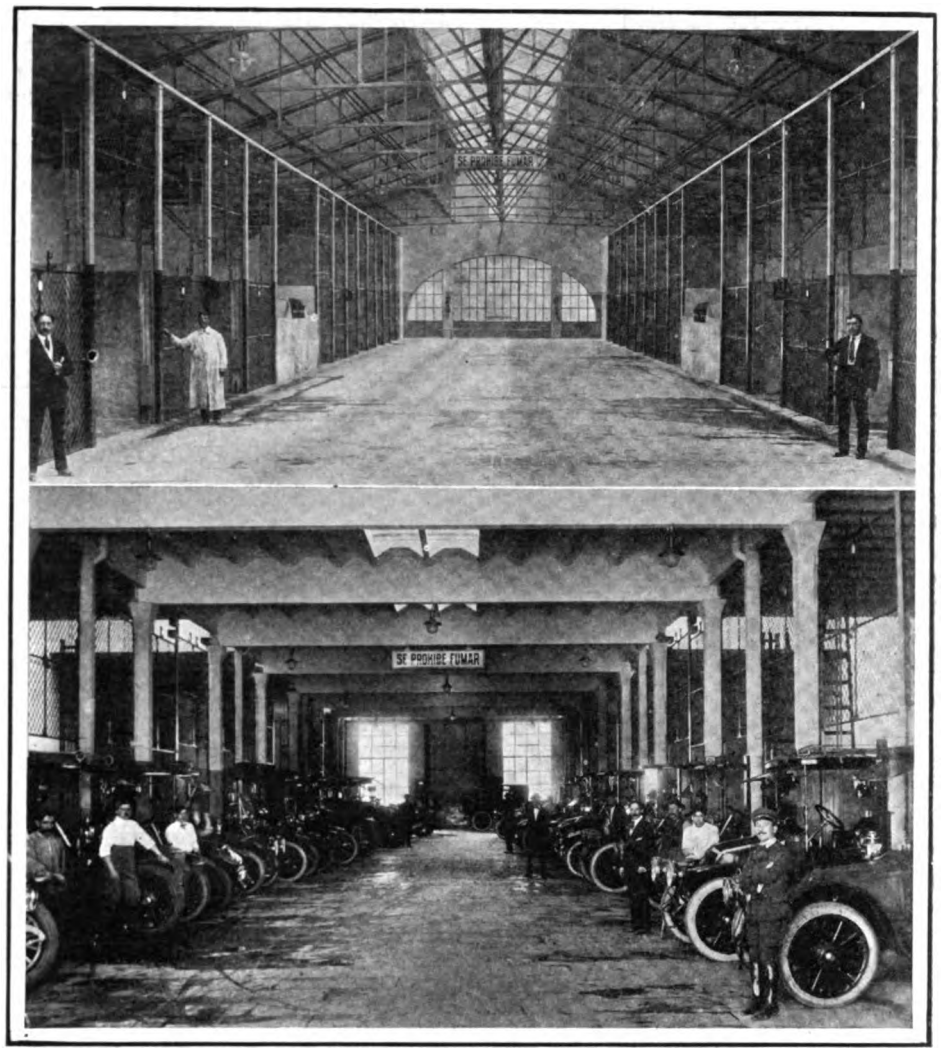
To care for 30,000 cars per year means at least 180,000 tires, which is no mean amount of business. But this is only Argentina, a fraction of the field. IT IS A BUSINESS WELL WORTH GOING AFTER.

Practically all of our tire concerns have sent ambitious young men through Latin America to develop this field, and there is still room for many more men. You meet these men in different parts of the several countries. They all have had years of experience in the rubber field. Some have been travelers for their home companies in Texas; others have had charge of large territories, and in nearly every case the men are practical types, who know how to get business in the U. S. A. and are well qualified to go after business in South America.

How Field Men Work

I have had several opportunities to observe two or three of these young men operating in Argentina, Uruguay and Brazil. A few pages from their note books of experience may be interesting.

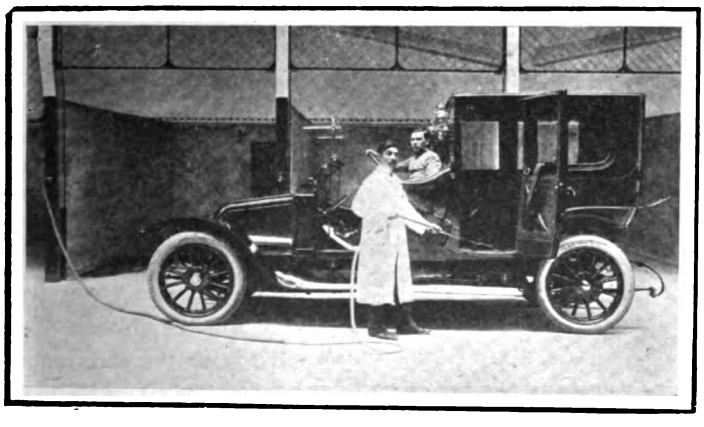
When reaching a new city, perhaps the largest city in a country, they rarely have any previous connections. They may not have a single letter of introduction. They may not know a person in the city. Some of the wiser ones spend several days examining the tire situation. They first observe the makes of tires in use on the street. They know what makes the taxi companies use and are generally able to get all of the prices paid, if the drivers get a commission and if the tires are sold for cash or on 60 or 90 days. This investigation work is expanded and takes in the passenger cars. Next the garages are visited and a closer tire check obtained.



The UPPER AND LOWER FLOORS of the Olympia Garage, Buenos Aires, are equal in construction and cleanliness to some of the best garages in the United States. Each car has its stall with protecting wire doors

Thus fortified, the tire representative is ready to visit the different tire dealers handling European or other lines of goods. The tire man soon discovers if they are getting all of the goods they want and on what terms. He soon learns those concerns that are shipping tires on consignment, those that are paying against document in New York and those that are buying on 60 or 90 days. IN 2 OR 3 DAYS HE KNOWS WHAT MAKES OF TIRES ARE GIVING GOOD RESULTS AND WHAT ONES ARE NOT. HE KNOWS WHAT TIRE DEALERS WANT TO TAKE ON NEW U. S. A. LINES; IN SHORT, HE HAS THE MARKET WELL SIZED UP.

With this preliminary work in hand the representative is now ready to make his selection. Perhaps his home firm in the U. S. A. has written him that a certain firm has been inquiring about the line and he must decide if such a connection is best or not. Very often such inquiries prove of least value. He must be mature enough and a sufficiently keen student of human nature and business possibilities to make his own selection. *Sometimes he has to decide on an agent directly opposed to the instructions from his home factory.*



For cleaning the cars of the wealthy garage patrons, a vacuum cleaner is used

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The Job Is Hard

This special representative work is not easy work. IT CALLS FOR A REAL MAN, and, fortunately, many of our concerns are paying salaries commensurate with the work to be done. The representative must be careful not to oversell the new dealer he appoints. Overselling is a common error. The representative has been several days in the country and has not sent a single order home. If he were in Texas he would be wiring orders to the factory every night. So he is inclined to make the order as large as possible. He tries to raise the dealer. This is generally poor business. South American business houses when dealing with you for the first time are inclined to be suspicious when you show too much zeal in making big orders. It is better to be content with a small order. It is better to suggest cutting the order than enlarging it. Leave the new dealer with an appetite, rather than overfeed him.

In placing initial orders the new dealer generally needs wise council. Perhaps he has never handled rubber anti-skid treads, and, of course, you want to fill him up on such. It makes the order larger. Take care! *You must aim at giving the dealer what he can most readily sell.* Your careful observation around the city will aid you in this.

Men From the U. S. A.

Practically all of our tire concerns opening branches in South America have taken their own managers from the U. S. A. and have taken three or four other good men. Ross A. White, the Goodyear manager, has had experience in Chicago and many other Central West cities. The same applies to the manager of the U. S. Tire Co. This applies to many lines of motor car accessories and will continue to apply. Our accessory houses will find it necessary to send competent U. S. A. men to assume charge of their South American business. We have mentioned before how many of our large concerns in other lines have had to follow this policy to meet with success. *What they have done the motor car accessory trade will have to do.*

What we need most of all in our South American business is a big supply of experienced, competent young men. We must have them. We need them to introduce our goods into those markets. After that we need them to handle our business there. There are many openings for such young men in the next year or so.

Certain qualifications are necessary. You must be more than a salesman, because when in South America and 6,000 *miles from the factory you have to rely on yourself, and frequently your judgment on the situation must take precedence to that of the factory. Your one great qualification then must be a* JUDICIOUS MIND.

You have much more to do than take orders. You have to interpret character, to understand trade conditions, to fairly correctly gage demand, to weigh financial conditions, to look up the credits of the prospective agents; in short, you have to be a real business man. With all of these responsibilities the position assumes proportionately greater importance. The responsibility you carry is proportionately greater. YOUR JOB IS PROPORTIONATELY WORTH MORE.

Must Know Spanish

Let us reiterate that you cannot make a success of business in South America unless you know Spanish. Once you get Spanish it will not be difficult for you to acquire enough Portuguese to carry you through Brazil. There is a marked similarity between the languages. Get Spanish first and learn Portuguese after you get there or on the way down.

The status of our accessory trade in South America in 5 years will largely depend on the caliber of young men we get to come here to manage the business. There is unquestionably a great future here. The natural resources are here and the future is certain. To-day the possibilities are not small, and in order that you may grasp a little clearer the accessory situation in South America we will give a brief synopsis of what accessories are most in demand at present.

Perhaps before doing this it will be well to interject a suggestion that it may be valuable to follow out with regard to selling our accessories in all of the South American countries. It will be expensive for several individual concerns to send a special representative to Argentina for their particular line. The business to-day would not warrant such. To overcome this, the plan of three, four or five accessory concerns uniting on a merchandising problem may be suggested.

There is no reason why five, or even ten, firms in non-conflicting lines should not unite and open one office in Buenos Aires for the control of the business in Argentina, in Uruguay and in Chile, and perhaps in Paraguay. A similar office could be opened in Rio de Janeiro to handle all of the Brazilian business.

Might Combine These

You might combine such non-conflicting lines as one each of carbureters, magnetos, spark plugs, metal polishes, body polishes, slip covers, oils, greases, jacks, shock absorbers and speedometers. These are all general lines that sell equally well throughout the country.

You could handle a line of accessories that would especially appeal to the garage trade such as gasoline storage tanks, oil and kerosene storage outfits, air compressors for tire inflation, and other lines, garage machinery, such as small lathes and grinders, and those accessories which nearly all of the garagemen handle.

Our manufacturers will have to consider seriously such uniting for sales purposes. To-day you cannot buy many of our accessories that are needed for our cars now there.

This is particularly true of speedometers for Fords, as the majority of these cars are shipped to all of these countries minus the speedometer.

There is not an accessory house in this city that carries one-tenth the supply of U. S. A. accessories needed.

In every city you visit the same complaints of not being able to get U. S. A. accessories reaches your ears.

THERE IS URGENT NEED FOR ACTION.

Next week's story will tell of accessories most in demand here.

New Row Has Open House

BOSTON, Aug. 20—A new retail motor district was opened in Boston today and for a whole week the dealers handling lines in the block are to keep open house. The buildings have just been finished and turned over to the concerns. The location is on Beacon Street, near the junction of Commonwealth Avenue in what is known as the Five Points.

The Oakland is at the eastern end and has a building all to itself. Next door is the Cole, handled by the Bryant G. Smith Sons Co., with the National in the adjoining section.

The Becker-Stutz has building number three, and the H. A. L. is a partner, being handled by the Bishop Motor Sales Co. The Pennsylvania Rubber Co. and the Atwood Lamp Co. divide the fourth building, and John L. Judd, with the Allen, Auburn and Smith Form-A-Truck, has the western end of the block.

For the opening week the showrooms of some of the dealers will be decorated and invitations have been sent out to owners to inspect the new places.

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The Dealers in Milwaukee Are Boosting Something All the Time

AUGUST 28, next Monday, they start with a string of cars and tour the State of Wisconsin, boosting for the Motor show and State fair, to be held Sept. 11-16. The pictures on this page show how they boost when they start out to boost. These pictures tell how they decorated their places of business this summer to boost business. Newspaper advertising was used and for a week cars carried visitors over the circuit of this salesroom-to-salesroom show. Things simply have to move in Milwaukee.

1—*Harry Newman, Inc., Chalmers.*
2—*Mitchell Automobile Co., Mitchell.*
3—*Overland Wisconsin Co., Overland.*
4—*Reeke-Osmond Motor Car Co., Jeffery.*
5—*Packard Motor Car Co. of Chicago, Packard.*
6—*R. D. Rockstead, Paige and Saxon.*
7—*Harry Newman's salesroom interior.*
8—*Schreiber-Boorse Motor Car Co., National and Chandler.*



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Accounting and Business Systems



By T. W. Snead

When Cash Is "Off"

System Editor:

We would like to know, in working your system, how you handle transactions when the cash is short or long, not covering the items listed on the cash register slip.—CRARY MOTOR CAR CO., Boone, Iowa.

Crary Motor Car Co.:

The writer does not just clearly understand what you mean when you say: "How do you handle transactions when the cash is short or long, not covering the items listed on the cash register slip?"

Offhand, the writer supposes you mean when the cash drawer is short of what your register calls for, or if it is over, and on second thought we can hardly believe that this is what you mean, as it seems to us that while such a case might appear once or twice, you would not possibly permit this as a regular thing.

If you will advise us a little more definitely what the trouble is, we will be glad to go into it with you.

Wants One-Book System

System Editor:

We understand from your representative, Mr. Brace, that you have an accounting system suitable for a garage. What we want is one book which will make the daily distribution of sales and repairs. Our departments comprise the motor department, the blacksmith department, trimming department, painting department, and body or wood-working department. If you have a book of this kind made up, we would like very much to have you send it to us, so that we may get started with as little delay as possible.—THE MULHOLLAND CO., Dunkirk, N. Y.

The Mulholland Co.:

While our system is mainly devised for garages, service stations and automobile dealers, it can, by simply changing a few headings at the top of the columns, be made to do the same work for a business similar to yours.

In order that you may understand clearly what we mean by this, we are forwarding you sample sheets of the system, which consists of two forms, each form divided into debit and credit entries, making the system self-balancing, or double entry.

You will notice on Forms One and Two that the Income or the Sales are divided into various departments, as designated by the headings at the top of the columns. If you so desire, we could turn out a system for you similar to this one and in place of these headings substitute Motor Dept., Blacksmith Dept., Trimming, Painting and Woodwork. This would give you the same result as obtained in our own system, and the complete book of instruction which is presented to you with the system would simply have to be read with these changes.

Wants Research

System Editor:

I am much interested in your pamphlet and when business quiets down a little I shall probably take up the whole thing thoroughly. In the meantime, I want to experiment with a few sample sheets.

Please send me six sheets each of Forms 1 and 2 and bill same to me.

Are you planning to obtain the data from the users of these standardized systems and publish them, as *System* is now doing in connection with the Harvard Bureau of Business Research?—F. H. KENNEY, Worcester, Mass.

F. H. Kenney:

If you are interested to the extent of adopting the system, a complete illustration and description can be obtained at a cost of $1, or if you are a subscriber and wish to renew your subscription for a period of 1 year, we will gladly present you with the pamphlet. However, we are forwarding you a few sample sheets in order that you may determine whether or not the system would fit your business. There will be no charge for these sheets.

In answer to your last inquiry in regard to publishing the statistics obtained from these standard systems, wish to say that the writer is at present working with the committee on retail accounting systems of the Associated Advertising Clubs of the World, and this committee, with the co-operation of Harvard University and the Federal Trade Commission, are planning to obtain statistics such as you speak of from standard accounting systems that are being devised by this committee.

It might be interesting to you to know that there are in the neighborhood of 1000 Motor World systems in use to-day, and we hope within a year's time to see this number reach the 2000 mark, at which time the information that could be gathered would be of immense value to the automobile trade.

Wants to See One

System Editor:

Please let us know if any garage or sales office in Pittsburgh has recently adopted your accounting system, and how you think it would work out if applied to our business. We do not have a great deal of ordinary garage work, but try to confine our shop to a service station for Republic trucks.—MARTIN-WHITEHILL CO., Pittsburgh, Pa.

Martin-Whitehill Co.:

We can only suggest that you investigate the system thoroughly before installing, and to that end are forwarding you sample sheets of Forms 1 and 2 of the system. There are in the neighborhood of 1000 systems in use to-day and the writer personally knows of many service stations using it with splendid results.

We have gone over our records carefully to find someone in the City of Pittsburgh to whom you could go for investigation, and while there may be someone in your particular line who purchased the system direct from the manufacturer, we can find no one on our list to refer you to. We have many systems in use in Harrisburg, Lancaster, Warren, Charleroi and Erie, and if you so desire we will send you the names in any of these towns, to whom you can write for information.

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ANGLES OF THE LAW



By George F. Kaiser

Made Salesmen Settle

Legal Editor:

A salesman—A—working on commission, while demonstrating, is struck by B on a street crossing. A's left rear wheel was struck by B's left wheel, doing damage to both cars. B sues A's employer for $100 damage to the cars. Should the mere fact that he had the right-of-way give him the privilege of colliding? Later, A's employer, when threatened by suit, settles with B, charging A's account, without saying anything to him. Can A recover?—Spokane.

It was decided by the Supreme Court of Alabama in a case just recently handed down that although the ordinance of a city may provide that vehicles going in certain directions shall have the right-of-way over vehicles going in other directions, it does not necessarily follow that the vehicle which has not the right-of-way at a crossing must, at its peril, avoid collision with a vehicle having the right-of-way.

If B's motor car damaged A's car because of the negligence of B, it would seem to follow that B would have no claim for damages sustained by himself, while, on the other hand, A would have a good valid claim for any damages he sustained.

If then A's employer settled the matter by paying $100 to B—which he was not under any legal obligation to pay—he naturally would not have the right to charge that amount against A's account, and I think that A would be able to recover that amount from his employer.

No, If It Runs

Legal Editor:

A dealer in used cars writes on the order: "Car guaranteed to be in first-class running condition." Purchaser takes delivery; 1 week later comes back, requesting return of his money. Is it your opinion he would recover purchase price? Car sold on terms. Dealer considered it good value for price sold.—Spokane.

Whether or not the purchaser can recover the money he has paid in a case of this kind depends, of course, on the condition of the car.

In the absence of any other warranties and representations, it would seem that he would not be able to recover back the purchase money he has paid if the car is in "first-class running condition." By first-class running condition would be meant the kind of condition a car of that year, make, model, etc., could reasonably be expected to be in.

There naturally would be no obligation on the dealer's part to furnish a new, perfect car, and, even if the parts were somewhat old and worn, he would not be guilty of misrepresentation if the car was able to run as well as a used car of that kind might be expected to run.

Maker Can't Cancel

Where the manufacturer of motor cars, during the existence of a contract, accepts orders for motor cars ordered thereunder and agrees to ship them, a subsequent failure and refusal to ship them creates a liability to the dealer for the amount of the loss occasioned to him.

The Court of Appeals of Georgia was called upon in a recent case to construe a motor car contract which provided that the dealer estimated that he would take delivery of not less than thirty-six automobiles between the date of the contract and Sept. 30, 1913; and further, that he would purchase a specified number of automobiles during each of the months covered therein, and by an express agreement it contained, provided that the failure on the part of the dealer to purchase the number of automobiles in any one month should give the manufacturer the right and privilege to cancel the agreement, such privilege, however, being the limit of liability for such failure on the part of the dealer.

A further provision that failure on the part of the manufacturer to supply the dealer with the number of automobiles in any one month would give the dealer the right and privilege to cancel the agreement, which right was to be the limit of liability for such failure on the part of the manufacturer.

During the life of the contract the dealer ordered seven automobiles. His order was accepted by the manufacturer and he thereupon ordered a "Roadster" from the manufacturer's manager in Atlanta, Ga., which order was also accepted and a promise was made that it would be filled at a time subsequent to the expiration of the contract between the dealer and the manufacturer. Instead of filling the orders, however, the manufacturer declined to ship any of the seven automobiles.

The court held that, although under the contract the dealer had the right to cancel the agreement, and that right fixed the limit of liability on the part of the manufacturer for such failure to deliver the cars, and accepted orders were subject to delay occurring in the manufacture or delivery of cars from any cause whatsoever, the manufacturer was, nevertheless, liable in damages in a case of this kind, as, although it was the manufacturer's privilege to decline orders, it could not accept them and then fail to fulfill its obligation.—FORD vs. JOHNSON, 89 S. E. (Georgia), page 430.

Bars the Copy-Cat

That when a spark plug manufacturer copies the product of another manufacturer, who has an established reputation, so closely that confusion is likely to result among spark plug buyers, relief may be granted from such unfair competition, is the decision in a late New York case.

The manufacturer of spark plugs sold some to a motor company practically at cost, making its profit out of new plugs which car owners subsequently purchased. Another manufacturer made spark plugs very closely resembling the first maker's plugs. The first manufacturer then brought suit, claiming unfair competition.

The court held that, as the buyers of cars which ordinarily were equipped with the first manufacturer's plugs would not be familiar with the cartons in which the plugs were sold, dissimilarity as to such cartons would be no ground for denying relief, and the infringing manufacturer would be required to color its plugs so as to distinguish them from the others.—233 Federal (New York), page 112.

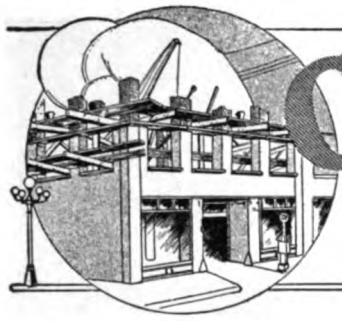
Oakes Sells His Last Car

HUTCHINSON, KAN., Aug. 17—Lewis W. Oakes, agent for the Studebaker automobile agency, Hutchinson, Kan., died at 12.30 Aug. 5, after an operation at the Methodist Hospital.

Rich Tool in M. A. M.

NEW YORK, Aug. 19—The Rich Tool Co., maker of engine valves and miscellaneous metal specialties, Chicago, Ill., has been elected to membership in the Motor and Accessory Manufacturers. The organization now has a membership of 235.

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

GARAGE AND ACCESSORY STORE 250 x 60

Figs. 1 and 2

Editor Motor World:

As a subscriber of Motor World we wish to get your opinion on laying out a garage. This building is to be altered for our use, giving us a space 250 x 60, blind at one end and side.

There will be no machine shop or repair work done in this building. Under these conditions, where would you locate the gasoline pump, oil storage, customers' rooms, wash stand and office? And how would you arrange the location of cars for economy of floor space and still to let them get in and out readily? There is no showroom, as we do not sell cars.—Reader.

You did not mention whether you were planning to have an accessory store, but with a garage of this size one is certainly necessary, and since your letterhead shows that you sell supplies, consequently an accessory store and stockroom have been provided.

Your garage is wide enough to place two rows of cars on each side of the aisle, providing that the cars are not too long. Fords, Dodges, Maxwells, Overlands, and even cars as long as the four-cylinder Studebaker, come within this classification. You probably understand that with this arrangement the cars in the row next to the wall are those that go out late in the morning and those in the front row are those that go out first. Which row a car is to be placed in is determined by asking the driver when he comes in at night. You will find that practically all of the cars will be moved out of the first row before there will be a call for any of the cars in the second row. At first glance you may not think that this plan of arranging the cars is practical, but it is used in many of the best garages throughout the country and it is satisfactory in every case.

The proper place to put the gasoline and oil pump is at the door, so that cars may be filled on their way out, as this is the logical time for the purchase of supplies. You will find this also the most convenient place to have this equipment.

An air pump is almost a necessity in the modern garage, and is often driven from the power shaft in the machine shop. In your case, however, it will be advisable for you to install a motor-driven pump for the convenience of your patrons. This may be either of the portable type, driven from sockets located at convenient points around the building, or may be permanently located at the rear of the gasoline and oil stations, as there is sufficient space there.

SHEET-METAL SHINGLES

Merchant & Evans Co., Philadelphia. PRICES: Gothic, 14 x 20 size, 68 shingles per square, $4 painted, $5.75 galvanized.

A light fire- and storm-proof metal shingle. May be made up of copper, tin plate or galvanized iron. Constructed on scientific principles, this shingle can be put on more readily than any other form of metal roofing, it is said. Expansion and contraction are provided for, and the large overlap makes an absolutely tight roof of one-sixth pitch or over. A pleasing appearance and reliability at a moderate cost are the advantages claimed for this type of shingle.

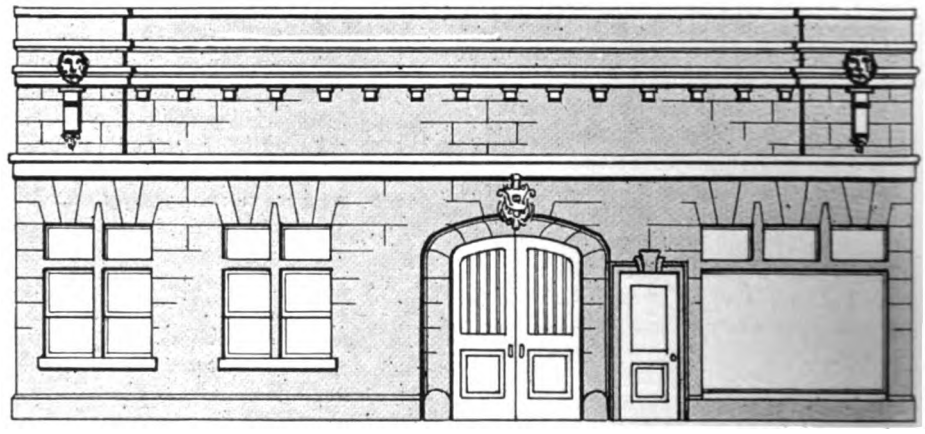


Fig. 1—Suggestion for an attractive arrangement of the garage front

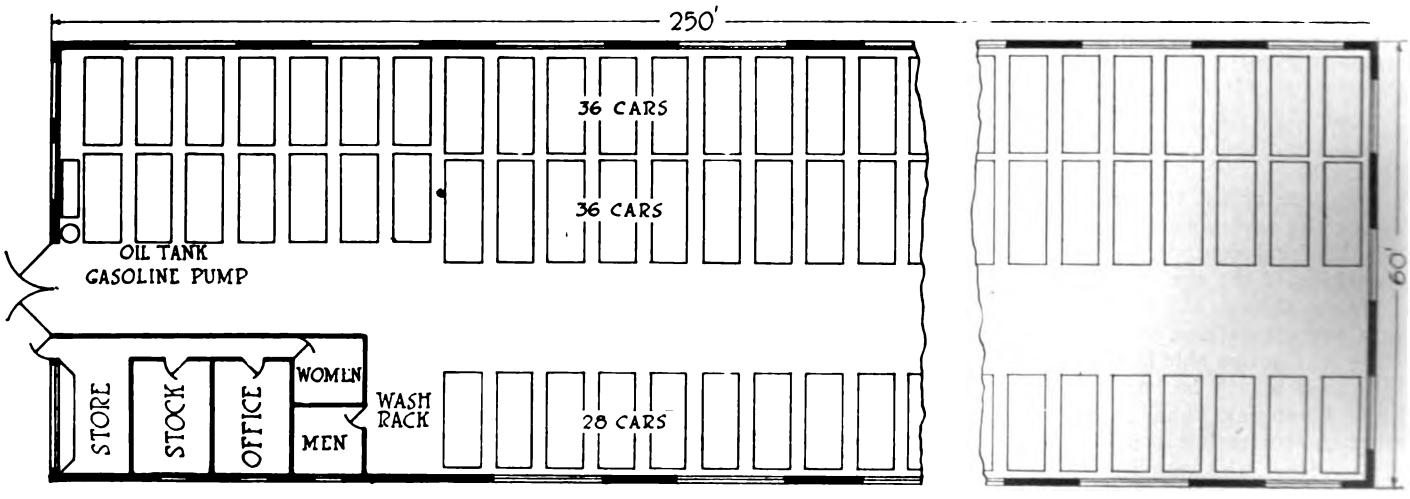


Fig. 2—Showing the altered floor plan of an old building, 250 x 60, that was made over into a 100-car garage. There is no machine or repairshop, though a store is provided for the sale of accessories

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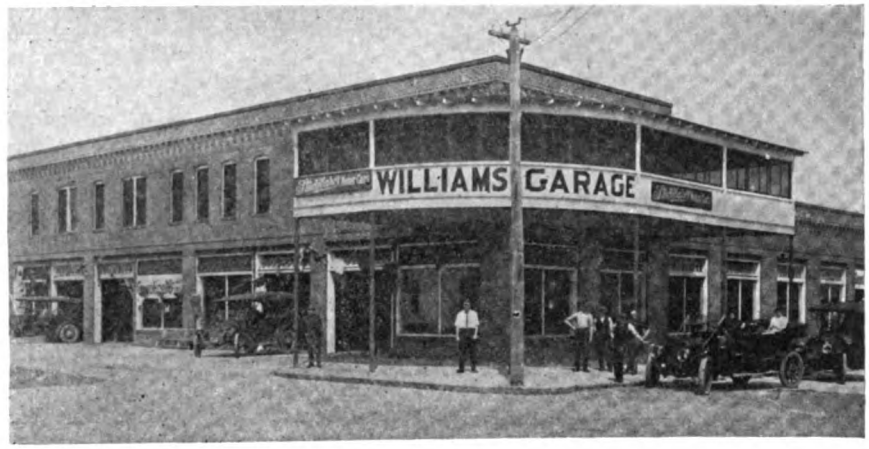
Garage and Salesroom Fronts from the Four Corners of the Country



Walter Williams, The Dalles, Ore., has one of the leading garages along the Columbia Highway. Spacious windows admit plenty of light. He handles the Ford, Dodge Bros. and Studebaker

The Grosse Pointe Motor Service Station, Detroit, in the picture below, is built for an elite class of trade. The front is of a style that matches well the neighborhood and the premises are ornamented by a lawn and flowers





Williams Garage, above, is in St. Petersburg, Fla., and it smacks of the South with its balcony and shaded front. The architecture is of an attractive type. He handles the Studebaker



The Slayton Automobile Co.'s building, Slayton, Minn., is typical of many western towns. The construction is substantial, but is not expensive, yet the front is made quite attractive. Note the excellent accessory displays



The Bethard Auto Agency, Richmond, Ind., utilizes its front to good advantage with display windows and gas and air stations. The sign helps get trade

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 822) TIRE RACK LOCK

It is often necessary to leave the store room unlocked and unwatched during the day, making the theft of a valuable tire an easy matter. A piece of pipe, supported and locked in the manner shown, secures the tires and yet leaves them accessible to the proper persons. All parts entering into the construction of the lock may be purchased directly from a hardware store stock.

(No. 823) FLASHING SIGN

An electric sign that alternately flashes and then goes out attracts much more attention than one that is constantly lighted. Economy is another point in favor of the flashing sign. A flashing device operating on the principal of unequal expansion of two different metals is illustrated. Two thin strips of metal—one brass and the other iron—about 4 in. long and ½ in. wide, are riveted together and screwed onto the wooden base in the manner shown. After being insulated with mica, a length of small-sized soft iron wire is wound around them and carried to the contact screw at the top. Care must be taken not to have the coils of wire touch each other. The current going to the sign is passed through this wire, and because of the high resistance of the iron the two metal strips are heated. The brass is expanded approximately twice as much as the iron and the strip is bent away from the contact screw, breaking the current. The strip then cools, straightens out, and again makes contact, starting the cycle again. The on-and-off period may be regulated by the contact screw.

(No. 824) TIMING GEAR PULLER

The puller illustrated is made specially for the timing gear of the Maxwell car, but one of similar construction may be made for any make of car. It consists of a flat triangular plate of cast-iron, having a ¾-in. tapped hole in the center and 7/16-in. plain holes in each corner. The hooks are made from ⅜-in. steel rod, each about 4½ in. long and threaded half their length.—E. W. Chamberlain (Maxwell), New York.

(No. 825) EYE-BOLT WRENCH

In removing or replacing radiator eye-bolts it is difficult to get a full turn with the common solid wrench, even when one that will fit is at hand. A special hook-shaped wrench may be made up in a few minutes, and permits a full turn with a good leverage. After the nut has been removed the wrench may be used as a hook to pull the eye-bolt from the frame.

(No. 826) PRIVATE DOOR LATCH

It is not desirable to permit free access to the repairshop or tool room, and an inside-operated latch effectively keeps out the undesirables. With the device shown, the knobs are removed from the door and the bent wire fitted into the door casing. A cord is carried from the handle to a point convenient to the tool room boy, a helper, or anyone that is always in sight, and opens the door for the privileged person.

(No. 827) VALVE RESURFACING TOOL

Pitted valves may be resurfaced quickly and accurately by the use of the proper grinding fixture. The accompanying layout shows a grinder that may be made up and requires no separate motor drive, being driven from the power line. The emery wheel is mounted on V-blocks, sliding in a cast-iron base bolted through a slot to the bench. Forward and backward adjustment is effected by means of this slot, the V-block and hand wheel controlling the cross-feed of the emery wheel.

The valve is held and rotated in a chuck supported in an adjustable spindle. This chuck consists of a split bushing held firmly against the valve stem by the pressure of the lock nut on the spindle. The rear end of the stem is supported by the bushing. Various sizes of bushings may be made to handle the common valve stems and are easily removable.

The spindle is supported by two bearings and driven by a round belt. It is mounted on an adjustable base that permits the valve to be swung at any angle to the grinding wheel and locked in the position. After carefully setting the valve at the required angle, the wheel is fed onto the work and the valve readily resurfaced.—Packard Motor Car Co., Boston.

(No. 828) VALVE GRINDING TOOL

Valve grinding is made less tedious and the work better done by this tool. The clutch is held in the S-shaped handle and is tapped to permit either a screw-driver or spanner point to be used. These points should be made from tool steel and hardened, as soft steel is not durable enough for this purpose. Sufficient pressure may be easily applied and the proper partial rotation imparted to the valve. This device is also very serviceable as a high-power screwdriver.

(No. 829) BEARING TESTING

Loose bearings may be quickly located with the aid of the oil-pressure tank shown. It is a small tank, carrying a 20-lb. gage, and made air tight by means of a screw cap over the opening. An inner tube valve stem, valve and cap permit the pressure to be applied and held on the oil, the oil being delivered to the oil manifold after the removal of the oil pump. The oil is thus forced to the bearing under pressure, and if the bearing be tight no leakage will occur. The test may be made with the engine idle and the loose bearings found and tightened.

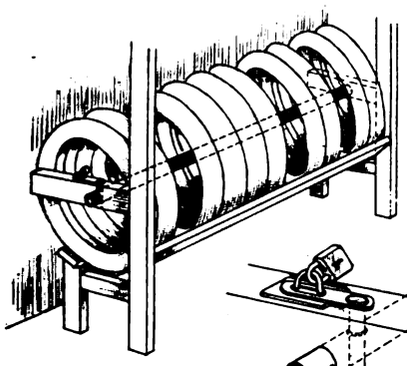
(No. 830) REPAIRING CRACKED WATER-JACKETS

Cracked water-jackets may be repaired and the crack prevented from spreading in the following manner: Drill and tap a ⅛-in. hole at each end of the crack and screw in brass plugs. This stops off the crack and prevents it from spreading. Then, with a small cold chisel, cut back the sides of the crack to permit the packing in of the rusting compound. The crack is then filled with a compound made up of two parts of iron filings to one part of sal ammoniac, with just enough water to make a good working mixture. Rapid rusting and hardening takes place and the crack is effectively sealed.

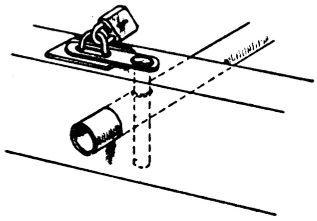
(No. 831) CRANKSHAFT GEAR PULLER

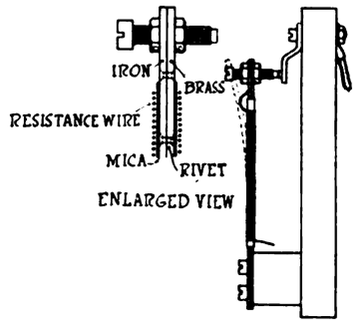
A simple gear puller is shown herewith. Though designed to remove a crankshaft gear, it may readily be adapted to many jobs that the common type of puller cannot handle. The cross-bar is made from a steel bar and the two end bolts fit loosely into the holes. It is advisable to make the center bolt from tool steel and have it fit the threads of the cross-bar very loosely. This will permit a sharp blow to be struck on the end of the bolt, applying a shock to the gear and loosening it very readily.—E. W. Chamberlain (Maxwell), New York.

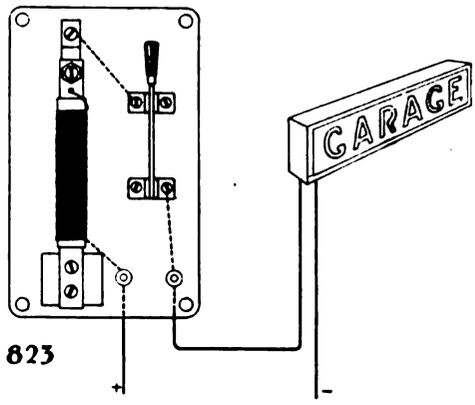
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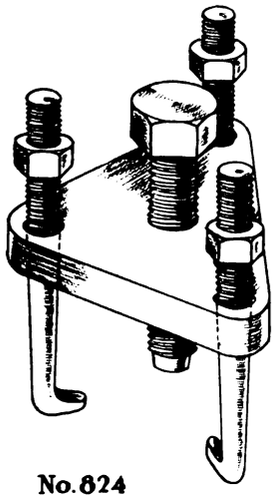
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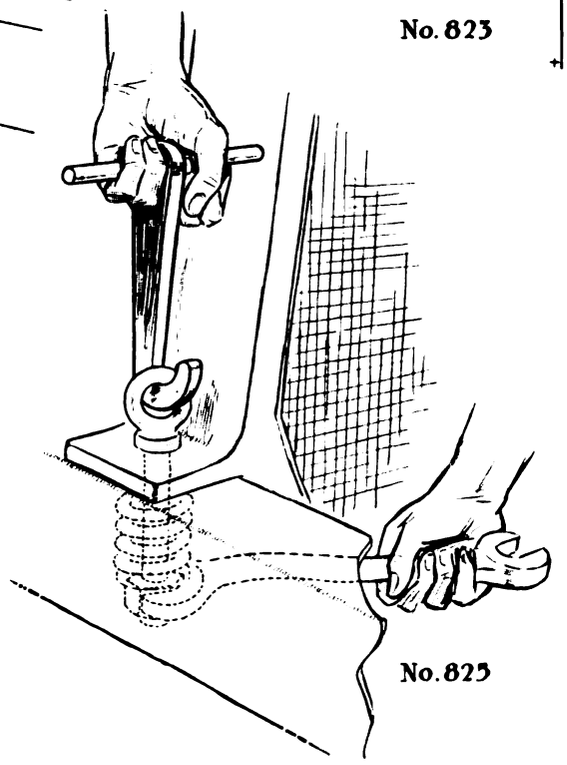




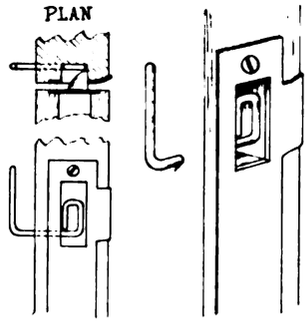
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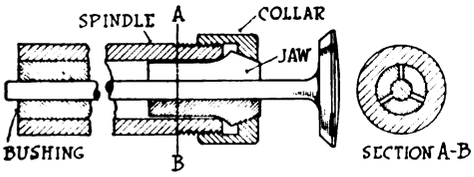
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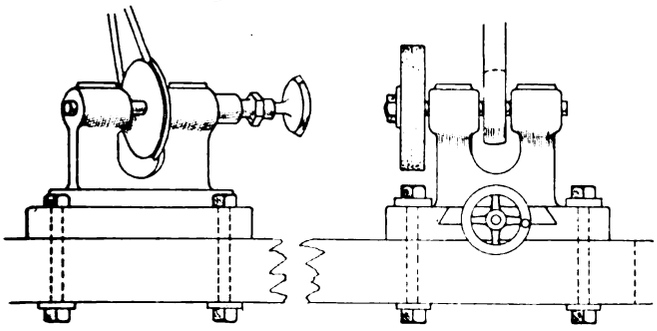


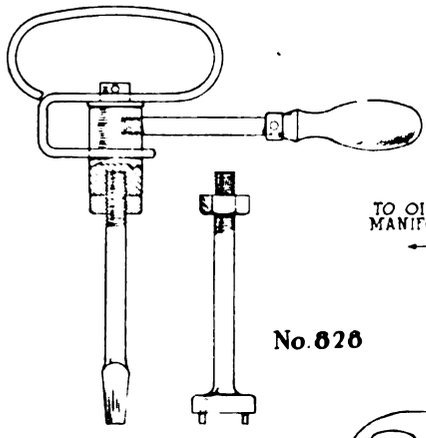
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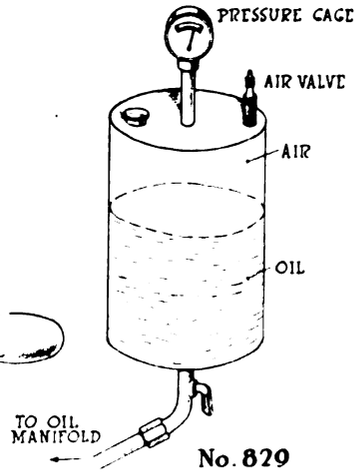
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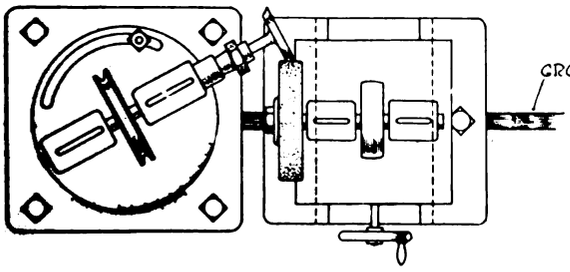




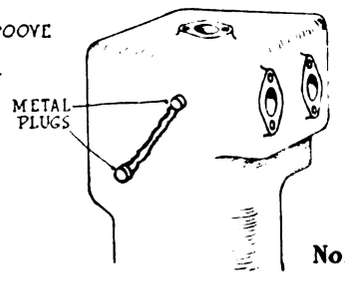
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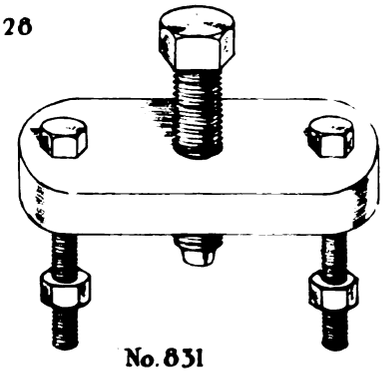
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Accessories & Supplies



THE GENOLITE

The Detroit Starter Co., Detroit. PRICE, $19.85.

The Genolite is a complete electric lighting system for Ford cars. The generator is mounted on a special bracket, held by the hose-coupling bolts, and driven through a spiral wire belt from a split pulley clamped onto the fan hub. The generator bracket also carries the automatic cut-out that connects and disconnects the generator and the battery at varying engine speeds. The two side lights, a tail lamp, storage battery switch and all wiring necessary to make the installation are included. No machine work is required, and the outfit may be attached in less than 2 hr., it is said. The lights may be lighted when the motor is idle, and when running, enough current is generated to more than take care of the lamp load.

ALLOY PISTONS FOR FORD

Featherweight Piston Co., 11 Guyman Way, Pittsburgh. PRICE, $15 per set, including pins and rings.

An aluminum alloy piston for Ford motors. Being light in weight, each piston weighing about 1 lb., the installation tends to reduce the vibration and decrease the wear. Four sizes are supplied, the standard, 0.0025 oversize, 0.031 and 0.033 oversize for rebored cylinders.

WHEEL PULLER FOR FORD

Motor Specialties Co., Waltham, Mass. PRICE, $1.

A loose plunger extends through the center of the screw and affords a means of starting off a wheel which is stuck or frozen to the axle. The hub-cap of the rear wheel is removed, the puller screwed on, and the set screw tightened. A sharp blow with a hammer on the end of the plunger readily starts the wheel. Wheel pullers of the same type are made for Overland, Buick, Maxwell, Saxon and Chevrolet cars.

V-RAY SPARK PLUG

Stewart-Warner Speedometer Corp., Chicago. PRICE, $1, in all standard sizes.

This plug has four sparking points and a core made from a high grade of porcelain. The wire used in the sparking points is chosen for long service and is claimed to resist corrosion. The terminal cap fits nearly every terminal in use and embodies a means for cleaning the sparking points. The V-Ray plug was formerly a product of the V-Ray Co., but has been bought outright by the Stewart-Warner corporation.

HI-LO-JACK

Hi-Lo-Jack Co., 140 Green Street, Worcester, Mass.

The toggle joint principle is incorporated in this automobile jack, enabling the operator to lift a heavy weight with a minimum of exertion. As shown in the illustration, the upper and lower joints of the toggle are fastened to the top and base of the jack, respectively. The horizontal screw connects the two other joints and applies the leverage that raises or lowers the jack. A ball thrust takes the side pressure, eliminates friction and aids easy lifting. In the closed position the jack is 5 in. high and will lift the load to 17 in. Owing to the construction the lifting power increases with the height and a graduated scale is attached showing tons in inches which can be lifted with safety.

BEMUS TIMER FOR FORD

Motor Specialties Co., Waltham, Mass. PRICE, $2.50.

A ball contact timer for Ford cars. Contact is made by a hardened steel brush engaging steel balls, both the brush and balls turning each time, so that new surfaces are continually brought into contact. The timer requires little oil, as there is little friction between the balls and the roller. The roller is made sufficiently long to permit each ball to have a path of its own, lengthening the life of the parts. The shell is made from one piece of an insulating material claimed to be very strong and impervious to oil and grease.

STAR TIRE RETREAD KIT

Star Auto Supply Co., Spokane, Wash. PRICE, complete, $8; dealers, $5.50.

This kit contains the tools necessary to rivet the tread of one old tire over another. It consists of three mandrels, a rivet set, fabric knife, pliers, can of cement, brush and clamp. The bead of one old shoe is removed and its tread is cemented over the tread of another old shoe having a good bead. The mandrels are then employed in driving the rivets from the inside and clinching them securely on the outside of the tread.

AUTOMOBILE MONOGRAMS

C. F. Essex, 306 Central Avenue, Jersey City. PRICE, as illustrated, $10 per pair; dealers, 25 per cent.

A distinctive monogram that may easily be attached to any car and just as easily transferred to another. All monograms are hand engraved and enameled in any color on sterling silver. Any special design will be made up on order without extra charge.

COMBINED SEARCHLIGHT AND MIRROR

Pittsburg Electric Specialties Co., Pittsburgh, Pa. PRICE, $6 with mirror, $5 without mirror.

A combined searchlight and diminishing mirror. This searchlight is known as the Pittsburgh "Five M" and consists of a 5-in. double curvature parabolic reflector searchlight, with a 3½-in. diminishing mirror located at the side at the proper angle. This combination of two accessories looked upon by most drivers as essential to the avoidance of delays and accidents, makes a very neat device that serves both purposes the same as two separate devices.

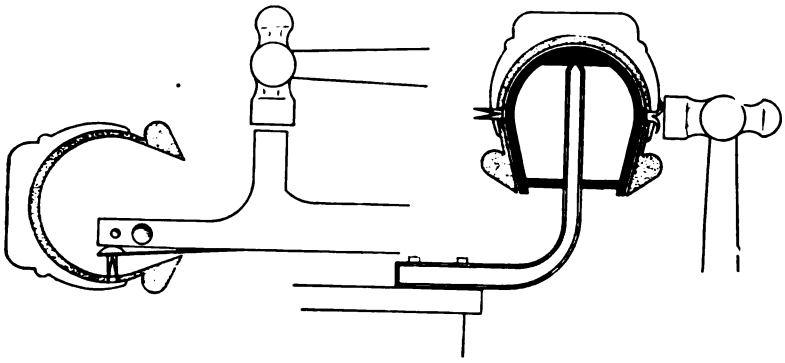
One of the features of this searchlight is the outside focusing adjustment, which enables the use of any size or type of automobile lamp manufactured. Besides permitting the use of lamps of different sizes, the lamp can be focused in a second's time to throw a sharp beam or broad beam, as desired.

UNIVERSAL AUTO PRESS

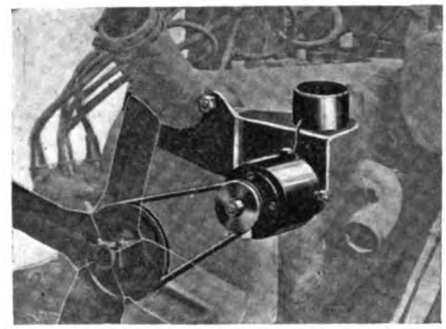
United Engine & Mfg. Co., Hanover, Pa. PRICE, $55 complete.

The particular features of this press are the two leverages, large clearance, and one fixed and one adjustable table. The high speed leverage of 1000-1 will handle 75 per cent of the garage work, it is claimed, while the low speed leverage is 2200-1. The frame is made of heavy 5-in. channel section, securely bolted together. The upper press will take work 18½ in. wide by 16 in. under screw. The adjustable lower table will take work up to 42 in. wide by 24 in.; 1/16 in. lost motion is left in the retaining bearing of the hand wheel to permit a blow to be struck on the exposed top of the screw in extremely obstinate cases. The makers state that it has a factor of safety of many times its rated capacity of 22 tons. It has a total weight of 450 lb.

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THE STAR TIRE RETREAD KIT



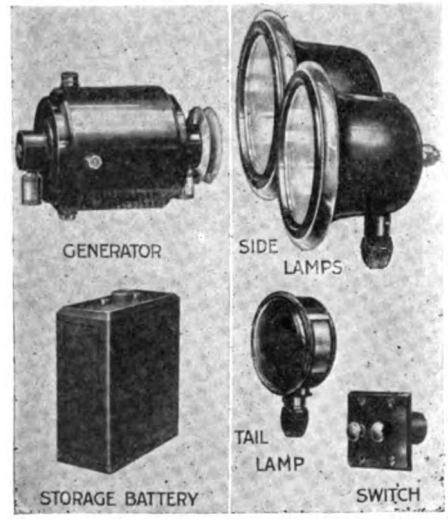
THE GENOLITE
as installed on the Ford motor



AUTOMOBILE MONOGRAMS



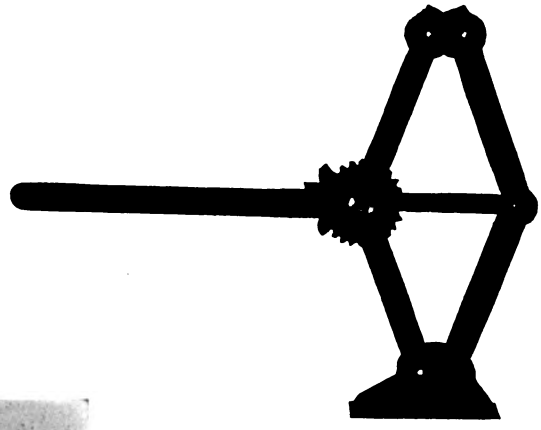
V-RAY SPARK PLUG



THE GENOLITE
showing complete outfit



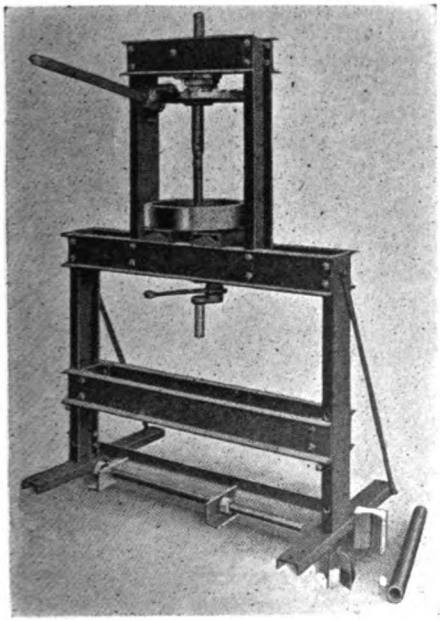
COMBINED SEARCH-LIGHT AND MIRROR



HI-LO-JACK
extended



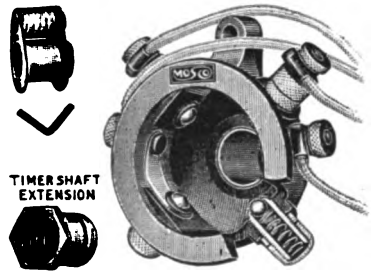
ALLOY PISTONS FOR FORD



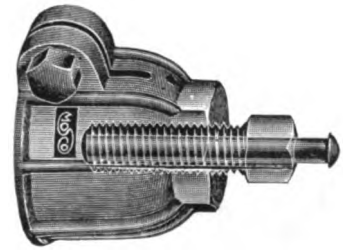
UNIVERSAL AUTO PRESS



HI-LO-JACK
in closed pose



BEMUS TIMER FOR FORDS



WHEEL PULLER FOR FORD

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Do It This Way—

···QUERIES ANSWERED···

ALUMINUM PISTONS

Editor Motor World:

I received your letter and was very much pleased with the information I derived from it. Now I would like to know about aluminum pistons, and if I install them in my roadster how much clearance I would have to give them so they would not bind at high speed. Would it be any advantage to have the flywheel made lighter? About the camshaft, would I be able to gain any speed by having the cams on the shaft ground off—that is, on the lower part of the cam—so I could get more lift and a quicker closing of the valve?—FRED BONNEAU, Manteno, Ill.

1—We cannot definitely state the clearance you should allow on aluminum pistons, as this depends on several things. The aluminum pistons should be at least .003-.004 in. smaller than the cast iron pistons they replace. The following paragraph is taken from an abstract by Eugene Gruenwald as presented to the Society of Automobile Engineers:

"The most important characteristic of aluminum alloy for pistons is its coefficient of expansion. The clearance cannot be the same as in the case of the use of cast iron. Furthermore, the clearance cannot be determined by the coefficient of expansion. Many tests have shown that light-metal alloy pistons vary in expansion as they differ in design. A straight-head piston has a different expansion than a concave- or convex-head piston of the same size."

"It is advisable to allow from .003 to .004 more clearance than in cast iron practice, and then determine by test whether the allowance is correct. A piston which has proper clearance will not rap after the first few explosions, or show any sign of a tight fit after the engine has been run at high speed and under heavy load. A few careful tests will determine quickly the proper clearances above and below the rings."

In ordering the new pistons, you should inform the maker exactly what you wish to do and he will make the pistons with the proper clearance.

2—The advantage in reducing the weight of the flywheel would be too small to merit the work. While the motor would accelerate quicker, it would not run smoothly at slow speeds; there would be no effect at the maximum speed attainable.

3—We would not advise you to attempt to change the shape of the cam. To be sure, you could make the valve open farther and quicker, but that is a doubtful advantage. At high speeds the altered shape would cause knocking, as the cams would be too steep for smooth action. The period of opening is decreased and the advantage gained in the increased lift would be lost in the shorter time of opening. Wear on the valve motion would be excessive. Careful timing with the present camshaft should give you all the speed you wish. Otherwise, we would advise a new special camshaft.

GEAR RATIO

Editor Motor World:

Please advise us what gear ratio would give us the most speed in a Buick 23 on a mile dirt track.—FENNELL-YOUNG MOTOR CO., Chester, S. C.

The question of gear ratio is largely a matter of reserve power. Any decrease in the gear ratio increases the power required to drive the car. You should therefore remove all parts that offer resistance to the air and see that all running parts are free and well lubricated.

The motor should be overhauled and the ignition set ahead. You may even find it advantageous to fit the cylinders with alloy pistons and rods. But you should at all events remember that high speeds require more oil than the stock oiling system can supply, and some new provision must be made.

Now is the proper time to consider the gear ratio. If the car seems to develop plenty of power at high speeds, and yet does not develop the speed you desire, it would then be advisable to change the gear ratio.

Too great a reduction in the ratio is as bad as none at all, as the speed of the motor will be held down so low that it cannot develop its power. The ratio best suited to your needs is 3 to 1, and any reduction beyond that is not advisable.

DIRECTING THE TOURIST

The amount of time and energy wasted in giving directions to tourists is no small matter in the average garage. How often have you heard, or perhaps taken part in, the following conversation:

"You go up this street four blocks, turn to your left, and go straight ahead for 4 miles. Then you come to a Y, where you bear to the right. It's 20 miles to Theresa, and then you——" It is the daily gas pump duet, the tourist trying to find where he should go, and how far he must go, and the garageman trying to direct him.

The tourist then pulls away—with his brain a confused mass of roads, turns and distances. The garageman resumes his work, only to perform the same ceremony with the next sale of gasoline. Like as not, the second turn out of town will find the tourist asking the same questions to the farmer over the fence. Meanwhile, the garageman has lost 3, or 4, or 5 min. of his time.

Cornell and Barber, proprietors of the Hodskin Garage, at Canton, N. Y., answer these questions this way: Taking the home town as a center, they made up a table of all the towns, and their distances on the radiating roads. This was printed in the form of a pocket card, and has an advertisement of the garage on the reverse. Now when the question comes, a card is produced, and the route marked out. For example, suppose the objective point to be Saranac Lake. The first town struck is Potsdam, and a dot is placed there. Several towns lead from Potsdam, but the one desired goes through Nicholville, Moira, and on through the towns in sequence to Saranac Lake, the destination. A dot is placed beside each town on the route, and any points that require explanation are noted.

Distance from Hodskin Garage, Canton, N. Y., to

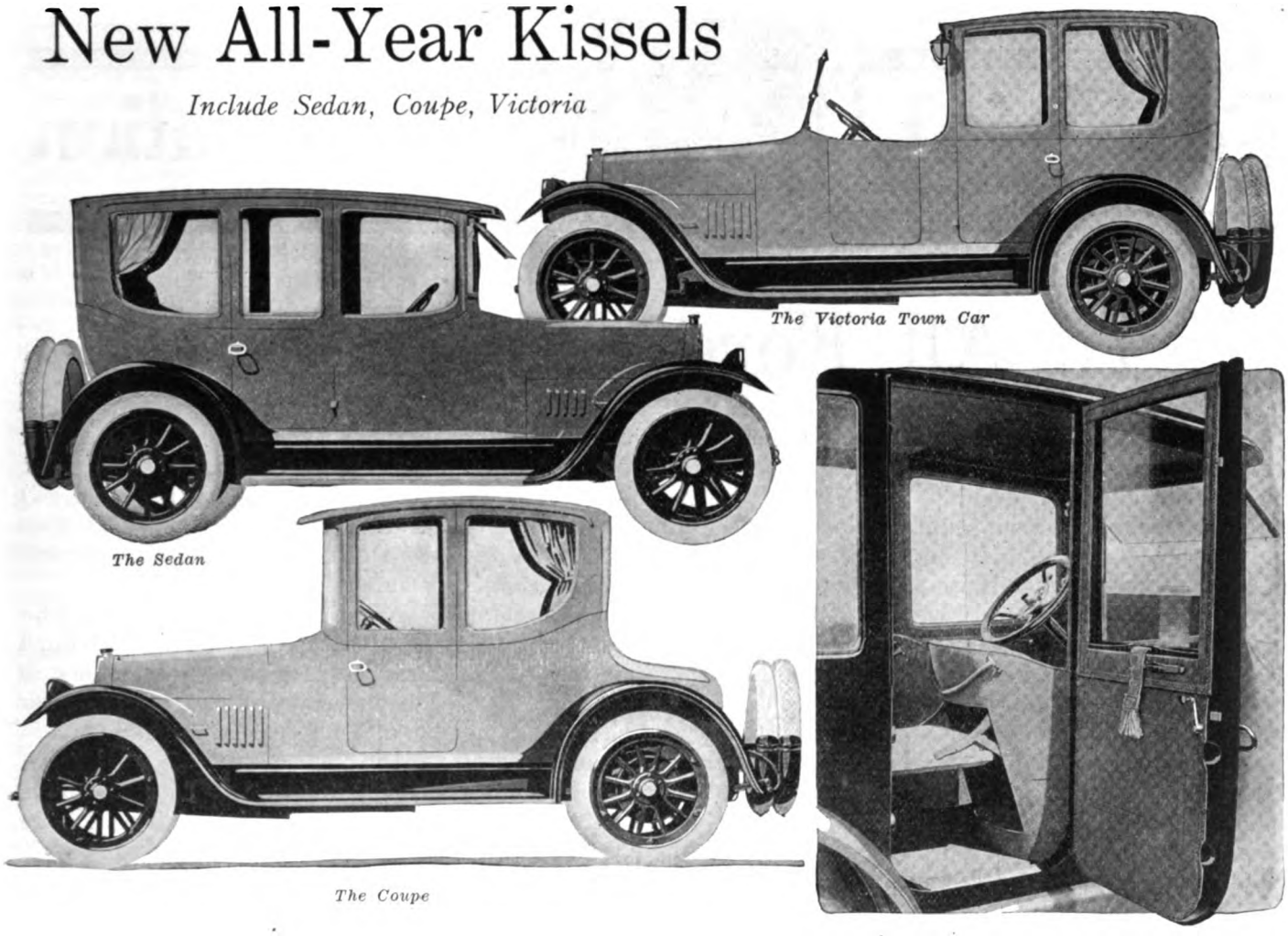
	Miles
*Potsdam	11
Hannawa Falls	15
Colton	21
So. Colton	26
Stark Post Office	32
Childwood	48
Gales	52
Piercefield	57
Tupper Lake	64
Wawbeek	72
Saranac Lake	92
Lake Placid	101
Keen Valley	123
Albany	263
*Nicholville	28
*Moira	40
*Bangor	48
*Malone	53
*McCollums	82
*Paul Smiths	89
*Saranac Inn	99
*Saranac Lake	101
Chateaugay	65
Ellenburg	84
Mooers Forks	93
Plattsburg	117
Champlain	105
Rousses Point	110
Chazy Landing	118
Ferry to Burlington, all cars $1.00, passengers 25 cents.	
Montreal	182
Norwood	17
Norfolk	22
Raymondville	27
Massena	34
Morley	5
Madrid	11
Lisbon	16
Waddington	21
Rensselaer Falls	9
Heuvelton	13
Ogdensburg	18
Morristown	29
Redwood	51
Alexandria Bay	58
Clayton	70
Ferry to Kingston, Ont., morning, all cars $7.50.	
Cape Vincent	84
Watertown	110
Dekalb	8
Old Dekalb	12
Richville	20
Gouverneur	26
Antwerp	38
Theresa	49
Watertown	68
Utica	154
Syracuse	140
Hermon	13
Russell	18

These cards were printed in large quantities and carry an advertisement of the garage on the reverse

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New All-Year Kissels

Include Sedan, Coupe, Victoria



The Victoria Town Car

The Sedan

The Coupe

Although the tops on all these cars are detachable, the door opens as a solid piece

FOR the winter of 1916-17 the Kissel Motor Car Co., Hartford, Wis., has brought out a number of improved All-Year bodies for the chassis model marketed under the title of Hundred Point Six. This is the smaller of the two Kissel sixes, and the larger will also be equipped with the All-Year tops, as before.

The new top line includes the sedan and coupe designs which were marketed last year, and in addition a town-car top mounted on a Victoria body. The price of the sedan and coupe bodies is $1,520, while the Victoria town car lists at $1,850. These bodies are about the same in construction as those of last year. They are distinguished by their easy convertibility from the open to the inclosed type, allowing the owner to have all the benefits of two cars for practically the price of one.

Selected white ash and elm are used for the main and door frames of the detachable top, with a covering of sheet steel. The roof is three-ply, paneled white wood under heavy duck canvas laminations. French plate glass is used for the windows, and these are set solidly into hard rubber to prevent leaks and to eliminate rattles. The standard tops are leather-lined, and special cloth lining can be secured at additional cost.

The body and the top are connected at ten points by rectangular bolts fitted into sockets, which are arranged to prevent any projections from marring the appearance. Between the body and the top is inserted a layer of felt anti-squeak material. In attaching the top the electric wiring is connected automatically by spring plungers. The winter bodies are all equipped with dome lights operated by push buttons.

All the Kissel bodies are fitted with divided front seats, a wide corridor allowing easy passage. Seventeen coats of paint are used, requiring twenty-two finishing operations. The concealed hinges are of pressed steel. Ventilation is secured by dropping the windows into the lower halves of the doors.

Burke Off the Road Forever

KOKOMO, IND., Aug. 19—Thomas H. Burke passed away at the Good Samaritan Hospital last week, age 55. As "Tom" Burke he was known to thousands throughout the State of Indiana and was one of the best known traveling men in the State. For some time past he has acted as local salesman for the Haynes Automobile Co.

$100 Fine for Gas Violation

LOUISVILLE, KY., Aug. 19.—Charged with selling gasoline in violation of an ordinance regulating weights and measures, the Roy E. Warner Co. was fined $100 in the Ordinance Court.

Five Days, Not Four

Through a typographical error, the story of the Marmon transcontinental run last week said that the time was 4 days, 18 hr. and 30 min. It should have been 5 days, 18 hr., 30 min.

Connersville Firms Combine

CONNERSVILLE, IND., Aug. 19—The Connersville Wheel Co. is winding up its affairs preparatory to consolidation with the Central Mfg. Co., also of Connersville. The stockholders of both companies are largely identical, and by combining under one management it is expected to effect certain economies.

Bower Pays 60 per Cent

DETROIT, Aug. 19—The Bower Roller Bearing Co. has placed its stock on a 60 per cent dividend basis. A quarterly dividend of 15 per cent was declared.

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To All Ford Salesmen—

THE new Ford merchandising plan means a great deal to you—to each and every one of you men who have been selling cars in Ford branches. It may also mean a great deal to those of you who have been selling Fords in other than Ford branches.

Heretofore you have been salesmen—working for a salary. Now you have the opportunity of *becoming dealers.*

Heretofore you have been an employee; now you may become an employer.

You have been a salesman; now you may become a BUSINESS MAN.

This step may be the future for thousands of you. It surely is a big opportunity. Already a lot of you have formed partnerships or have set up alone and are retailing Fords. You already are classed as BUSINESS MEN.

And right here is what Motor World had in mind to say when it began this editorial—BE BUSINESS MEN.

If you do that, you will succeed; if you don't, the chances are you will fail. And if you fail you have thrown away the big opportunity that they say always knocks once at every man's door. It has knocked at yours—this month.

Heretofore you may have thought unkindly of some of the things the boss required of you. But probably he had a good reason.

Now it is you who is the boss and your employees may be thinking unkindly of you. And now you will see the reasons for the things you didn't understand when you were an employee. You will learn that there are TWO sides to EVERY situation. Profit by it. Work WITH your employees.

You can get men to turn the world upside down WITH you. You can't DRIVE them into doing anything worth while.

And then there is the BUSINESS side of the story.

Heretofore you have had no financial responsibility aside from drawing your salary. Now you are PAYING salaries, and you must get the wherewithal to pay these salaries.

Instead of chucking your work-a-day cares at 6 o'clock at night, you are going to carry them home with you, eat with them and sleep with them. But don't let them become too big a burden.

Think and plan. Work intelligently—but don't worry.

Above all, YOU ARE NOW AN EXECUTIVE. You are steering the ship, not pulling a rope. You must have an accounting system in your business, and if you don't find one anywhere else, there is a Motor World Simplified System of Accounting that will help you wonderfully.

You must run your business in a BUSINESS way. You must account for every cent that comes in and every cent that goes out. It is the ONLY way you can succeed.

And as to selling, GET THE PRICE. Henry Ford has drummed that into the industry for 13 years —Get the Price! And is Ford a success or a failure?

Remember this: If you cut a price once, you'll cut it twice. And every time you cut a price you are taking so much money out of your pocket and throwing it away. It doesn't even get you the good-will of the buyer. He laughs at you. He thinks you are a boob business man. AND YOU ARE.

As for succeeding, the men who have been trained in the Ford branches are more than a match for the many others who will set up as Ford dealers, because you ex-Ford men are Ford specialists. You are trained in Ford selling. You have a big handicap in your favor at the very start.

There is every reason why you Ford men should succeed. You should make more money than you ever made before in your lives. You can do it if you go at the job right.

PLAN YOUR SELLING.

Plan your sales story. Shape it for greatest effectiveness. Make it bang against the prospect's resistance. Get his money. Then handle that money like a BUSINESS man.

Don't imagine you can rent a salesroom, take orders and call the job done—for you can't. You must be

AN EXECUTIVE,
A BUSINESS MAN,
AN EMPLOYER,
A MANAGER OF MEN.

There is a wonderful future before you. Years stretch out beyond in an entrancing vista. You stand at the beginning of the Valley of Business. At the other end is Success.

The biggest opportunity that ever came your way is with you NOW. Go to it, Ford boys.

We're for you.

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Tractor Accessories

Editor Motor World:

We congratulate you upon Mr. McMinn's article in the Aug. 9 issue of Motor World. It is a subject which you cannot too strongly place before the automobile accessory jobbers at this time, because this tractor accessory business is wide open to them now if they will go after it.

After talking with scores of tractor owners at the four tractor demonstrations held thus far, we find that scarcely one of them thinks of the implement dealer from whom he bought his tractor when there is a necessity for new piston rings, spark plugs, grease cups, cable, or re-equipment of any sort. It is the garageman or the town machinist whom he thinks of, and the garageman has first call, because he carries in stock at least some of the accessories which the tractor owner most frequently needs.

All the garagemen need is to be educated to actively go after this business. It is waiting for them. To be sure, the market as yet is comparatively small, but it is increasing so fast that by another year it will be a real factor in the business of any man in the accessory line who vigorously goes after it. When 40,000 people attended a tractor demonstration at Fremont, Neb., it is significant of the future.

The very service which tractors render necessitates more frequent replacement than is the case with pleasure automobiles. There is another side to it. The man who might postpone new equipment for an automobile cannot do so for his tractor. It must give 100 per cent service when he needs it. The garageman is the only person equipped to give him this service.

We have talked at the tractor demonstrations with tractor owners from the rice field of Louisiana to the Canadian line, and in not half a dozen cases have we found them depending upon the implement dealer for supplies or service. Now is the time for the accessory jobber to get his garage customers wakened up to this splendid opportunity.

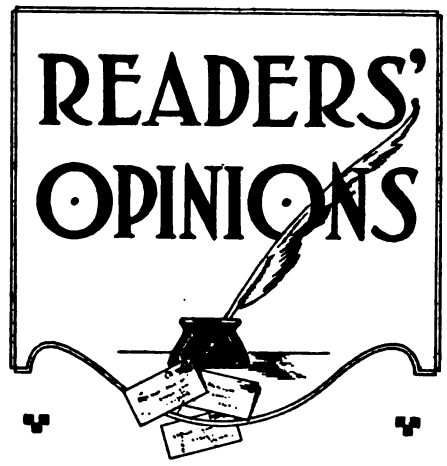
McQuay-Norris Mfg. Co.,
L. A. Safford, Second Vice-president.
St. Louis.

Kissel Claims "All-Year"

Editor Motor World:

The following letter, copy of which was sent to all automobile manufacturers under date of Aug. 4, is respectfully referred to your attention:

"On account of one automobile manufacturer recently using our trade name, although slightly modified, we again wish to give due notice that:



"'THE ALL-YEAR CAR' is a Kissel trade name, used continuously in special display form in our advertising for the last 2 years. It identifies our product and is not legally applicable in whole or in part as a descriptive phrase to any car of other make.

"Last year we sent out a notice to this same effect and our rightful contention was acknowledged by most of the leaders of the automobile industry.

"We must therefore insist that 'ALL-YEAR,' used either with or without the word 'Car,' or otherwise modified, in advertising a competing car, is a violation of our just rights, and, if necessary, proper action will be taken to protect those rights.

"We feel sure you will agree that the English language is rich enough and broad enough to adequately describe other detachable tops or convertible cars without using our established trade name.

"Yours very truly,
"The Kissel Motor Car Co.,
"By G. A. Kissel, President."

Wants Name Protection

Editor Motor World:

The manufacturer of a nationally known and standardized trade-mark must of necessity jealously protect it. Our trade name, "LEAK-PROOF," has been nationally standardized through extensive advertising and the phrase "LEAK-PROOF" is our own registered trade-mark.

Like many pioneers in a new field, this company has suffered through misuse of our trade-marked name "LEAK-PROOF." The name "LEAK-PROOF" applies specifically and only to the piston ring manufactured by this company. It is not a descriptive phrase, pertaining to a type of ring. Yet some automobile and engine builders who are departing from the conventional type of one-piece ring have described their ring equipment as being leak-proof or of a leak-proof type. The injustice of this is manifest.

Therefore, we will appreciate your giving publicity in the columns of Motor World to this letter and the fact that there is no "LEAK-PROOF" PISTON RING except our patented, trade-marked product, which is not used by any automobile motor builder as universal equipment. "LEAK-PROOF" PISTON RINGS are sold only through jobbers and dealers for replacement purposes.

Yours very truly,
McQuay-Norris Mfg. Co.,
L. A. Safford, Second Vice-President.
St. Louis.

Registers 10,000 Cars in 60 Days

OMAHA, Aug. 17—Ten thousand cars have been registered in Nebraska within the last 2 months. At the end of July there were 86,690, and 90,000 is expected by the end of the year. In 1915 there were 59,000, which gives a 1916 sale of 31,000.

Now 1 Car to 13 Iowa People

DES MOINES, Aug. 19—There is now one car to every thirteen persons in Iowa—178,000 cars and 2,300,000 people. At the same date last year there were 141,000 cars, 1 to 17 of population. Last year 146,000 cars were registered in this State; this year it is expected there will be 190,000, a sale for the year of about 45,000.

Owen Continues as Denning Dealer

CHICAGO, Aug. 18—Owen & MacGowan have succeeded the Owen-Buxton Co., which handled the Reo until the Reo company recently established a branch. The new firm is distributing the Denning farm tractor, which was handled with the Reo. Headquarters are at 1532-34 South Michigan Avenue. The principals are O. C. Owen and F. D. MacGowan, Jr.

Finds Bargain Day Pays

MONTREAL, Aug. 21—The New Automobile Accessory Store, 11 Park Avenue, Montreal, run in conjunction with the Cadillac Motors, Ltd., has adopted department store methods and every Saturday is bargain day. Although this firm has only had one such advertised day, it has proved a success beyond expectations and demonstrates that a slight cut on a limited number of standard articles pays and at the same time it gives an opportunity of working off obsolete and poor selling lines. The firm in question ran good-sized copy which, among other things, referred the readers to the classified columns, wherein is stated the bargains for the day.

These bargains are restricted to Saturday only and any buyer coming in for one on Monday has to pay the regular price. The idea is to help increase Saturday sales, as this day is generally slack.

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The RETAIL NEWS

NORTHWEST

John Leff, Falls City, Neb., has sold his garage business to a company in Brock, Neb.

Frank H. Miller, Ulysses, Neb., has opened a garage and machine shop.

The William Berg Co. garage, Omaha, was partially destroyed by fire. The loss is about $1,500.

Harry Leafgreen, Minatare, Neb., has sold a half interest in the Ford Garage to Devere Youmans and the firm name has been changed to Leafgreen & Youmans.

Hein Brothers, Culbertson, Neb., have disposed of their garage to Mohr & Ehler, who have taken possession.

Martin & Carter, Lenox, Iowa, have sold their garage business to Charles Sturm and Charles Preston.

Stickleman & Whitmore, Clarinda, Iowa, have opened a garage.

The Third City Auto Co., Grand Island, Neb., has been organized by Fred Schlotfeldy and Edward Guthman, who purchased the Stratman Garage and will operate it.

James Maddox, Gordon, Neb., has sold his interest in Parker & Maddox to his partner and retired from the business.

Ernst & Brock, Columbus, Neb., have opened a new garage.

The Siama Garage, Humboldt, Neb., was destroyed by fire.

The Babson-Dickman Implement Co., Utica, Neb., has rented quarters for a new automobile business.

Robert Powers and **Benjamin Philpot**, Humbolt, Neb., have obtained the Hupmobile agency.

The Ulysses Auto Co., garage, David City, Neb., was entirely destroyed by fire.

The Florence Auto & Taxi Co., Florence, Neb., has been sold by Wright & Stoltenberg to Johnson & Acken.

Colfax Auto Co., Colfax, Iowa, has opened a new garage on Front Street.

S. H. Shields, Allerton, Iowa, succeeds to the garage of Clements & Shields.

The Schultze Auto Co., Jefferson, Iowa, is successor to the Cooper Auto Co.

John McCall, Decorah, Iowa, soon will open his new Ford Garage.

Mann Auto Co., Emmetsburg, Iowa, is opening a new garage.

Overland Motor Inn, Keota, Iowa, is adding a new front.

Estes & Co., Leon, Iowa, is adding to its garage equipment.

The Ford assembly branch, Des Moines, has leased the Mason Motor Car Co. plant as temporary headquarters; a new building is being erected at Eighteenth and Grand Streets.

The Maxwell Motor Co. is about to open a branch in Des Moines. Offices have been opened at 408-10 West Ninth Street.

C. W. Harris, Nevada, Iowa, has bought out his partner, Harry Crouch, in the Nevada Auto Co., and will conduct the business alone, while Crouch will buy war horses.

The Lewis Bros. Co., Oskaloosa, Iowa, has taken over the interests of the Schee Co., now of Des Moines, including the Buick and Packard agencies.

The Howell Garage, Neligh, Neb., has been purchased by Harry Petersen and W. J. Yates.

The Home Auto Co., Charter Oak, Iowa, was entirely destroyed by fire, with a loss of $10,000 and no insurance.

Harmenza Brothers, Ashton, Neb., have bought and taken possession of the Ashton Garage.

Reed & Masters, Montieth, Iowa, will open a new fireproof garage, 40 x 60, now being built.

Lester Fonda, Osage, Iowa, has bought the Osage Tire Hospital from Walter Morrison.

Ralph Brickley, Olin, Iowa, has sold his garage and repairshop to his brother Martin.

Charles Schmidt, Avoca, Iowa, is building a new garage.

A. J. Bensmiller, Sigourney, Iowa, has sold his garage to C. M. Roberts of Keota, who is handling the Studebaker. Bensmiller has moved to the Kracht Building and started a new business.

Chester Davis, Cedar, Iowa, is building a new garage and repairshop.

The J. W. Smith Motor Co., Cedar Rapids, Iowa, is a new concern which will distribute the Reo in twelve counties. Smith goes to Cedar Rapids from Fort Dodge.

The Economy Welding Co., Cedar Rapids, Iowa, is a new concern located at 111 South Fifth Street, with K. C. Saffee in charge.

Jay Wiggins, Jefferson, Iowa, has sold the Lincoln Garage in that city to Frank Harding, also of Jefferson.

P. Mathre, Ames, Iowa, has bought the garage and accessory business of Lew Robertson.

Everett Ferguson, Ferguson, Iowa, is building a new garage, 24 x 40.

Harvey Zbornick, Randalia, Iowa, is fitting up a new garage.

John Scarborough, Newton, Iowa, is building a new garage, 130 x 40.

Brodersen Brothers, Harlan, Iowa, succeeds to the Court Street Garage, formerly conducted by Mortensen & Brodersen.

A. F. Chase Sons Co., 904 Hennepin Avenue, Minneapolis, have taken the Stephens agency.

The Twin City Cord Tire Co., Minneapolis, has filed amended articles of incorporation, increasing capital to $250,000.

The Chevrolet Motor Co. of Minnesota, Inc., Minneapolis, has opened a factory branch at Sixth Avenue South and Fourth Street. Headquarters are established for Minnesota, western Wisconsin, the Dakotas, Iowa, Nebraska, Montana and Wyoming. Field and office forces are being organized.

Frank Blaha, Ravenia, S. D., will build a two-story hollow tile garage, 25 x 70.

A. J. Johnson, Lead, S. D., will erect a $15,000 garage at Pine and North Bleeker Streets.

Leonard Nelson, Tracy, Minn., has bought the Ford garage and agency from Neil Nelson.

Edwards Bros., Joplin, Mont., have opened a garage.

C. W. Hurd, Alexandria, Minn., is building an addition, 20 x 60.

Arthur and Harry Castor, Waseca, Minn., will erect a garage on Third Street between Oak and Elm Streets.

Matthew Noehl, Watkins, Minn., has leased the Oscar Olson Garage.

Arthur Marston, Lake Basin, Mont., will build a garage.

J. E. Sundahl, Antelope, Mont., with H. L. Miller of Plentywood, Mont., has bought a livery barn and will make it into a garage.

Lindmeyer & Schimmel, Forman, N. D., have sold their garage to Nelson & Son.

Emil S. Nelson, Fordville, N. D., has sold his interest in their garage to his partners, Nels S. Nelson and Carl K. Thoe.

The Wilson-Barber Auto Co., Huron, S. D., has been incorporated at $50,000 by William Wilson, Albert N. Barber and Percy Brown.

Sandberg & Dinger, Aberdeen, S. D., are building an addition to their garage.

The Waters Good Service Garage, De Smet, S. D., has opened.

Lloyd Rowland, St. James, Minn., has bought the O. J. Bjorkman vulcanizing plant.

The Duff-Barr Auto Co., Dazey, N. D., will engage in the implement business.

A. B. Levea, Egan, S. D., has bought the Peerless Garage from F. E. Hutton.

The Northwest Motor Co., Minot, N. D., has incorporated as the McKinney-Fuller Co., capital $100,000, with C. A. McKinney as president, M. L. McKinney as vice-president and A. H. Fuller as treasurer.

The Moore Auto Co. Garage, Park River, N. D., is being remodeled. It is the Ford service station of the Moore Auto Co. of Grand Forks, N. D.

Gust Johnson and Oscar Lindberg, Hibbing, Minn., will open a garage on Pine Street.

J. W. Hoffland, Hendricks, Minn., will remove his automobile agency here from Ivanhoe.

H. J. Kurth & Son, Hendricks, Minn., will erect a garage, 48 x 100.

William French, Kimball, Minn., has bought the R. J. Bergum Garage.

Dillner & Holbrook, Mankato, Minn., will erect a garage.

The Pure Oil Co., Minneapolis, will erect a garage at its filling station, 2858 Hennepin Avenue.

W. F. Thomas, Lake Crystal, Minn., has bought the Johnson Bros. Garage.

F. L. Kaufman, Dawson, Minn., will make a 40-ft. addition to the Red Trail Garage.

Phil O'Neill, Deer Lodge, Mont., is erecting a garage.

W. A. Sullivan, Park City, Mont., will erect a two-story garage, concrete, 48 x 80.

Helmer Mellum, Rolette, N. D., has bought an interest in the Rolette Garage and the firm will be Christianson & Mellum.

Stice & Ulman, Crosby, N. D., have dissolved, Ulman continuing.

C. D. Litch & Son, Dickinson, N. D., have bought the T. L. Beard Auto Co. accessory business and have rented a building.

SOUTHWEST

M. I. Goddard, Phillipsburg, Kan., will erect a new garage, 52 x 150.

B. F. Jacobs, Los Angeles, has become head of the Marion-Handley Sales Co., which opened at 1053-55 South Olive Street, St. Louis, last week.

The Missouri Haynes agency, Kansas City, of which G. A. Jones was president and H. A. Cook sales manager, was sold Aug. 1 to the Midwest Haynes Automobile Co. H. A. Cook is now manager and O. E. Van Noy is sales manager and assistant manager. Each owns half of the business.

L. O. Jarvis, El Paso, his disposed of his interest in the Cadillac Sales Co. to his partner, C. P. Henry. Jarvis will locate in Detroit.

The Totelk Motor Co., El Paso, has been appointed distributer of the Moreland truck.

H. Jackson, Flagstaff, Ariz., has opened a repairshop.

Clyde Amster and Kent Reese, Clarkdale, Ariz., proprietors of the Clarkdale Garage and Machine Shop, have moved into larger quarters and added several thousand dollars' worth of new machinery.

The Huntsman-Hotchkiss Overland Co., Tucson, Ariz., has changed its name to Overland Arizona Co. J. H. Huntsman continues as president and H. H. Hotchkiss as vice-president and general manager. Frederick W. Pitcher, formerly Overland factory representative in Arizona, is wholesale manager and F. R. Eddy traveling representative. The Arizona Overland Co. has headquarters in Tucson, with branches in Phoenix, Bisbee and Douglas.

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The S. G. Davis Motor Car Co., Dallas, has been organized to handle the Oldsmobile.

Victor L. Phillips, Seventh and Delaware Streets, Kansas City, has taken the distribution of the Four Wheel Drive truck.

The Hudson-Phillips Motor Car Co., St. Louis, has been appointed Diamond T truck dealer.

The Merchants' Truck Co., St. Louis, has opened a garage and service station at 1111-19 North Twelfth Street. The company also is Gramm-Bernstein dealer. The company was recently organized with J. A. Yung, president; Theo. Meuller, treasurer, and H. B. Willower, recently of the Gramm-Bernstein Co., as manager.

The St. Louis-Racine Rubber Co., St. Louis, has opened salesrooms at 3146 Locust Street. James Maginnis, proprietor, was for 17 years with Morgan & Wright and the U. S. Tire Co.

Ralph Peavy, formerly Racine tire distributer in St. Louis, is now Racine distributer in Texas and New Mexico.

R. E. Campbell, formerly manager of the accessory department of the H. W. Johns-Manville Co., St. Louis, has taken a similar position with the Hudson-Phillips Motor Car Co. of that city.

The Chevrolet Motor Co. of St. Louis, Inc., opened uptown salesrooms on Plasa Square last week with the showing of a new model. The service station will give 24-hr. service.

C. E. Hathaway, Kansas City, Mo., president of the Southwest Motor Co., has sold his interest to J. Frank Witwer, vice-president, and H. T. Severin, treasurer. Witwer will be president and Severin vice-president. Witwer has been president of the Kansas City Motor Car Dealers' Association for three terms.

Beals & Wilson, King City, Mo., will erect a two-story garage.

Van Agee, St. Joseph, Mo., has purchased an interest in the Limpp Garage at King City, Mo., and will move to King City. The name of the firm will be Limpp & Agee.

W. T. Wingate, Maysville, Mo., has sold his garage to George Beatty.

W. A. Schwope, Kansas City, has secured a 10-year lease on the Prospect Garage, which is being erected at 3914-20 Prospect Avenue.

The Missouri Delivery & Motor Supply Co., Columbia, Mo., has been organized.

F. J. Clinkenheard, Carthage, Mo., has enlarged his garage.

The Auto Service Station, Kansas City, has been opened at 713 Main Street.

Fred Crawford, Ottawa, Kan., has purchased the Martin Bros. Garage, 103-105 North Main Street.

Chris Roper, Jr., Halstead, Kan., has rented the new Jones Building and opened a garage.

T. H. Milligan, Greenfield, Mo., has opened a repairshop in the Underwood Garage.

Ralph Pine, Gardner, Kan., has purchased the repairshop in the Gardner Auto Co. garage, which has been operated by L. I. Gray, and will continue in the same location.

C. E. Gardner, Burlingame, Kan., has moved to Lyndon, Kan., and purchased a garage.

The Pratt Auto Co., Pratt, Kan., has bought out J. W. Farmer, who had the Ford agency.

The Electric Storage Battery Service Co., Tulsa, Okla., will occupy new quarters at Seventh and Main Streets, now under construction.

The Overland-Springfield Motor Co., Jefferson City, Mo., has incorporated at $10,000, to operate a garage. The directors are: Carl W. Lehnhard, A. F. Lehnhard and Willis W. Lehnhard, all of Monett, Mo.

J. E. Wilkoff, Spring Hill, Kan., has moved his garage to Overland Park, Kan.

Miss Pauline Haynes, Columbia, Mo., has sold out her interest in the 491 Taxicab Co., of which she was manager. Miss Haynes was the first woman in the business in Columbia.

Kansas City.—The strikes which have been delaying the work on the new home of the Willys-Overland, Inc., at Twenty-sixth Street and Grand Avenue, which will run the length of the block between McGee Street and Grand Avenue, have been settled and the work is proceeding. This building will have a frontage of 200 ft., will be six stories high, and will house the service and sales departments and branch offices.

The Kansas City King branch is to move to 1901 McGee Street, a two-story brick building, which is being remodeled.

The Paxton-Duke Motor Co., Independence, Mo., is erecting a garage.

Uhlman Paris, Arkansas City, Kan., will construct a garage.

N. H. Cannon, Kiowa, Kan., has opened a tire shop.

Teater & Delap, Blairstown, Mo., have moved into a new garage building.

The Backer-Overland Auto Co., Louisiana, Mo., has discontinued the automobile business.

Will G. Price, Wichita, Kan., will erect an $18,000 garage at Topeka and English Streets, two stories, 50 x 140.

The McCreary Plating & Enameling Co., Kansas City, has moved into quarters with the Squire Electric & Construction Co., 401 Wyandotte Street. A large part of the work is plating and enameling automobile parts. An oven will be installed for baking Ford bodies.

The W. C. Norris Motor Sales Co., Oklahoma City, Okla., has opened a shop and salesroom at 605 West Main Street, where it will represent the Oldsmobile and Marmon in that State.

The Motor Instruction & Engineering Co., 4835-37 Easton Avenue, St. Louis, has been appointed distributer of the Hollier and will at once erect a two-story building adjoining its present plant.

The Dallas Oakland Sales Co., Dallas, has been incorporated by Joseph P. Kelley and A. C. Schmidt to conduct a sales and service station at 1915-1917 Commerce Street.

Sloan & Turley Bros., La Plata, Mo., have retired from the motor car business and leased the building they occupied to the La Plata Auto & Supply Co. The new firm has added storage battery repair and recharging departments.

E. M. Naylor, Dallas, has closed a contract to sell the Kelly-Springfield truck in north Texas. His headquarters will be at Dallas.

Will G. Price, Wichita, Kan., of the Wichita Business College, will erect an $18,000 garage.

COAST

The Oldsmobile Co. of Washington, Spokane, distributer of the Oldsmobile and Federal, now occupy new quarters at Jefferson and First Avenue. The building is of brick and concrete.

The Auto Electric Equipment Co., Portland, Ore., has acquired the interests of the Willard Storage Battery Co. at Everett Street and Broadway. William Allen is manager, having purchased the interests of E. W. Wright, Jr., in the station.

R. R. Carlson, Gresham, Ore., has let plans for a two-story garage, 50 x 60.

The Hodgins Motor Co., Spokane, have contracted to handle the Grant.

Bush Bros., Inglewood, Cal., have taken in a third member and the business is now Bush & Hurlbert.

Venable & Anderson, Redondo, Cal., have purchased the garage formerly operated by the Taggart Motor Co. The Taggart Motor Co. has moved to Anaheim, Cal., where a large two-story brick garage is being erected.

The United Auto Supply Co., Los Angeles branch, is to move from 1047 South Main Street, Aug. 31. The company owns its own store buildings in San Francisco and Sacramento and is to build in Los Angeles.

The Steele Motor Sales Co., Los Angeles, has secured the southern California distribution of the Elcar line and opened a garage and salesroom at 1306-1308 South Main Street.

The Hartwell Motor Co., Los Angeles, has taken over the Jeffery business in southern California and established temporary headquarters at 1242-44 South Flower Street, where the sales and service departments will be located until the new company erects its own home.

SOUTH

The Overland Automobile Co., Inc., Monroe, La., has taken over the George Auto Co. of that place and will distribute the Overland in northern Louisiana and eastern Texas. The main office will be in Monroe, with a branch at Shreveport, La.

EAST

The Hartford-Apperson Motor Co., 284 Main Street, Hartford, Conn., has taken over the Peerless Garage, 278 Main Street, and will conduct it as an Apperson and Inter-State service station.

Edward S. Clark, Hartford, Conn., has leased another portion of the new Fuller Storage Battery Co. building on Church Street and will remove his sales headquarters from 183 Allyn Street.

Kilby & Hamilton, Hartford, Conn., are conducting the garage at No. 37 Mulberry Street formerly operated by the Heublein Garage Co., which moved into new quarters at 39 Gold Street.

N. E. Nystrom, Bristol, Conn., has merged his interests in the Ford and Buick agencies with the recently formed Bristol Auto Sales Corp. He will retain his service station on Church Street and will give service on Ford, Buick and Maxwell cars. Nystrom will also be a salesman for the new concern, which has opened a salesroom in the Bishop Block on Main Street. George W. Hull is president of the company, Harry S. Beals secretary and N. E. Nystrom vice-president.

The Hudson Garage, Hudson, Mass., is to enlarge its premises.

The W. R. Smith Garage, Caribou, Me., has been rented by Jasper Harmon and Earl Ward.

Frederick W. Graham, Portland, Me., is building a garage on Clark Street.

B. L. Handleman, Worcester, Mass., is building a public garage.

The Becker-Stutz Co., Springfield, Mass., has leased another building for a service station.

The Ford Motor Co., Springfield, Mass., has opened for business at 75 Liberty Street.

F. H. Kenney, Worcester, Mass., Chalmers dealer, has moved into a new building.

The Connell & McKone Co., Boston, has opened new branch salesrooms in Worcester.

The Ford Motor Co. has leased for 5 years the building used by the Handy Garage on Grafton Street. The building will house 100 cars and it has a floor space of 10,000 sq. ft. The yearly rental is $4,000. Edward F. Matthews, who has been the Ford dealer here for many years, has refused an offer of $3,000 a year as manager of the factory branch and will leave the company. B. L. Handleman, who had the Handy Garage, is building a larger one in Portlnd Street, where the Reo salesrooms, now in the Handy Garage, will be located.

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J. J. McCarthy, Boston, has taken the Ross agency for the entire State.

Perkins & Perretz, Brooklyn, Franklin representative for several years, has secured the Marmon agency for Brooklyn and the rest of Long Island.

The Kenworthy-Clark Co., Providence, has taken over the Studebaker agency, formerly held by Charles H. Goodwin.

The A. W. Halle Motor Co., Buffalo, has increased its capital stock from $25,000 to $50,000.

Hurley & Early, Philadelphia, Jeffery dealers, are having alterations made to their service station on Race Street.

George H. Patterson, Philadelphia, formerly with Hurley & Early, has been made sales manager of the Lexington Motor Co., 150 North Broad Street. The latter firm will be in new and larger quarters by fall.

The Chevrolet Motor Co. of Penna., Philadelphia, has leased a garage building at 434-436 Walnut Street, Camden, N. J., which will be used for a service station for Camden County. The local agency is at 204 Broadway.

The Hawley Motor Co., 632 North Broad Street, Philadelphia, increased its capital stock from $50,000 to $250,000.

The Merchantville Auto Co., West Park Avenue, Merchantville, N. J., is building a one-story garage adjoining the showroom and is making other alterations.

Robert Ramey and A. P. Witteman, Philadelphia, have organized the Ramey Motors Co., with temporary offices in the Bellevue Court Building. The new concern will distribute the H. A. L. in eastern Pennsylvania, New Jersey, Delaware, Maryland, Virginia and West Virginia.

Charles W. Mann, Philadelphia, for 10 years with the Buick Motor Co., has opened a Buick agency at 322 West Main Street, Norristown, Pa., under the name Charles W. Mann Motor Co.

MIDDLE WEST

The Goodrich Tire Co., 506 Andrus Building, Minneapolis, has begun the first unit of a factory at Red Wing, Minn., to make tires and rubber goods. The cost of the unit will be $75,000. It is to be slow-burning, three stories, 100 x 100, and large power plant is to be built. Machines will be motor driven. The company is reported incorporated at $300,000. Officers are: President, H. Scott Ewers; secretary, Frank E. Oberg; superintendent, H. J. Smith.

Thomas Rebard and William Hughes, Knoxville, Ill., have opened a garage and repairshop.

C. F. Hilger, Sterling, Ill., and brother, B. F. Hilger, Prophetstown, Ill., have purchased the garage on Fifth Avenue, Sterling, Ill., now conducted by P. J. Kempster, for $9,500.

Paul J. Killenn, of late senior partner in the firm of Killenn-Green Co. of Batavia, N. Y., has disposed of his interests in the latter city and has taken charge of the Galesburg, Ill., agency of the Buick Motor Co. He has established headquarters at 181 North Cherry Street.

Uniacker & Schorr, Eureka, Ill., have purchased two lots in Roanoke, Ill., and will shortly open a branch in the latter city.

S. I. Benford and E. E. Householder, Urbana, Ill., have opened a branch garage and repairshop at Hickory and Columbia Streets, Champaign, Ill.

Davis W. Shipman, Sullivan, Ill., is erecting a new garage at Main and Jackson Streets.

Robert Jones, Morenci, Mich., is now sole owner of the Deline & Jones Garage, having bought out the interest of his partner.

The Nashville Auto Co., Nashville, Mich., has taken the agency for the Overland and Saxon. The company has just moved into new quarters in the McLaughlin Building and will carry a line of accessories.

The Gordon Auto Sales Co., Detroit, has been appointed distributer of the Grant in Detroit and lower Michigan. The car was formerly handled by the Devlin Co.

The Sun Auto Sales Co. has been formed in Kalamazoo, Mich., to handle the Sun. Ira McMakin and Will Kanley are the members of the new firm, which has opened quarters at Kalamazoo Avenue and Park Street.

A. Kann & Co., Manistee, Mich., dealer in horses and farm implements for the last 20 years, has entered the automobile business and will sell the Mitchell.

Rev. C. S. Rennels, Romulus, Mich., Chevrolet dealer, has secured new quarters with Churchill Bros., at the Star Garage.

The Sewell Cushion Wheel Co., Detroit, has opened a branch at 711 First National Bank Building, Pittsburgh, Pa., in charge of E. G. Burley.

Stickley & Langenberg, Cadillac, Mich., is to be the name of a new concern which will do a garage business.

The Michigan Motor Car Sales Co., Cadillac, Mich., which handled the Chevrolet and Studebaker, has gone out of business.

Asire & Palmer, Marquette, Mich., have secured the garage of Samuel J. Mitchell and will use it as a service station.

The McDonald Auto Sales Co., Calumet, Mich., has secured the premises formerly occupied by the Michigan Motor Car Sales Co.

The Breckenridge Garage, Breckenridge, Mich., has been purchased by F. M. Dancer. W. H. Gidley, one of the former partners, will remain with Dancer.

Toney Johnson, Greenville, Mich., has taken an interest in the Wilbur Co. and has the sale of the Buick.

The Economy Garage, Nashville, Mich., has been opened by A. M. Spangenberg and J. F. Applegate.

The Maxwell Garage, Benton Harbor, Mich., which has the agency for the Maxwell and Oakland, has been taken over by C. G. Madson, formerly of Flint.

The Hubble Auto Sales Co., Bay City, Mich., will start work on a new two-story garage, 100 ft. square, to be located at Fourth and Saginaw Streets. The display room will be 40 x 100.

The Raymond-Ford Garage, Adrian, Mich., is to be enlarged by a two-story addition, which will triple the present space. The machine shop and tire department will occupy the second floor, while all of the old building and part of the new building will be used for storage.

The Abbott Auto Sales Co., Bay City, Mich., has been organized and has taken the State agency for the Abbott-Detroit.

The Broad-Oak Automobile Co., Columbus, has taken the central Ohio agency for the Studebaker, formerly handled by the Brasher Motor Car Co.

The Toledo Central Garage Co., Toledo, has purchased the stock of Oakland and Hollier cars of the Toledo Auto Sales Co., which will retire from business. William C. Whitman is manager of the sales department.

The Kissel Service Co., Columbus, has taken a lease on a new building at Fourth and Spring Streets, where salesrooms and the service station will be operated.

The Central West Motor Car Co., Columbus, has taken the agency for the Liberty.

The Garford-Toledo Motor Truck Co., Toledo, has been organized to handle Garford trucks in northwestern Ohio. The new organization started business Aug. 15, with A. H. G. Jenssen as general manager. The salesroom and service station are at 214 Huron Street.

The City Garage, Pittsville, Wis., has installed a private electric light plant, which uses the present power plant of the repairshop for generating current at the same time that the tools are being operated.

The Broadway Garage, DePere, Wis., has been incorporated at $10,000 by Grover T. McGeehan, Bridget and Margaret McGeehan.

The West Side Buick Co., Milwaukee, has been incorporated at $10,000 by E. M. Jordan, W. S. Schurman, L. M. Jeger and A. J. Klingelhoefer.

The Standard Oil Co. of Indiana, with Milwaukee headquarters in the Germania Building, has been granted a permit to build an office, warehouse and garage at Fratney Street and Auer Avenue. It will be 37 x 77, two stories and basement, and cost $12,000.

The Modern Garage, West Twenty-fourth and State Streets, Milwaukee, has broken ground for a new garage and machine shop. The building will be 45 x 125, one story, and cost $8,000.

Hugo A. Ernst, Oconomowoc, Wis., will erect a new garage and repairshop. It will be 70 x 100, two stories and basement, of brick and mill construction.

O. A. Jasperson, North Cape, Wis., has been appointed district agent for the Ford and has leased the Gill Garage, Burlington, Wis., as headquarters. Jasperson takes over Ford agencies held by numerous concerns in the territory.

Lochen & Heindl, West Bend, Wis., have changed the style of the business to West Bend Motor Co. Nicholas Heindl has sold his interest to Elmer Eberhardt, until now a Milwaukee city salesman for the Ford Motor Co.

The Pell Garage, Bloomer, Wis., is building an addition to its shop.

Arthur Manske, Lake Mills, Wis., will build a $5,000 garage at Wilton, Wis., having purchased the former Sorge Building for $3,000.

P. E. Lehmkuhl, Cumberland, Wis., who recently established a tire shop, will move into the Schultz Building. His floor space will be tripled.

Hugh Agner, Burlington, Wis., is erecting a garage and repairshop on Chestnut Street. The difficulty of getting steel at reasonable prices made it advisable to change plans, so that only a first story and basement will be erected at this time, but foundations will be sufficient for three stories.

H. L. Bergstrom, DePere, Wis., has purchased a site at Broadway and Charles Street and will erect a fireproof garage, 60 x 100, of which 60 x 80 ft. will be equipped for machine and repairshop purposes. Two entrances are provided.

The Detroiter Garage, Platteville, Wis., has started work on its new garage on Main Street, 40 x 120, and two stories.

The Overland-Green Bay Co., Green Bay, Wis., organized recently to distribute Willys products in northeastern Wisconsin, will build a two-story salesroom, warehouse and service station, 100 x 125.

The West Side Buick Co., Milwaukee, has been organized to retail Buick cars within the city. E. M. Jordan and W. S. Schurman are proprietors.

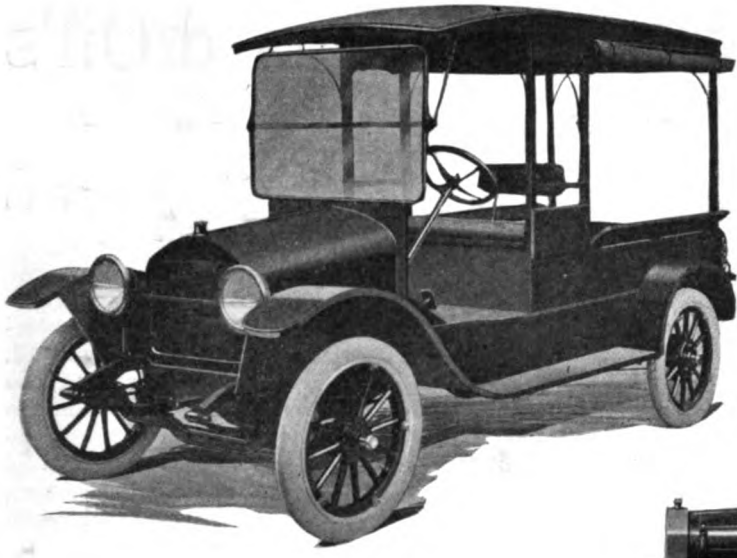
The Reeke-Osmond Motor Car Co., 455-459 Broadway, Milwaukee, Wis., distributer of the Jeffery, has changed its corporate style to Osmond-Vogel Motor Car Co. Alfred Reeke, president, retired several months ago to become general sales manager of the Thomas B. Jeffery Co., Kenosha, Wis., and has disposed of his interests to N. E. Osmond and H. E. Vogel.

The Saxon Service Co., Fond du Lac, Wis., expects to take occupancy of its new garage and repairshop at 239 South Main Street Sept. 15. The building is L-shaped, with the Main Street section 40 x 106 and the other part 34 x 60 ft. The salesroom is 25 x 20 and the shop 24 x 40 ft. L. K. Price is owner.

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Three New Entries In The Light Truck Field

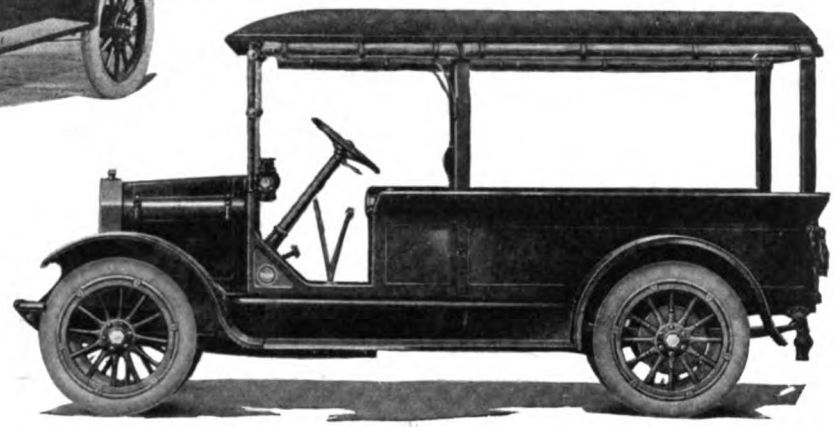
Ellsworth, Ranier and Denmo



Ellsworth Light Truck
(*Above*)

THE Mills-Ellsworth Co. of Keokuk, Iowa, formerly in the buggy business, has entered the light delivery field with the announcement of an 800-pound truck. The features of the truck are the light weight with its attendant economy and flexibility, rugged construction and low first cost.

The specifications are in part as follows: Motor—four cylinder, cast en bloc; bore and stroke, 3¼ x 5 in., developing 30 horsepower at 1800 r.p.m. Clutch—12-in. cone with six compensating springs. Drive—chrome nickel steel shaft with one universal joint through nickel steel pinion and gears to a full floating rear axle. The differential is mounted on annular bearings; the wheels on roller bearings. The wheelbase is 108 in., and the tread standard. The price, complete, with express body, $695, f.o.b. Keokuk, and any special body design will be furnished at a cost as low as the construction will permit.



Ranier 1-2 ton
(*Above*)

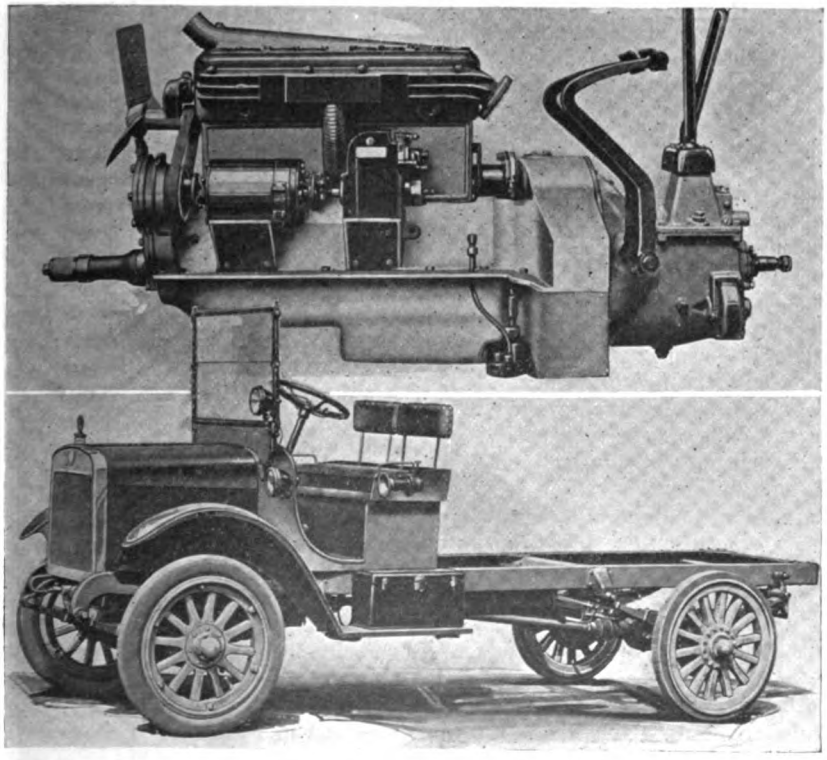
THE Ranier light delivery truck, which will appear in October, marks the re-entry of John T. Ranier and Paul N. Lineberger into the field of manufacture. The makers realized the demand for a truck of 1,000 lbs. capacity, designed in conformance with big truck experience and selling at a moderate price. One chassis only is produced, selling for $850, and may be equipped with bodies to meet any requirement. The illustration herewith shows one type of body, styled the model E and selling for $950 complete.

The 4-cylinder motor is a special Ranier design, block-cast and of the high-speed type. Both manifolds are cast integral with the crank case, giving compact construction and ready access to the cylinder heads. The bore and stroke are 3½ x 4½ in. and the motor is claimed to develop 28 horsepower at 2000 r.p.m.

The driving system includes a Borg & Beck 3-plate dry clutch, a Grant-Less 3-speed gearset, a two universal shaft drive and a Timken worm drive axle with the Hotchkiss drive.

The frame is of unusual size, being 4½ in. deep, of 5/32 in. pressed steel and properly necked in at the front to provide a short turning radius. The front springs are 38 in. long, 2 in. wide, and have seven leaves. The rear springs are 50 in. long and 2¼ in. wide, having eight leaves and are of a special construction developed by the Ranier Motor Corporation in co-operation with the Perfection Spring Co. A double-eye arrangement on the front ends of the rear springs gives additional strength and permits the truck to stay in operation if the top leaf be broken.

Tires are 33 x 4 all around, an unusually large size for this capacity and mounted on demountable rims. The 115-in. wheelbase permits the use of larger bodies than is customary on ½-tonners and gives 74 in. of load space back of the driver's seat.



Denmo 1 1-4-ton, $1385
(*Left*)

THE Denneen Motor Co. of Cleveland has entered the motor truck field with its first model—a 1¼-tonner that is to sell for $1,385. The truck has been designed to give dependable day-after-day service with a minimum expense for operation, maintenance and repair. With this in view, the units entering into the construction were chosen with the greatest care and tested over thousands of miles of roughest roads.

Here are a few of the specifications. Motor—Denmo-Wisconsin, 3¾-in. bore, 4 cylinders, and having a S. A. E. rating of 22.5 horsepower. A Pierce centrifugal governor, driven from the propeller shaft controls the vehicle speed, and not the speed of the motor. This permits the operator to run the truck at its maximum capacity, and yet prevents him from running at reckless speed. The ignition is by a model 44 Dixie high-tension truck magneto, and the starting and lighting is by a Splitdorf-Apple double unit. A single dry plate disk type Borg & Beck is used, and has all parts fully enclosed and protected.

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$28 Lost Business Started Standard Oil's War on the Independents

Indiana Subsidiary Claims Independents Started 1915 Price-Cutting by Underselling It to That Amount

(Reprinted from the National Petroleum News.)

BECAUSE all the Independent marketers in Standard Oil Co. of Indiana territory for 6 months sold a carload of gasoline at the rate of 5 gal. a day in each State at a "cut" under the market price, amounting all told to $28.66 on the entire car over the entire period, the Standard Oil Co. of Indiana started its big war on the Independents of last year.

This is the summary of the "evidence" of "wholesale price cutting" by Independents presented by the Standard of Indiana to the Federal Trade Commission this summer in defense of its acts.

Investigated Tickets

Personal investigation of each tank wagon ticket submitted to the Commission by the Standard, made R. L. Welch, general counsel for the Western Oil Jobbers' Association of Chicago, showed that in the case of 6384 gal., the Standard either failed to show the different marketing conditions at points which accounted for a few mills difference in the price, lied, or some one falsified the tickets after they left the hands of the customers of the Independent marketers.

The remaining 2359 gal. was sold at $20.54 less price—all told—than the Standard said it should have been sold for. Of more than 1000 gal. of this Mr. Welch could secure no trace, for some tank wagon tickets neglected to state the town where it was bought; which left 1300 gal. on the sale of which Mr. Welch said any fair-minded person would probably approve.

In what seems to the oil trade to be a press agent story on behalf of the Standard of Indiana recently printed, the following paragraph appears, in which, for some unknown reason, is the name of only one jobber in the whole territory of the many accused by the Standard of price cutting:

What Stewart Claimed

Mr. Stewart (general counsel for the Standard of Indiana) exhibited to the (Federal Trade) Commission a quantity of tank wagon tickets, one of these showing that the Cedar Rapids Oil Co., on June 12, 1915, sold 165 gal. of gasoline at 8.8 cents a gallon against the witness' company's price of 10.2 cents. That was at Coggon, Iowa. Another ticket of the Cedar Rapids Oil Co. June 26, 1915, showed a sale at 8.8 cents. Mr. Stewart challenged any one to show that the prices his company sold at were different from those he gave the Commission, unless it should be an occasional cut on the part of a tank wagon driver.

This information was wired to the Cedar Rapids Oil Co., by Petroleum News, and Grant Collins, president of that company, at once replied, as follows:

June 12, 1915, ticket for 165 gal. to T. L. Donnely at 10.1.

June 26, 110 gal. to same party at 9.1. Our price at Coggon 10.1 and 9.1 in 100 gal. lots (the last drop in tank wagon market having gone into effect in that month). Their records must be damn lie or they hired some one to make the tickets. We are sending you the entire business done in Coggon in June, 1915.

The tank wagon tickets for that place were received. Careful inspection fails to show where the carbon copies of the originals have been tampered with in any way, and the carbons for the days named are especially clear. There were two other sales made in Coggon on the 26th of June, one to a minister and the other to the city, but both at the Cedar Rapids Company's market price, which appears from the Standard's statement to be 0.1 of a cent below the S. O. price.

Another statement credited Mr. Stewart in that press agent story was that the Standard's competitors in Kansas City got together and advertised gasoline at 1 cent below the Standard's market. What these Independents did advertise was 1 cent above the Standard's market.

He Passes Buck

Mr. Stewart, on behalf of the great Standard of Indiana, then, according to this press agent story, paid the company's compliments to its army of tank wagon drivers by referring to their "low order of intelligence" as follows:

"In handling the business of this kind we are dealing with the low order of intelligence that the average tank wagon driver possesses, and some discrepancies are likely to come in little 'warts' on the body of our business."

Here is the account by General Counsel Welch of his investigation into the Standard's price-cutting claims:

By R. L. Welch, General Counsel, Western Oil Jobbers' Association, Chicago, Ill.

The tentative report of the Federal Trade Commission prepared by Prof. L. H. Haney and submitted to the conference, held in Washington on June 13, 1916, contained an intimation that the Standard Oil Co. of Indiana led in reducing prices during the first half of the year 1915, generally in February and June. Presumably the finding was based upon the evidence which the Commission had gathered.

Deny Charge

L. J. Drake, vice-president, and Col. Stewart, director and general counsel for the company, very strenuously denied the charge and asserted that the Standard Oil Co. of Indiana had merely followed the Independent refiners and jobbers of the Middle West. Both gentlemen were very vehement and emphatic in their denial. Col. Stewart stated that he had a room full of tickets to substantiate his position, and that he would produce the evidence. He was requested to do so.

Although but 10 days were given by the Commission for the various persons interested in the report to produce evidence to overcome any of the tentative findings, and although it would be supposed that this room full of tickets would be so classified and prepared as to permit of their being promptly forwarded to Washington, more than a month was consumed in preparing and taking to Washington the vast aggregation of evidence which had been so industriously collected! The matter is really one of great importance, because the price recessions which occurred in the Indiana territory were the only ones in practically the entire United States. It has always been maintained by the Independent jobbers that these recessions in price were deliberate cuts in the market, made solely for the purpose of obtaining lost gallonage.

What the Standard Submitted

Covering the period from Jan. 1 to June 10, 1915, and in support of its contention that it reduced the market only for the purpose of meeting competition, the Standard of Indiana submitted to the Commission tickets showing sales in the aggregate by Independents of only 8743 gal. of gasoline during the 5 months and 10 days in controversy. This was the room full of evidence!

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Figuring this gasoline at the prices submitted by the Standard Oil Co. (which, by the way, in many instances were incorrect), and taking every sale just as the Standard wished it to be taken, it was claimed that the Independents received for this gasoline $773.57, while, if it had been sold at the alleged prices of the Standard Oil Co., it would have brought $802.23, or a difference of $28.66. It is this $28.66 which we are to believe was responsible for the bitter commercial war which has been waging for a year and a half. The Independents committed the unspeakable crime of selling one carload of gasoline below the market in the short period of 160 days. They sold 794 gal. per State during this period, or less than 5 gal. a day in each State.

An Analysis

The statement of this absurd evidence contains its own answer, but an analysis of the evidence would not be amiss. The writer is not at liberty to disclose the names of the oil companies which it is claimed cut the market, but actual instances are referred to, and if the Federal Trade Commission shall hereafter permit, the names of the companies will be given. It should not be forgotten that the quantity discount price was in effect during nearly all of the period in question, and that the testimony before the Commission showed that about 90 per cent of the sales of gasoline were made at the quantity fill price.

It was, therefore, a very easy matter for the Standard to gather up a lot of Independent tickets at the quantity fill price and claim the Independents were below the market, although it was notorious that the Standard drivers at the very time were selling at the quantity price quite irrespective of the amount taken by individual purchasers.

Let us take typical instances of tickets. It was claimed that a certain oil company sold 50 gal. of gasoline at a point in Kansas for 11 cents a gallon when the market was 11.4 cents. The facts are that the Independent company maintains a tank station at the point in question, and that the Standard of Indiana does not, but is compelled to haul gasoline from another place. The price charged by the Independent was precisely that which the Standard would have charged had it a station at the point. Is this cutting the market?

Another sale by the same company of 200 gal. at 9.5 cents when the Standard's price was 9.9 cents is charged. The circumstances were absolutely identical. And the difference in price would have to be made no matter what the market may have been. Can the Standard Oil Co. of Indiana legitimately claim that an Independent shall have a varying scale of prices at its tank stations, because the Standard happens to have no tank station at one competitive point and must haul goods across the country?

Employee to Blame

Here is a real cut price. A jobber was said to have sold 40 gal. of gasoline at 10 cents when the price was 11 cents. It was a fact. A dishonest agent made the price. He was discharged for falsehoods which he told the company. The difference between the market price and the amount charged on this sale was collected from the agent. Was this a deliberate cut of the market?

Again, it was charged that an Iowa jobber sold 55 gal. on March 20 for 10.9 cents when the price was said to have been 11.9 cents. No place was given on the tickets, so that it was impossible to either deny or verify this sale. The quantity price in Iowa on March 2, 1915, was around 9.6 cents. Where on earth did the Standard Oil Co. of Indiana have a price of 11.9 cents on March 20?

A prominent jobber was charged with having sold 55 gal. of gasoline at 11.1 cents when the price in fact was 11.2 cents. This jobber has 350 stations, and it is the only sale charged against him from the first of January to June 10. One single market irregularity of 0.1 of a cent! The company in question supposed the sale was made at the market, and the trifling error was corrected. Is this a cut of the market?

A company in Kansas is said to have sold 55 gal. of gasoline at 11 cents when the price was said to have been 11.6 cents. This sale is a positive joke. The jobber had never met the quantity fill price. The Standard agents were selling all around him in large and small quantities at 10.5 cents, which was the quantity price. In other words, this jobber was 0.5 cents above the market.

Grades Differed

A jobber in Wisconsin, it is claimed, sold 80 gal. of gasoline at 11 cents when the Standard's price was 12 cents. The comparison was made between two different qualities of gasoline and the sale was at the market.

Another jobber is said to have sold 55 gal. at 11 cents when the price was 11.4 cents. The sale is absolutely and flatly denied by a reputable company, which states in the strongest terms possible that under no circumstances during 10 years of business has the company ever deviated from the established market.

The next ticket was issued by a company of notorious affiliation with the Standard Oil Company. Let it make its own defense.

A sale in Oklahoma of 110 gal. of gasoline at 10.7 cents on March 22 was charged to the Independents. The Standard Oil Co. of Indiana is not in that territory. In addition, the sale was at the market price!

A sale in Wisconsin of 125 gal. at 10.1 cents, when it is claimed the market was 10.4 cents, was charged to the Independents. It was an out-of-town delivery. Will anybody in the oil business rise up and tell us what the Standard's market price is when it makes out-of-town deliveries in this territory?

Out-of-Town Price

Another sale of 75 gal. was said to have been made at 11.1 cents when the market price was 12.1 cents. The purchaser lived at the end of a delivery route and was willing to take more than 100 gal. of gasoline. The driver had only 75 gal. in the tank wagon and sold it to the purchaser at the quantity price. Was this a cut of the market?

At a point in Kansas it was claimed that a refining company sold 100 gal. at 9.4 cents when the market was 9.9 cents. Investigation shows that the market in fact was 9.3 cents, and the sale was above the market.

A prominent jobber was said to have sold an unknown quantity of gasoline at a point in Iowa 0.5 cent below the market. The jobber absolutely has no station at the point named. The sale ticket, if there be one in existence, may have been issued at some point where the price was perfectly proper.

Sales of 2635 gal. out of this carload of gasoline sold in the 160 days were claimed to have been 1 cent below the market. Over a quarter of the sales, therefore, were only 1 cent under the market, and it is claimed for them that they were deliberate price cutting. Does one need to answer the assertion?

Some evidence on a par with that which has just been analyzed was submitted to show that even after June 10 the Independents demoralized the market. Let us take a good instance. A large jobber with stations scattered through Iowa, Nebraska, Missouri and Kansas was claimed to have cut the market seven times! The evidence submitted by the jobber in question shows conclusively that the statement was absolutely false, except in one instance a new agent made a sale 1 cent below the market, and he was very promptly charged with that 1 cent and compelled to pay it.

The evidence submitted by the Standard Oil Co. of Indiana was beneath the dignity and standing of so great a corporation.

Who is cutting the market now? Who has cut it ever since June 10? Who has maintained a lower level of prices in eleven States than in all the rest of the United States? Who has cut the market not on thousands of gallons, but on millions of gallons of gasoline?

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Ford Salesmen Flock Into Line as Dealers

Ex-salesmen, Thrown Out of Jobs By New Merchandising Plan, Set Up in Business

NEW YORK, Aug. 21—With the adoption of a new merchandising policy by the Ford Motor Co., hundreds of Ford salesmen, instead of finding themselves out of jobs, have found new futures for themselves in that they may now become dealers. In many cases, Ford salesmen have set up by themselves and in other instances have formed partnerships with their co-workers. In still other cases, they have readily obtained positions with the many new Ford agencies that are being established.

The unrestricted territory plan has occasioned the formation of many agencies even by those not heretofore connected with Ford branches, and many garagemen, equipped to give service, have become Ford retailers. The change is most noticeable in those cities where there have been Ford branches. In towns where representation has been by a dealer only, new agencies as yet have not been established in any great number, and sometimes not at all.

One of the greatest changes will be in America's biggest city, New York. In Manhattan it is estimated there will be twenty-five or thirty, and in Greater New York—which includes Brooklyn, Manhattan, The Bronx and Staten Island—fifty or more.

In Chicago there will be about thirty Ford dealers, who will handle 10,000 Ford cars during the coming year. None of them will be allowed more than 500, and the minimum, according to the plan, will be ten.

In St. Louis, nine new agencies are to be formed, making ten, including the Johnson Auto Co., the original Ford retailer. Several of these agencies have held openings, served lunch and entertained the public.

While additional appointments may be made, there are already in Milwaukee ten and in the suburbs two. In Wisconsin and upper Michigan the business in the immedate future will be handled by 254 dealers, of whom 238 are in Wisconsin and sixteen in upper Michigan. Many of these have been handling the Ford. The branch had thirty salesmen, most of whom have already made new connections.

In Louisville, Ky., four dealers have already been appointed, and in Lowell, Mass., the agency has been given up by Stephen L. Rochette of the Lowell Motor Mart and has been taken over by Harry Pitts of the Pitts Auto Supply Co.

In Connecticut the number of dealers has been increased from twenty-two to thirty-eight. The Elmer Automobile Co. has controlled the territory and states that it plans to operate much as in the past. It has headquarters in Hartford, with branches in Manchester, New Britain, Willimantic, Torrington and Winsted. John M. Butler, manager of the Elmer company, said he expected to dispose of 28,000 cars during the next 12 months. Dealers who heretofore have had more than one town, will concentrate on one town, which means an increase of 73 per cent in the number of dealers.

It is stated that in Columbus, Ohio, the Ford branch has, where possible, given preference to its former sales force. In fact, outside of one dealer, who formerly handled the county, every Ford agency in Columbus will be controlled by former Ford salesmen. There will be eight in all in the city and quite a few in the county, although it is said that most of the country dealers will be unchanged.

Ten of the fourteen Philadelphia salesmen have left the branch to open agencies.

Conditions similar to these exist throughout the United States, and while the unrestricted territory plan will vitally affect some dealers and distributers, there are instances in which the actual operation of the plan will be less revolutionary than its theory indicates. This belief seems to hold true among dealers especially with regard to country districts.

SOME OF THE NEW FORD AGENCIES

St. Louis

Johnson Automobile Co., 3667 Olive Street.
Mendenhall & Sievers, 2315 Locust Street.
Ayres Auto Co., 1045 Grand Avenue.
Ollie Haupt Motor Car Co., 4125 Olive Street.
Bilgere-Kavanaugh Automobile Co., 2820 North Grand Avenue.
Walsh Motor Car Co., 4718 Delmar Avenue.
C. H. Tevis, 3900 Washington Avenue.
Lawwell & McLeich Co., 241 North Fourth Street.
Walker-Hornbeck Co., High and Poplar Streets.
H. J. Reichenbach, Eighteenth and Main Streets.
Carroll-Ford-Edgar Co., Long and Hamilton Streets.
Miller & Howe, Fourth and Mound Streets.
Norval T. Foster, High and Northwood Streets.
Jacob Renner, 1158 West Broad Street.

Louisville

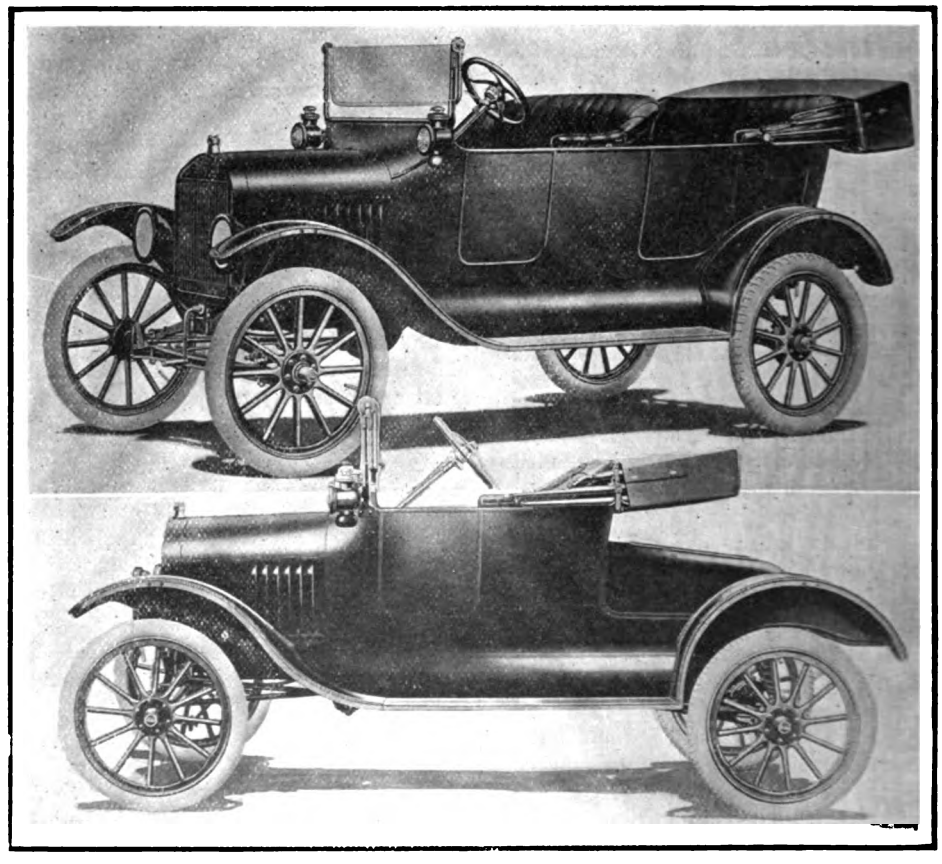
Louisville Motors Co., Jackson and Broadway.
Browder & Hoskins, 828 South Third Street.
Roy E. Warner Co., 928 South Third Street.
Broadway Motor Sales Co., 1012 East Broadway.

Milwaukee

Northwestern Motor Co., Twenty-ninth Street and Fond du Lac Avenue.
E. A. Sorenson, 720 National Avenue.
P. E. Christianson, 1197 National Avenue.
Soerns & Holtz, 100 North Avenue.
Universal Auto Co., 963 Eighth Avenue.
Holmes & Co.
Auto Mart.
Lando L. Albert.
John Wisniewski & Son.

County of Milwaukee

L. F. Scheife, Silver Spring Road, Whitefish Bay, Wis.
Diedrich Bros., Wauwatosa, Wis., and 235 Wisconsin Street, Milwaukee.



THE NEW FORDS. The visible change is in crowned fenders, new hood and new radiator, but these alterations make the car look little like the former Model T

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Resta Wins for Fifth Time on Chicago Track

Wins $5,000 and Gold Cup, Making $51,000 the Speed Man Has Earned on the Board Oval

The Finish Times

Car and Driver	Time	Speed	Prize
Puegeot, Resta	29:52.49	100.42	$5,000*
Hoskins, Lewis	29:56.77	100.19	2,500
Duesenberg, Buzane	30:40.37	97.82	1,250
Sunbeam, Galvin	31:27.89	95.39	750
Duesenberg, D'Alene	32:03.41	93.58	500

*Also gold cup.

Resta's Record on Chicago Speedway

Date	Distance	Time	Speed	Prize
June 26, 1915	500	5:07:26.00	97.58	$23,000
Aug. 7, 1915	100	58:42.20	101.86	5,000
June 11, 1916	300	3:02:31.64	98.61	13,000
June 18, 1916	84	50:31.20*	97.82*	5,000
Aug. 19, 1916	70	41:35.09†	101.01†	5,000

*Total time for three heats and average speed.

†Total time for two heats and average speed.

CHICAGO SPEEDWAY, Aug. 19—With the same assurance that has marked his driving in every professional race on the local speedway, Dario Resta drove his Puegeot to victory again to-day, this time winning the 50-mile American Speedway Grand Prix.

He drove against a field that he apparently did not fear and after taking the first heat of 20 miles in 11 min., 42.6 sec., he went into the 50-mile final and won easily in 29 min., 52.49 sec., or an even hundred miles per hour. In all, he drove 70 miles in 41 min., 35.09 sec., at an average speed of 101.01 m.p.h., pulling down the big end of the $10,000 prize money—$5,000—at the rate of $71.43 a mile.

There is a certain sense of security that is bred of experience, and if this is applicable to racing, then Resta's previous record on the Chicago speedway may account for the assurance with which he drove to-day. With to-day's win he has chalked up five victories in as many starts on the local board oval; in fact, he has been winner in every race held here with one exception—an amateur drivers' event. In all, he has driven 1054 miles on the Chicago track in competition and for this has taken down $51,000 in cash prizes as well as four trophies.

The winners of the heats, their times and speeds follow:

First—Resta	11:42.60	102
Second—Galvin	11:37.72	103
Third—Lewis	12:07.30	99
Fourth—Buzane	12:27.68	96.5
Fifth—D'Alene	Ran one lap.	

As an added feature, the two Packards that were scheduled to start in the race but which were withdrawn 2 days ago, were put on for a 10-mile exhibition, with Ralph de Palma driving one and W. Rader, one of the Packard engineering corps, the other. De Palma brought his car across the finish line somewhat in advance of Rader, Ralph's time being:

		Speed, m.p.h.
2 miles	1:16.70	94
4 miles	2:23.70	107
6 miles	3:30.35	108
8 miles	4:36.00	110
10 miles	5:43.50	107

Average—105 m.p.h.

In his qualifying trial Resta set the official course record of 113.5 m.p.h., a fraction better than Barney Oldfield did this summer with his front-drive Christie.

The crowd was not large and it is doubtful if a profit will show after prize money and the expenses of administration of the race are paid.

King Running For Two Weeks

WASHINGTON, D. C., Aug. 19—An eight-cylinder King touring car is making a 2-weeks' non-stop run on the boulevard between this city and Baltimore. The start was made at noon Aug. 12, from the plaza fronting the United States capitol, and at the conclusion of the first 168 hours' run had a mileage of 3515 miles. The gasoline consumption has averaged 12.126 miles to the gallon. Edelen Bros. of this city and J. Stewart Smith of Baltimore are promoting the run.

King Goes 616 Miles In Actual Tour Test

Sends Car From Pittsburgh to Milwaukee to Show Sample of Owner Performance

CHICAGO, Aug. 21—In order to demonstrate the performance of the King eight under actual touring conditions, the King Motor Car Co. has just completed a tour economy run from Pittsburgh to Milwaukee. The run was under A. A. A. supervision.

The distance is 616.4 miles and the car averaged 14.658 miles to the gallon of gas and 962.4 miles to the gallon of oil. The run was in charge of F. E. Edwards, of the Technical Committee of the American Automobile Association, with H. A. Tarantous of New York as observer. The car left Pittsburgh at 8 a. m., Aug. 14, and arrived at Milwaukee 3.41 p. m., Aug. 15, averaging 19.44 m.p.h., including stops, and 22.67 m.p.h., excluding stops.

Controls to take on fuel had been selected in advance and the gasoline used was obtained from stations at these controls. The car was a regular stock, seven-passenger touring model. The car with baggage and five passengers weighed 4250 lb.

A Boyce motor-meter and a spot-light were the only equipment carried that is not regular.

How Gasoline Was Measured on the King 8 Test



F. E. Edwards, A. A. A. official, holding graduate and note book; T. P. Chase, chief engineer for King, holding certified gallon measure and funnel. Every gallon was measured in this copper can, being filtered through filler. In case gasoline was left in copper gallon can it was then measured in graduate, and it was possible to obtain the fractions down to an ounce. Every notation of fuel, work done, time of arrival and departure in all cities passed through or stops made was recorded

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Gasoline Continues to Decline in Price

Falls Cent to Two Cents All Over Country—Trade Feels Further Drop Is Coming

NEW YORK, Aug. 22—Gasoline continues to drop in price. No universally satisfactory reason has been given, although many authorities say the decline is due to the digging of new wells.

A belief prevails in certain quarters that the price will reach 20 cents a gallon in nearly every section of the country within 2 weeks. The price has been falling steadily the past week throughout the Middle West and Far West from Chicago to Denver.

In most cases, the Standard Oil Co. is in competition with independents and either one leads in the cutting. Nearly all the reductions are a cent, although in a few instances they have been 2 cents. Reductions in the East have not been so high as in the West. Some of the prices follow:

Chicago and Des Moines, 17½.
St. Louis, 16.9 to 17.9.
Rocky Mountain section, 22.
Columbus, Ohio, 22.
Milwaukee, 17.6, 18.6.
Buffalo, 23.
Albany, 25.
New York, 25.
Louisville, 20.
Pittsburgh, 22, 23.
Detroit, 18.

The Texas Co. to-day made reductions of 1 cent, tank-wagon basis, to meet competitors in the following territories, where the prices are:

Illinois, 17½.
Minnesota, 18½.
Missouri, 16.9 and 17½.
Florida, 22, 23½.
Georgia, 22, 25.
Louisiana, 18½ and 20½.
Mississippi, 20½, 22½.
Alabama, 22½, 26.
Ohio, 21.

Entries In For Cleveland Show

CLEVELAND, Aug. 19—The following companies will have exhibits at the exposition and fair to be given by the Cleveland Chamber of Industry at Edgewater Park, Sept. 2 to 9, inclusive:

Loveland Co., Saxon; Cuyahoga Sales Co., Chandler; Safe Motor Sales Co., Federal and Vim trucks; Jackson Sales Co., Jackson; Euclid Motor Co., Paige; Main Auto Sales Co., Grant; Ford Motor Co.; Forest City Garage Co., Inter-State and Paterson; Lucas & Christianson, Mitchell; Packard-Cleveland Motor Co., Packard; Peerless Motor Co.; Cleveland-Cadillac Co., Cadillac; Winton Co., Central Auto Co., Ford; National Garage Co., G. M. C. truck; Ohio Auto Sales Co., Oakland and Detroiter.

Among those exhibiting accessories are Brown Spring Oiler Co., Equalizer Mfg. Co., Kelley-Springfield Tire Co., Fen Far Co., Globe Machine & Stamping Co., American Ball Bearing Co., Cleveland Automobile School, M. & M. Co., National Carbon Co., Pull-U-Out Co., Smith Form-A-Truck Co., Lubric Oil Co., Banner Tire & Supply Co., Presto-Cloth Mfg. Co. and Willard Storage Battery Co.

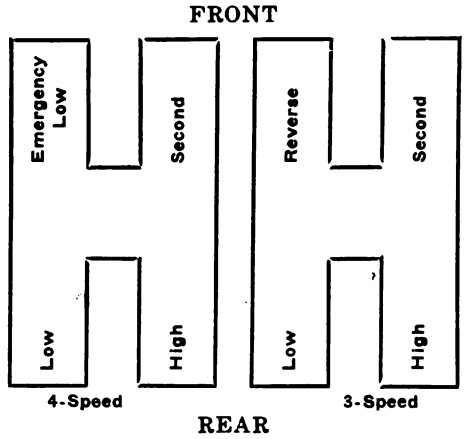
Judge Gets Own Evidence

BOSTON, Aug. 19—The first judicial decision on the headlight law, where a judge went out for himself and made an inspection of a device, was rendered in the Boston courts yesterday, when Judge John Perrins, Jr., stated that the Warner Lenz complied with the Massachusetts law. The importance of the decision lies in the fact that a judge has really passed upon the matter after a demonstration. Heretofore the judges sat in court and heard policemen say a light dazzled even if it had a device on it, and the officer's word was accepted and the motorist fined or his case filed.

Is In Easy-Riding Business

KANSAS CITY, Aug. 19—Making cars—particularly Fords—ride easier, is the business of Rice's Motor Shop, Kansas City. This company has built up quite a business graphiting and taping the springs of Fords. The leaves are first separated and cleaned and then a coating of Gredag is spread between them. The spring is then tightly wrapped all over in ordinary tire tape to keep the lubricant in place and prevent the ingress of dirt. It generally requires about 4 hr. to do two springs on a Ford and the charge to the owner is $3. The springs of larger cars also are treated at from $3 to $4 for two springs, according to the size of the car.

Recommends Same Gearshift for All Trucks



The above illustration of a gearshift quadrant shows a recommended form of standard track gearshift positions that would make a driver at home on any truck. The recommendation is made by the Truck Standards Division of the S. A. E. Standards Committee. On the 4-speed the location of the reverse is left optional; the main idea has been to get high, second and low in the same relative positions.

Abbott Car Factory to Go to Cleveland

Consolidated Car Co. Raises Capital and Becomes Abbott Corp. and Will Leave Detroit

DETROIT, Aug. 21—The Consolidated Car Co., manufacturer of the Abbott-Detroit, has been reincorporated as the Abbott Corp., and the capital stock has been increased from $500,000 to $1,250,000. The larger stockholders in the concern are F. C. Hull and A. W. Gardiner of this city, and F. C. Hull of Toledo. It has been definitely decided to remove the business of the Abbott Corporation to Cleveland, where a factory has already been secured with facilities for increasing production over the 15 to 20-car-a-day output possible in the present factory. Difficulties in getting materials and the labor situation here are given as two reasons for the change, although Messrs. Gardiner and Hull have material financial interests in Cleveland, according to M. J. Hammers, vice-president, and this move will, therefore, serve to group the holdings of those principally interested and provide the best of financial and commercial support for the Abbott concern. The personnel of the company will remain the same, with the exception that an executive officer will be appointed to succeed C. L. Lewis, who recently retired from the presidency to become affiliated with the General Engineering Co.

Sounds Reasonable

DALLAS, Aug. 19—J. W. Frawley, head of the Frawley Motor Co., Reo and Ford distributer, tells it on Roger Stewart. Stewart hints that "Bill"—who is Frawley—was the man who did the trick.

The story goes that in a certain Texas town there was a certain very sandy hill. This hill was the bane of all salesmen, and prospective purchasers had a habit of demanding that the car they were figuring on pull the hill in high. No car ever has done it yet.

Stewart, so Frawley says, got hold of a prospect who made such a demand. He had made the similar request of other salesmen and they hadn't closed a deal with the would-be buyer.

"I want to buy a car," he told Stewart, "but I want a test first."

"All right, sir," suavely responded Stewart; "what shall it be?"

"Can you pull such and such a hill on high?" asked the would-be and skeptical purchaser.

"Why, man," said Stewart, with the greatest of confidence, "I can pull that hill backwards."

And he did, and the sale of the car was made.

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New England's System Seems to Be Changing

Distributers of Boston Are Reaching Out and Establishing Many Branches

BOSTON, MASS., Aug. 19—Will Boston eventually be the big distribution point for New England, with many of the men in the other cities managers instead of dealers? That is the question some of the dealers in the smaller cities will have to answer, judging by the trend of events where the big fellows are gradually absorbing the smaller ones.

Worcester is a good example of one such instance of the smaller giving way to the larger. Several of the dealers there have been absorbed by the Boston branch.

Alvan T. Fuller, who has the Packard, with headquarters at Boston, reached out and took over the Worcester territory. The Stanley company was another that reached out and took over the business there. So did the Metz, but it has decided to make a change again to an agency and is looking for one now. But the Henley-Kimball Co., Boston, took over the Hudson business here, and the Henshaw company slipped in and got the Worcester territory just at the time a deal was being closed to have it handled by an agent. Studebaker reached out and added Worcester under Boston jurisdiction, and the Oldsmobile agency is said to be directed from the Hub.

Last week the Connell & McCone Co. of Boston, Overland distributers, took over the Overland-Winton Co. agency at Worcester, and the New England Jackson Co. at Boston directs the destiny of the Worcester man. The Buick agency comes under the Noyes-Buick Co. of Boston, New England wholesale agents, as does all the Buick agents, but it is supposedly a distinct agency. Some of the other dealers who have popular cars at Worcester are wondering if the handwriting is on the wall for them.

Another place that will very likely be added next is Providence. That city represents the entire Rhode Island territory and part of Connecticut and southern Massachusetts. Alvan T. Fuller directs the Packard affairs there through his subordinates. The Becker-Stutz Co. of Boston, that now includes Springfield in its territory, has gone into Providence. Some time ago the Peerless at the latter city was under Boston.

With that city dominated, the next place to be added would be Portland, Me., the city on the entrance to that State. Here, again, Fuller has anticipated others, for he has the Packard interests for that city. Some of the Boston dealers work in conjunction with their Maine dealers there, so that it would be an easy matter to take over a territory. Manchester, N. H., might be added, as it is the big city of that State, and again we have Fuller there with the Packard. The Boston Cadillac agency also controls that in Manchester.

Where the desirability for controlling these smaller places comes in is in the moving of used cars now taken in trade so freely. If an agent has three or four places, he can take some used car of a particular make, say, at Portland, knowing that he can get rid of it at Providence to some one, or at Worcester, and vice versa. In other words, he can keep moving his cars in a circle, and so get the greater margin of profit. It means some financiering, but as Fuller has made it a success others are now being innoculated with the idea since they have realized how great is the demand for their lines in the outside territories.

Why Marmon Seals Were Broken

INDIANAPOLIS, Aug. 18—The Nordyke & Marmon Co., one of whose cars recently made a record transcontinental run with A. A. A. seals attached to parts, states that the reason some seals were missing or broken was that they came in contact with the road and were torn away. A story last week in Motor World mentioned the breaking of the seals, but did not state why. Standard equipment wire wheels were used, and instead of changing tires complete wheels with tires were changed, which explains the disappearance of the seals that had been affixed to the wheels.

Draw For Milwaukee Show

MILWAUKEE, Aug. 19—Forty Milwaukee car and truck agencies have been granted space for the State Fair motor show to be conducted under the auspices of the Milwaukee Automobile Dealers, Inc., in Machinery Hall, at State Fair Park, West Allis, Milwaukee County, during the week of Sept. 11.

Drawing for space took place at the regular August meeting at the Milwaukee Automobile Club. At this time the by-laws were amended to the effect that local manufacturers of either pleasure cars or trucks who have retail sales departments may become members of the M. A. D. As a consequence, the Stegeman Motor Car Co. and Sterling Motor Truck Co., both of Milwaukee, have been elected to membership. Four new retail agencies also were admitted to membership as, follows:

Saxon-Reynolds Co., 124 Mason Street, Saxon; Stephens-Adams Motor Sales Co., 495 Broadway, Case; Olson & Pauly Automobile Co., 441 Jackson Street, Ross 8; Rademacher & Jaeger, 2405 Vliet Street, Paterson.

Service to be Fixed by Each Ford Dealer

And No Dealer Can Get More Than 500 Cars—Ford to Give No Service at All

DETROIT, Aug. 22—Supplementing the exclusive publication in last week's issue of the details of the new Ford selling plan, which is revolutionary in the automobile industry, complete information as to the workings of the new method of marketing Fords has now been secured.

The plan is really very simple in its workings, and requires only that the prospective dealer have financial responsibility and a garage at which he can take care of service for the car. The dealer can interpret the word service in any way he sees fit. Possibly Ford will continue to give service for some months yet at the various branches and assembly plants throughout the country, but when a man comes for service he will be told that that time is the last from the Ford company direct.

The number of cars that a dealer may secure for the year is based upon an estimate of his possibilities of selling them, and the maximum allotment that any dealer can get is 500 cars. The reason for this limiting of the number is obviously to prevent any strong dealers from monopolizing the retail selling to the detriment of the less strong ones. There is a regular discount per car, and if the dealer meets the estimated number of cars he has arranged for per month he will get a bonus on each car at the end of the fiscal year. If, for instance, a dealer contracts for twenty-five cars a month for the year and takes this number, his discount per car is increased by a bonus payment.

The number of agencies in any city or locality will be based upon the population and experience in that locality. In Detroit the maximum number is to be twenty-five agencies, and this will vary for other points. Already some eighteen dealers are either selling or getting ready to take contracts.

The contract limits the dealers to selling cars in Detroit, Highland Park and Grosse Point, which are really all a part of Greater Detroit. Thus, in any locality the dealers will have to confine themselves to certain selling fields as per their contracts. Dealers must do their own advertising.

This is all there is to the plan. Ford salesmen and other branch men affected by the change will be taken care of by the factory in the event they elect to stay with the Ford company.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

H. B. McMaster, general manager of branches of the Berger Mfg. Co., Canton, Ohio, has resigned to become vice-president and general manager of the Gordon Tire & Rubber Co., Canton, Ohio.

H. T. Boulden has resigned as sales and advertising manager of the Chase Motor Truck Co., Syracuse, effective Sept. 1, to become sales director of the Selden Truck Sales Co., Rochester, N. Y. He will be succeeded in the Chase organization by S. E. Blackley, who has been Boulden's assistant. R. H. Salmons will continue as secretary of the Selden organization.

Theodore F. MacManus will leave the Erwin & Wasey Co., advertising company, Aug. 31, and as Theodore F. MacManus, Inc., will handle the advertising of the Cadillac, Dodge Bros. and Hupp companies. His offices will be in the Kresge Building, Detroit.

F. A. Wager has been appointed sales and advertising manager of the Michigan Auto Trailer Co., Detroit, builder of light and heavy duty trailers for cars and trucks. Wager left a similar position with the Swinehart Tire & Rubber Co., Akron, Ohio, and was formerly assistant sales manager for the Regal Motor Car Co., Detroit.

L. Trevor Hudson, vice-president and wholesale manager for the Hudson-Phillips Motor Car Co. of St. Louis, has left that company to become general sales agent of the Memphis-Overland Co., at Memphis, Tenn.

D. P. Edwards has resigned as comptroller of the Olds Motor Works to become connected with the Gier Pressed Steel Co., Lansing.

Don S. Devor, formerly assistant factory manager of the Olds Motor Works, has been made production manager.

John Scott, formerly superintendent of final assembly, has been made factory manager of the Olds Motor Works.

Lewis M. Browne has been placed in charge of the Northwest sales division of the Anderson Electric Car Co., Detroit, with headquarters in Minneapolis. Previously he was connected with the Eastern sales division.

N. E. Wahlberg, chief engineer of the Oakland Motor Car Co., has resigned to take a similar position with the Nash Motors Co., Kenosha.

D. T. Hastings has become the engineer for the Empire Automobile Co., Indianapolis. Formerly he was a member of the engineering staff of the General Motors Co.

S. B. Howard, formerly Eastern and Foreign representative of the General Motors Co., has been appointed New England sales manager of the Denneen Motor Co., Cleveland. Edward P. Strang, formerly with the Kirk-Latty Mfg. Co., Cleveland, has been made Middle Western sales manager.

J. M. Barker has joined the sales force of the Kentucky Wagon Mfg. Co., Louisville, Ky. He will represent the Old Hickory truck in Alabama and Georgia. He formerly was connected with the I. H. C.

B. D. Zimmerman, president of the Overland Sales Co., Chicago, has acquired an interest in the Milwaukee Auto Engine & Supply Co., Milwaukee, and has been elected its secretary and treasurer. He will assume his new duties in the near future.

Lloyd P. Jones has been made sales manager for the Federal Brass Works, Detroit. For the past 5 years he has been connected with the American Bronze Co., as manager of its Western office since 1913.

L. G. Dodge has resigned as general sales manager of the Houk Mfg. Co., Buffalo, to take effect Sept. 1.

Edward King, for several years manager of the B. F. Goodrich Co.'s Boston office, has been promoted to the administration force at the factory. O. E. Hoeger, for several years St. Louis manager, has been transferred to Boston. C. E. Littlefield, who had charge of advertising and publicity in Boston, has been promoted to the factory advertising department. King was presented with a watch by his associates.

Men Scarce in Ohio

COLUMBUS, OHIO, Aug. 19—F. T. Price, president of the Ohio Automobile Trade Association, is in receipt of dozens of letters from garage owners and managers of repairshops, asking for mechanics. It is almost impossible to get mechanics in many places in Ohio. One of the reasons for this state of affairs is the mobilization of the Ohio militia, which took away many mechanics.

Another Rap At "League" Bidwell

BUFFALO, N. Y., Aug. 19—A fraud order has been issued by the Post Office Department at Washington against the Buffalo Automobile Supply Co., 2966 Main Street, Buffalo. This is the third fraud order of a series against companies with which A. C. Bidwell is alleged to be associated.

The first was directed against the International Automobile League, Inc.; the International Automobile League Tire Co., and A. C. Bidwell, president of both concerns. The second was against the Robert J. Connelly Co., alleged to have been organized to continue the business against which fraud orders had already been issued.

Inspector William A. Golden claims that the Buffalo Automobile Supply Co. was started as a part of the plan to carry on the business fostered by Bidwell as president of the original companies.

Can You Help Him?

Editor Motor World:

If you know of any list of standard prices for certain classes of repair work, kindly tell us where we can get them.

W. W. Taylor.

722 Marshall Street, Shreveport, La.

Forbids Use of Trailer

MILWAUKEE, Aug. 19—The City Council of Escanaba, Mich., has passed an ordinance prohibiting the use of trailers on motor trucks. The same law fixes the maximum speed of motor trucks at 8 miles an hour and the maximum load of any vehicle at 8000 lb.

Capt. Lewis Pays Up Every Cent of Debts

Creditors of L. P. C. Get 100 Per Cent Although 76.3 per Cent Is Paid By Lewis Himself

RACINE, WIS., Aug. 19—Capt. William Mitchell Lewis, former president of the Mitchell-Lewis Motor Co. and later the moving spirit in the L. P. C. Motor Co., Racine, Wis., has fulfilled his promise to creditors of the L. P. C. company that all claims would be paid at 100 per cent of value, regardless of the amount accruing from the sale of assets of the company.

The L. P. C. Motor Co. made a voluntary assignment 11 months ago. At that time, Capt. Lewis gave creditors his personal pledge that none would lose even a penny in the transaction. On Aug. 16, last Wednesday, the assignee, F. Lee Norton, filed in Circuit Court his report of receipts and disbursements, amounting to $102,000. It was stated that preferred creditors were paid in full some months ago, and checks were mailed to other creditors on Aug. 15 for 100 per cent of their claims, although the sale of assets gave general creditors only 23.7 per cent of claims. The referee states that Capt. Lewis gave him his personal check to make up the balance, amounting to 76.3 per cent, thus making it possible to liquidate every cent of the indebtedness.

The Lewis family recently disposed of its holdings in the Mitchell-Lewis Motor Co. to the Mitchell Motors Co.

Widen the St. Louis Row

ST. LOUIS, Aug. 19—After months of patient and persistent effort by the motor car dealers, the city has begun widening Locust Street by 6 ft. This thoroughfare is almost entirely given over to automobile and accessory dealers. The curb will be set back 3 ft. on each side of the street. The first work has been undertaken by the City Forestry Department in cutting down the trees within the 3-ft. limit. These men work from midnight until 8 a. m., so that the work will not impede traffic. The dealers are disappointed in that the work will not be completed in time for the October "open week." So that the street may be kept open, only half of the street will be surfaced at a time.

To Sell Twin City Speedway

ST. PAUL, Aug. 21—The Twin City speedway will be sold in portions, according to demand, as nobody seems to want to buy the equity. P. W. Herzog is receiver.

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Gasoline Still Being Probed By Uncle Sam

Trade Commission Has Not Dropped Its Inquiry Into Charge of Price Manipulation

WASHINGTON, D. C., Aug. 19—The Federal Trade Commission met again to-day to consider the gasoline phase of its oil investigation that has been in progress for several months. It announced that the report on gasoline would be issued shortly, but those in close touch with the commission say the report will not be submitted before the adjournment of Congress.

That the commission was co-operating closely with the Department of Justice also was learned. When the investigation was first inaugurated, such co-operation was planned; any specific complaints in regard to gasoline prices were to be turned over to the trade commission and anything of intrest to the Department of Justice was to be called to their attention.

G. C. Todd, assitant attorney general in charge of anti-trust prosecutions, met with the commission to-day and listened to some of the information it has collected to report to Congress on the causes for the rise in the price of gasoline. The Department of Justice has kept an eye on the companies into which the old Standard Oil Co. was dissolved under the Supreme Court decree several years ago, but never has discovered evidence to show that decree has been violated.

Todd declined to discuss the value of the evidence collected by the trade commission, but it was understood that so far the Department of Justice had not determined whether there was new information in Government hands to warrant proceedings.

It is understood the commission's report, insofar as it has been completed, deals at length with price differences in cities where the Standard company has competition and where it has none. Distribution also plays a large part in the price determination and is analyzed in the report.

Indians Are Buying Cars

OKLAHOMA CITY, Aug. 21—Many sales of cars are being made to the Indians in this section. According to an estimate made by an Oklahoma automobile man, more than $4,500,000 will be spent for cars here within the next 30 days.

This represents half the sum that will be paid to the members of the Choctaw and Chickasaw tribes of Indians by the Federal Government. Thousands of orders have already been placed and the dealers are stocking up, expecting a big business.

Most of the cars have been bought on the time-payment plan. Each Indian has received enough money to make the initial payment on any of the low-priced cars, and has contracted to pay the remainder by the month.

Redden Enlarging

DETROIT, Aug. 21—The Redden Motor Truck Co. has recapitalized at $500,000 in order to expand its business. It manufactures an attachment for making a Ford into a 1-ton truck.

Torbenson Adds To Factory

CLEVELAND, Aug. 21—The Torbenson Gear & Axle Co. has purchased the three factory buildings of the Samuel Austin Co., 152nd Street and Nickel Plate Railroad, which it will use as its own factory, with the addition of another building. The site contains 4½ acres.

Brown Takes Lubricating Bolt

SYRACUSE, N. Y., Aug. 21—The Brown Co., this city, has taken an exclusive license to manufacture the automatic lubricating bolt recently patented by David Landau, New York, and H. G. Farr, Springfield, Mass. The lubrication is from a main reservoir wick of felt that is positively attached to a threaded cap plug with feed wicks.

Building National Addition

INDIANAPOLIS, Aug. 21—Work has been begun on the new $150,000 addition to the National Motor Vehicle Co.'s factory. It will be completed Nov. 9. The building is 380 x 60 and three stories. Another new building will be 328 x 140 and one story. They will extend the plant over half of the block adjoining the complete city block now occupied by the factory.

McClurg to Reorganize

COSHOCTON, OHIO, Aug. 19—Prior to a reorganization of the McClurg Tire & Rubber Co., a receivership has been asked by J. S. McClurg, L. C. McCurday and Dr. Jesse McClain. The plaintiffs are sureties on notes aggregating $17,500.

Westgard to Build Plant

WARREN, OHIO, Aug. 19—The Westgard Tire & Rubber Co., capitalized at $1,500,000, will erect a plant on a tract of land containing 4½ acres northeast of this place. It is said that the capacity of the plant at first will be about 400 tires per day and at least 200 men will be employed. The officers are: President, A. L. Westgard; vice-president and general manager. A. E. Gordon; treasurer, F. A. Vallbrecht. The directors are nearly all New York men.

Kissel Needs More Room

HARTFORD, WIS., Aug. 19—Approximately 14,000 ft. of floor will be added to the plant of the Kissel Motor Car Co. at once. Contracts have been let for sheet metal and body building additions, 77 x 123 and 40 x 100.

Herschell-Spillman Enlarging

NORTH TONAWANDA, N. Y., Aug. 21—The Herschell-Spillman Co. is building an addition to its already large motor manufacturing plant.

Factory News of the Week

54,700 Chevrolets During Year

NEW YORK, Aug. 21—The Chevrolet Motor Co. during the year ended July 31 turned out 54,700 cars, including the output of the Canadian factory, thereby entering the list of the seven largest producers in the country.

The company will turn out about 10,000 cars this month, and plans 100,000 to 125,000 cars for next year.

Phianna Car Now on Market

NEWARK, N. J., Aug. 21—Another high-priced car will soon make its appearance in the East. This is the Phianna, which will be built in special body designs for town car use and will sell for $6,000.

The Phianna car is made by the Phianna Motor Co., Newark, N. J., capitalized at $500,000, all paid in. This company has just started manufacturing and will turn out 200 cars of special body work during the first year. The car is not an assembled product and all parts will be made at the factory. The chassis sells at $3,600, and with the coupe or closed body at $6,000. T. M. Pepperday, former Simplex agent in Pittsburgh, is president.

The car has 62-in. cantilever springs and a four-cylinder 3⅞ x 6-in. motor. The wheelbase is 125 in.

Denneen to Add ½-Ton Truck

CLEVELAND, Aug. 19—The Denneen Motor Co. will soon be on the market with a motor truck of about 1000 lb. capacity. It will sell for from $750 to $800 equipped and including a body. Only recently this company announced a 1¼-ton truck, the first of several models they will put on the market.

U. S. Truck Recapitalizes

CINCINNATI, Aug. 19—The United States Motor Truck Co. has voted to increase the capital stock from $300,000 to $1,000,000 and has declared the regular annual dividend of 7 per cent on the preferred. Quite a large sum was placed to the credit of surplus. Sales and production increased greatly during the past 6 months.

The company was established 7 years ago with small capital, and in 1914 was reorganized and the capital stock increased to $300,000, with R. C. Stewart as president.

Buildings Going Up In Trenton

TRENTON, N. J., Aug. 21—The Thermoid Rubber Co. has under way construction work designed to double the capacity of the plant. The Mercer Automobile Co. is erecting buildings which will add nearly 100 per cent to its present facilities. In addition to extensions made during the last year, the Ajax Rubber Co. has started work on a four-story steel and brick addition.

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Overland Gets Broadway Home

NEW YORK, Aug. 21—The Willys-Overland Co., which recently took control of its sales in this city by the establishment of temporary quarters on Columbus Circle, has leased the property at Broadway and West Fiftieth Street, belonging to the Wendell Estate. This building has remained vacant for 14 years. The Overland company will be the first tenant and will occupy the entire three floors and basement. The company has also opened a used-car department at 1700 Broadway, near Fifty-fourth Street.

1915 Biggest Petroleum Year

WASHINGTON, D. C., Aug. 19—That 1915 was the most successful year of production in the history of the petroleum industry is shown by statistics just compiled by the United States geological survey.

The total quantity of crude petroleum entering the world's markets in 1915, which amounted to 426,892,673 bbl., exceeds the former record, established in 1914, by 28,194,307 bbl., or 7 per cent. The bulk of the increase in 1915 came from the United States and Mexico, though Russia, Argentina and Japan recorded significant gains. The marketed production of crude petroleum in the United States in 1915 was 281,104,104 bbl. of 42 gal. each.

Lets City Select Plans

KANSAS CITY, Aug. 21 — The Sweeney Automobile School, which was already well known in this section, gained valuable publicity recently when it made the whole city and surrounding country a partner in the selection of designs for a new building.

It was possible to enlist public interest because the building is to stand on the Plaza at the new Union Station. This Plaza is surrounded by few buildings as yet and the whole city jealously watches the section in the hope that only buildings of a handsome architectural design will be erected there. The city wants to make the Plaza one of its show spots.

When the Sweeney school secured a site on this Plaza, it had four designs of building drawn up, each about ten stories high. It used page advertising in the newspapers, showing a map of the site and the four designs. In a corner of the ad was a coupon on which the public was invited to vote for the design it preferred to see upon the Plaza; 3100 answers were received and in addition many letters commending Emory J. Sweeney, owner of the school, upon his enterprise and public spirit. The total cost of the advertising was $900. The new school will cost about $250,000. It accommodates sometimes more than 1000 students.

Coming Events

General Events

Sept. 25.....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association. Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12.....Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Oct. 16.....Rockford, Ill., Convention Garage Owners Association of Illinois.

Feb. .....Convention Minnesota Retail Automobile Dealers Association.

Races, Contests and Tours

Aug. 26.....Kalamazoo, Mich.; 100-mile track race.

Aug. 28-Sept. 1...Milwaukee, Wis. Booster Tour of Milwaukee Automobile Dealers.

Sept. 1-2.....New York, N. Y.: Sheepshead Bay Speedway, 24-hour race, Trade Racing Assn.*

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. I., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica: Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Tractor Demonstrations

Aug. 21-25.....Bloomington, Ill.

Aug. 28-Sept. 1...Indianapolis.

Sept. 4-8.....Madison, Wis.

Shows

Aug. 28-Sept. 1...Des Moines, Iowa, show, State Fair.

Sept. 2-9.....Cleveland, Ohio. Show, Industrial Exposition and Fair, Edgewater Park.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 4-8.....Hartford, Conn., annual automobile and truck show, under the auspices of the Connecticut Fair Assn.

Sept. 4-11.....Indianapolis, Ind., show, Indiana State Fair, Indianapolis Automobile Trade Assn.

Sept. 11-16.....Milwaukee, Wis., Second Annual Fall Show, State Fair, Machinery Hall, Milwaukee Automobile Dealers, Inc.

Sept. 25-30.....Salem, Ore., Show, State Fair.

Oct. 14-31.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 9-10.....Fort Dodge, Iowa, Iowa Automobile Dealers Association.

Jan. 13-20.....Montreal, Can. Montreal Automobile Trade Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb .....St. Louis, Mo. Show, Automobile Manufacturers & Dealers Assn.

Feb. 3-10.....Minneapolis, Minn., Annual Show, Minneapolis Automobile Trade Assn.

Motor Car Securities Quotations

	Aug. 19, 1915 Bid	Aug. 19, 1915 Asked	Aug. 19, 1916 Bid	Aug. 19, 1916 Asked
Ajax Rubber Co. (new)	..	..	64⅞	66
J. I. Case T. M. Co., pfd.	70	79	84	87
Chalmers Motor Co., com.	89	92	170	178
Chalmers Motor Co., pfd.	94	97	95	101
*Chandler Motor Car Co.	..	..	104	105½
Chevrolet Motor Co.	..	..	202	206
Fisk Rubber Co., com.	..	..	110	150
Fisk Rubber Co., 1st pfd.	..	..	..	..
Fisk Rubber Co., 2d pfd.	..	..	..	..
Firestone Tire & Rubber Co., com.	518	525	915	930
Firestone Tire & Rubber Co., pfd.	111	..	112	114
*General Motors Co., com.	202	207½	580	590
*General Motors Co., pfd.	106	107	130	130½
*B. F. Goodrich Co., com.	55	57	73½	73
*B. F. Goodrich Co., pfd.	107	108	113⅝	114⅛
Goodyear Tire & Rubber, com.	271	275	235	239
Goodyear Tire & Rubber, pfd.	108½	110	106¾	107½
Grant Motor Car Co.	..	..	7½	8½
Hupp Motor Car Co., com.	..	..	6½	7
Hupp Motor Car Co., pfd.	..	..	80	110
International Motor Co., com.	23	25	6	8
International Motor Co., pfd.	50	52	15	20
*Kelly-Spgfld. T. & R. Co., com.	174	177	71¾	72⅝
*Kelly-Spgfld. T. & R. Co., 1st pfd.	85	87	96	97
*Lee Rubber & Tire Corp.	..	..	45½	46
*Maxwell Motor Co., com.	40	41	84¼	84½
*Maxwell Motor Co., 1st pfd.	86	87	86⅝	87
*Maxwell Motor Co., 2d pfd.	34	35	56⅝	57
Miller Rubber Co., com.	..	195	225	230
Miller Rubber Co., pfd.	107	107½	104	106
Packard Motor Car Co., com.	112	119	168	173
Packard Motor Car Co., pfd.	99	100½	99	103
Paige-Detroit Motor Car Co.	..	..	46	47
Peerless Truck & Motor Corp.	..	..	26	26½
Perlman Rim Corp.	..	..	..	..
Portage Rubber Co., com.	42	..	115	118
Portage Rubber Co., pfd.	92	94	115	118
Regal Motor Car Co., pfd.	..	..	17	22
†Reo Motor Truck Co.	17	18	35	37
†Reo Motor Car Co.	38½	34½	42½	44
Saxon Motor Car Co.	..	..	77½	78½
Standard Motor Co.	..	..	6	6½
Stewart-Warner Speed. Corp., com.	65½	67	104	104½
Stewart-Warner Speed. Corp., pfd.	105	107	..	..
*Studebaker Corp., com.	90	101	121	131⅛
*Studebaker Corp., pfd.	102	103	109	111
Swinehart Tire & Rubber Co.	85	90	100	105
United Motor Corp.	..	..	63¾	64⅛
*U. S. Rubber Co., com.	48½	50	58	58⅜
*U. S. Rubber Co., pfd.	104	105	110	111
White Motor Co. (new)	..	..	53½	54
*Willys-Overland Co., com.	169	171	551½	557½
*Willys-Overland Co., pfd.	105	106½	103⅜	104⅜

*At close Aug. 19, 1916—Listed N. Y. Stock Exchange.
†Par value $10.

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PROMINENT AND DOMINANT

National HIGHWAY

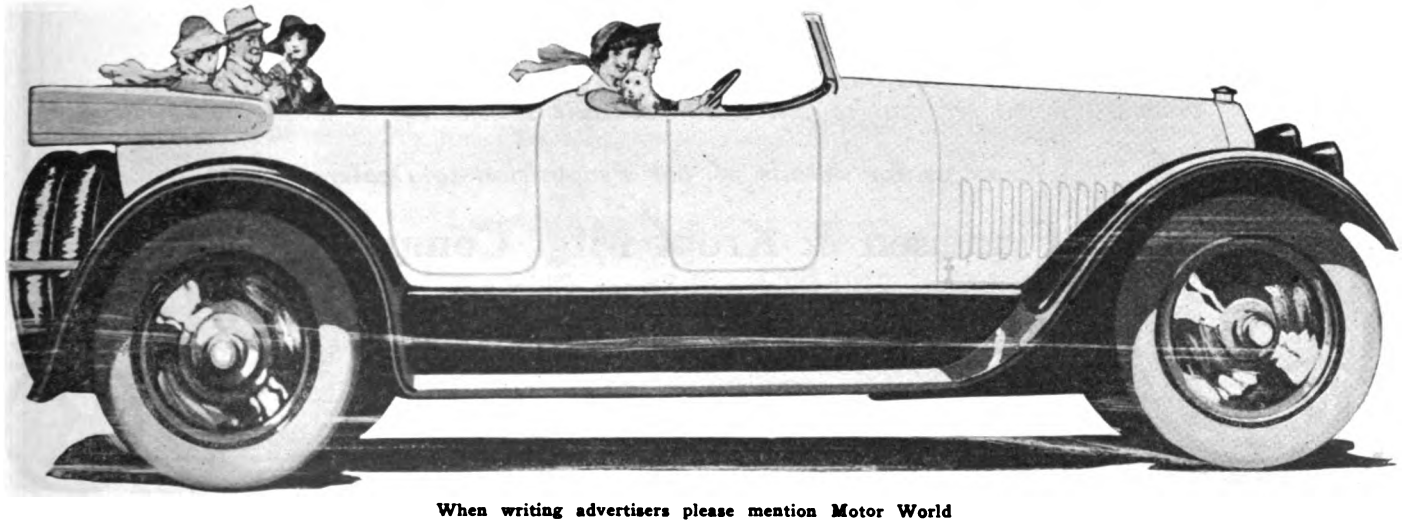
Highway *Six* $1750 Highway *Twelve* $2150

IN all automobile history there has been achieved no such success as the Twelve. National built Amerca's first Stock Sixes and maintains its rank in this field with the Highway Six. National was one of the Twelve pioneers. National Twelves are now in daily use in every state in the country.

Why not be associated with the very newest and most satisfactory type of car? Write us.

National Motor Vehicle Co., Indianapolis

Sixteen Successful Years

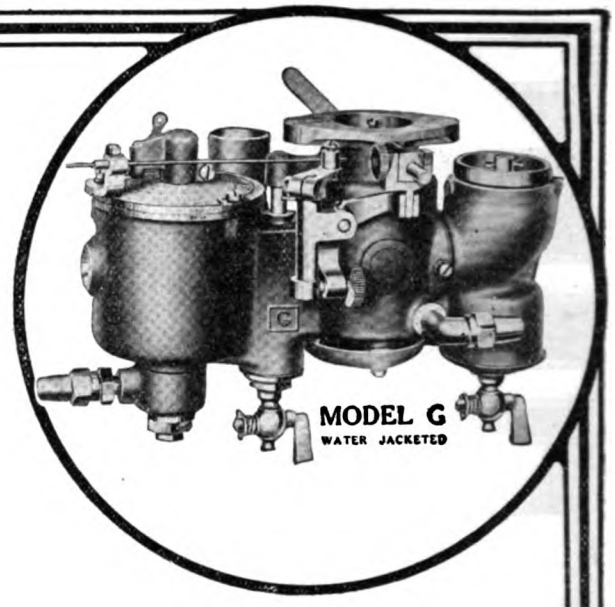


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In the recent 300-mile Non-Stop run of stock

Saxon Sixes

—the 206 cars that participated, aggregated 61,800 miles, and averaged 23.5 miles to the gallon of gasoline.



All these cars were equipped with

RAYFIELD CARBURETORS

In the Saturday Evening Post of August 5th, a double-page spread of the Saxon Motor Car Corporation announced the results of this now famous run.

Three paragraphs from the Post tell the story of this achievement:

"ON July 1st, 206 Saxon dealers in all parts of the country, ***driving stock model Saxon "Sixes,"*** staged a 300 mile ***non-stop*** run to prove the remarkable gasoline economy of "Saxon Six."

The total distance traveled was 61,800 miles—more than twice around the world—nearly 20 times across the continent. During the entire 61,800 miles not a single motor stopped running.

The winner averaged 34 2/3 miles per gallon of gasoline. The grand average for the 206 Saxon "Sixes" was ***23.5 miles*** per gallon."

We guarantee to dealers and car owners that the Rayfield will save from 20 to 50 per cent in fuel cost — absolute satisfaction or money back.

Write us for details of our Proposition to Dealers

Findeisen & Kropf Mfg. Company

2101 Rockwell Street, Chicago

BRANCHES:

1140 Michigan Avenue
CHICAGO

1902 Broadway
NEW YORK

1191 Woodward Avenue
DETROIT

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Not until this clock—



—is in their cars do the following leading manufacturers consider their cars "completely equipped":

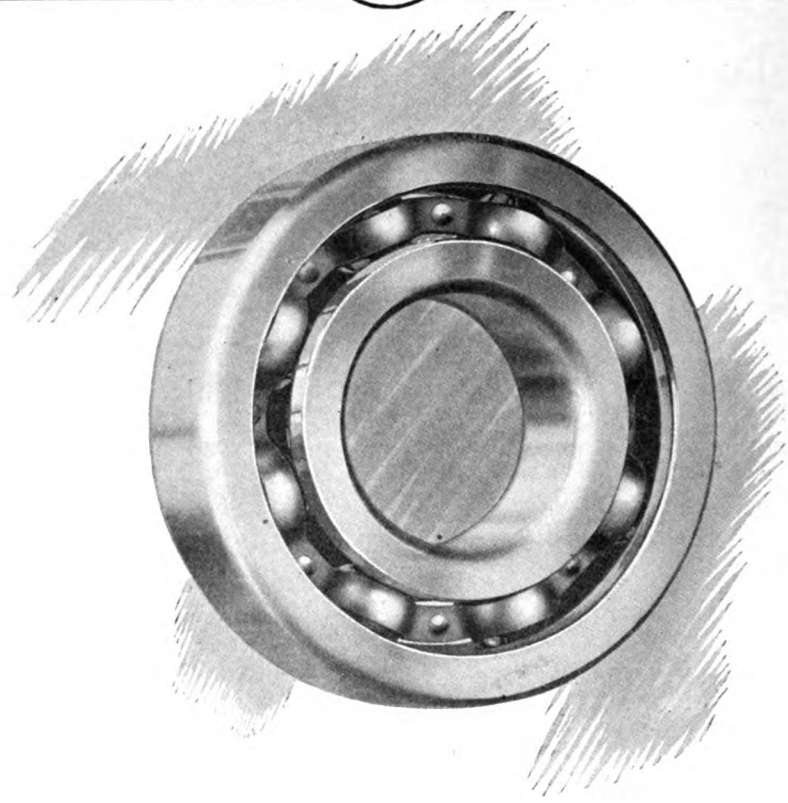
Brewster	Haynes	Pierce-Arrow
Cadillac	Locomobile	Rauch & Lang
Cole	Lozier	Rolls-Royce
Crane	Marmon	Simplex
Detroit-Electric	Owen Magnetic	Stearns
Franklin	Packard	Winton

The Waltham is more than "best." It is literally the ***only*** clock which is worthy to go into these cars, because it is the only clock which is made especially for automobiles and which tells the right time everywhere, every weather.

Is ***your*** car "completely equipped"?

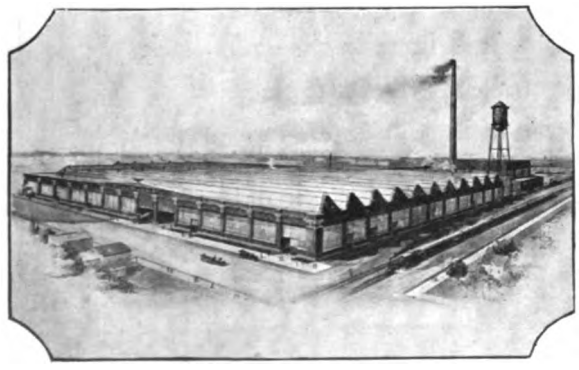
WALTHAM WATCH COMPANY, WALTHAM, MASS.

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U. S.

BALL BEARINGS



What We Mean by Balanced Bearings

It isn't so much the question of the number of balls in a ball bearing—

It isn't so much the thickness of the raceways which carry those bearings—

But rather the designing of the one part in relation to the other part, so that both perform to their fullest possibilities, within certain definite factors of safety.

The point we are making is that we might add two or three balls to our bearings and still have a weaker bearing than we have at present.

Conditions must be balanced.

U. S. BALL BEARINGS are balanced bearings because there are just the right number of balls to supply the correct capacity to the proper sized raceways. And it is this proper blending or balancing of the various components of U. S. BALL BEARINGS, combined with the high quality of materials and extreme care in production, that gives to U. S. BALL BEARINGS their extremely high ca rrying capacity

U. S. Ball Bearing Manufacturing Co.
(Conrad Patent Licensee)
Palmer St. and Kolmar Ave. Chicago

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GOOD MORNING, JUDGE!

Lights out—and you can't discover the trouble! You decide to take a chance of reaching the garage safely—but it can't be done. A motorcycle cop scorches up alongside of you. You try to explain, but excuses don't go. He hands you a summons and next day you appear in the police court and say—

"Good morning, Judge!"

It cost you a five spot. You pay up and, then you pay again to the garage man for locating the trouble.

You've lost time from business. You've lost your temper, and you've lost real money —all of which could have been prevented with

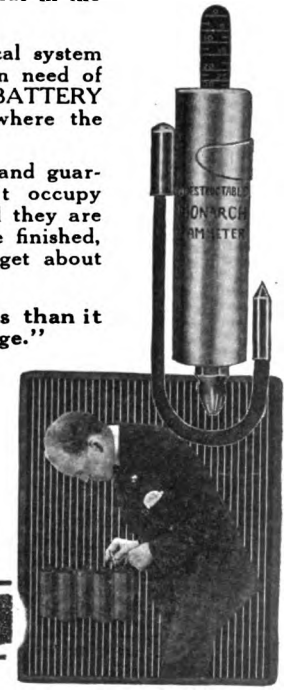
BENFORD'S INDESTRUCTIBLE BATTERY TESTERS

They're as useful to the car owner as the "Gold Dust Twins" are to the housewife. They're real trouble-finders. When your batteries go wrong; when your electrical system is out of order; or when you are in need of help, just call on BENFORD'S BATTERY TESTERS and they will tell you where the trouble exists.

They are accurate, indestructible and guaranteed for five years. They don't occupy much more room than a pencil, and they are just as easy to use. When you are finished, throw them in the tool-kit and forget about them until the next time.

The cost is small, too—much less than it costs to say, "Good-Morning, Judge."



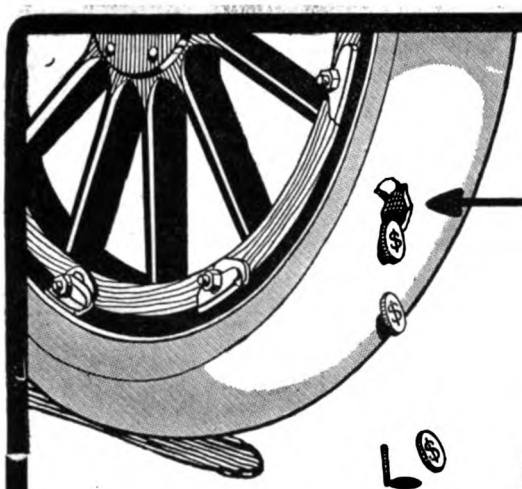


Storage Battery Tester, $1.50
Dry Battery Tester, $1.00

BENFORD MFG. CO.

MOUNT VERNON NEW YORK

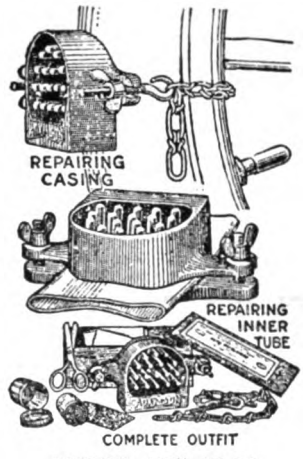
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Stop that Leak with an ADAMSON

AN "Adamson" Vulcanizer is the one indispensable motor car accessory that never comes with the car. It offers the surest, quickest method of making permanent tire repairs right at the time when they are needed most and at the lowest cost. Thousands of "Adamson" users are doubling their mileage, getting continuous use out of their cars and saving ninety per cent of their tire trouble and expense.

No steam or electricity is required with an "Adamson" Vulcanizer. It is absolutely automatic, does not require watching or regulating and cures the repair to the exact degree for perfect service.



MODEL "U" $3.00

"Adamson" Vulcanizers use common gasoline. They are so simple in principle and construction that anyone can operate them with no experience whatever. "Adamson" Vulcanizers are most reasonable in price—quickest and surest in operation.

DEALERS: **A million satisfied users boost the sale of "Adamson" Vulcanizers; continually send new customers to you. Hundreds of the most progressive and successful dealers rank "Adamson" Vulcanizers the quickest and easiest selling automobile accessories on the market.**

The big selling season is here. Give your "Adamson" Vulcanizers a good display right up in front where your customers can see them. Remember, a million new cars sold this year and every purchaser represents a red hot prospect for an "Adamson" Vulcanizer. Let your customers know that you handle "Adamson" Vulcanizers and a good share of this profitable, easy business is bound to come to you. Recommend "Adamson" Repair Gum for absolutely the best results on all repair jobs.

Write today for catalog and your copies of new booklet, "Repair and Care of Tires." It's free. Don't delay—write us at once.

Adamson Manufacturing Co.

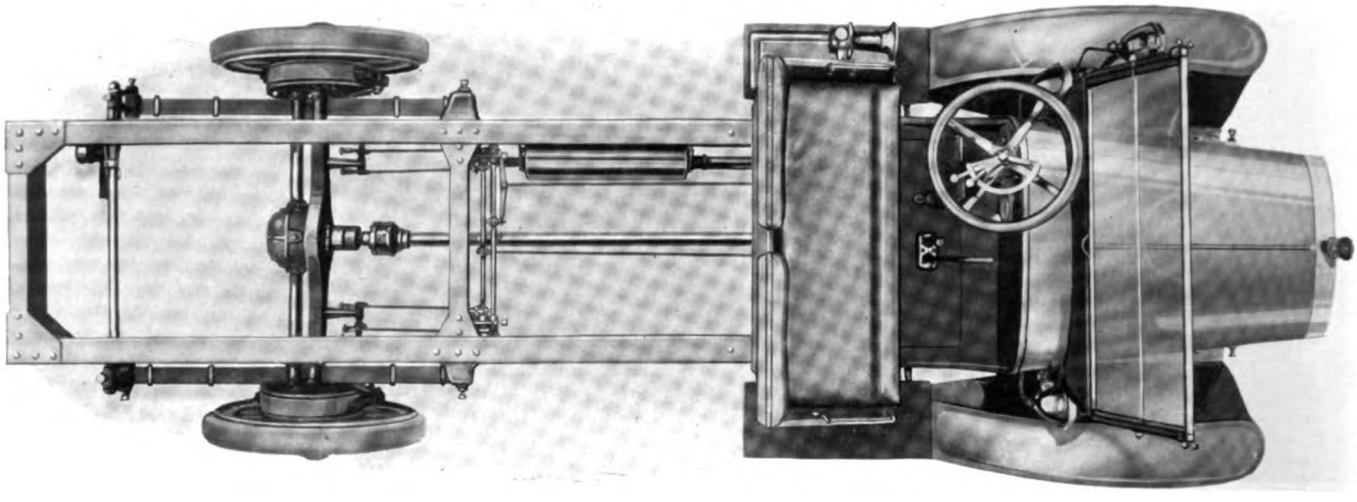
EAST PALESTINE, OHIO

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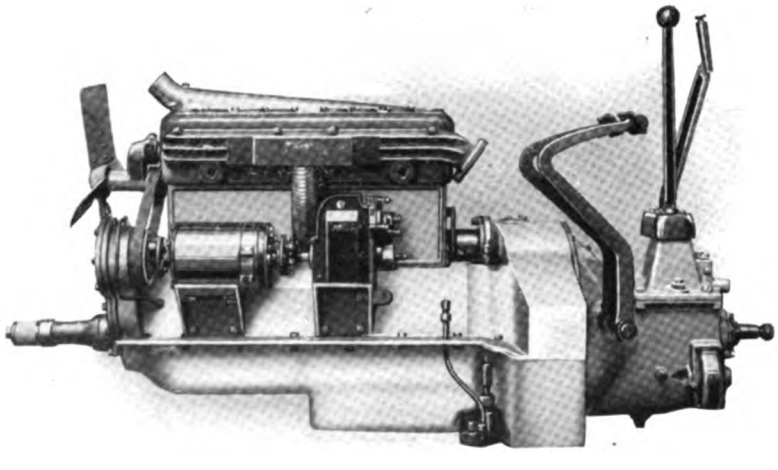


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DENMO TRUCKS



Note the clean cut appearance of the DENMO Chassis.



Left side of DENMO Motor, Dixie High Tension Truck Type Magneto is standard equipment.

Ten DENMO Features

Wisconsin Motor—DENMO design—forced feed, non-splash lubrication.

Splitdorf-Apple two unit starting and lighting equipment.

Spring cradled battery suspension—a DENMO invention.

Straight line drive—prevailing European practice.

Pierce Governor-DENMO transmission drive.

Stewart-Warner Speedometer—transmission drive.

Correct load distribution only 85% on rear wheels.

Cushioned radiator carrier—a DENMO invention.

Torbensen Drive Axle backed by Gold Bond Guarantee.

100% complete chassis equipment for $1385 a DENMO achievement.

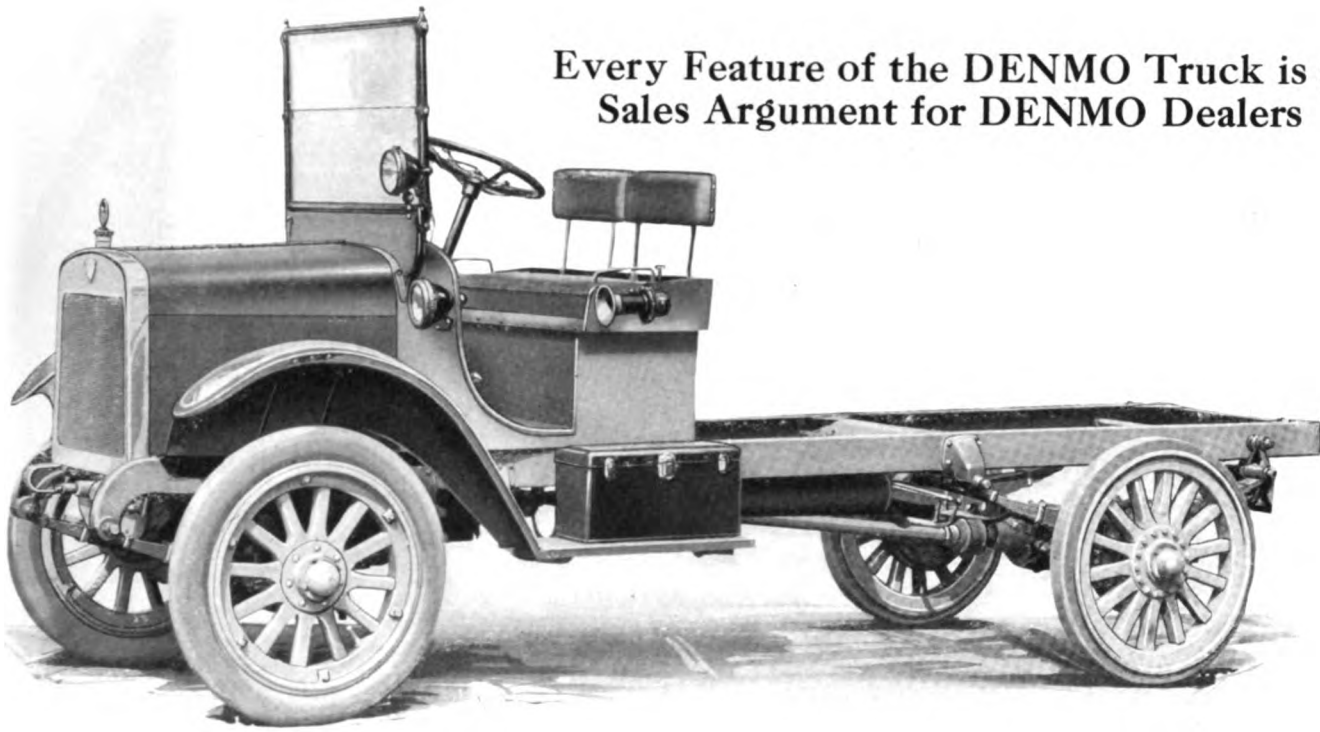
Electric Starting and Lighting equipment is but one of the big features made possible by the superior construction of DENMO Trucks. Yet on this one point alone hundreds of truck sales will be decided. And every time in favor of the DENMO. The invention of our spring cradled battery suspension eliminates all the difficulties that have hitherto prevented the use of storage batteries in commercial car service.

More than a year's test of this starting and lighting equipment on a DENMO truck has proved its success beyond question.

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DENMO TRUCKS

Every Feature of the DENMO Truck is a Sales Argument for DENMO Dealers



NEVER in the history of the commercial car industry has a truck been offered embodying the unusual sales and service features found in DENMO Trucks. Each unit entering into their construction has been proved through actual use to be the best that money can buy. DENMO construction establishes a new era in motor truck manufacture.

The organization and ample resources back of DENMO Trucks are the greatest assurance of their success. As they stand today they represent the combined experience—the broad knowledge of men who have been responsible for the most successful pleasure and commercial cars in the country.

The inbuilt strength and durability of the DENMO has marked it truly "The Truck for Super Service." Before this announcement was made experimental DENMO Trucks were tested for more than 8000 miles. And while they were designed for a 2500 pound load—through all of this, the most gruelling test ever given any motor trucks—excessive overloads were carried

In this 8000 mile test every conceivable condition was met. No hill was too steep. No condition of road travel was too severe. And at the end of this period not one single feature of the DENMO was found wanting in strength or efficiency—no changes whatever in the construction were found necessary.

If you are looking for a permanent connection—for a big paying business that will be yours this year and all the years to follow—The DENMO Agency offers a golden opportunity. The field for a rightly designed ton and a quarter truck is unlimited and the possibilities of profit from The DENMO Agency are not equalled throughout the industry.

To the man familiar with the truck industry the specifications are proof positive of the highest quality in DENMO Trucks. But is only when you consider that the price includes such long-needed features as electric starter and lights, windshield, warning signal, spot light, speedometer, etc.—in fact **100% complete equipment**—that you realize the wonderful value of a DENMO Agency.

Read the Detailed Specifications on the Next Page.

PRICE $1385

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DENMO TRUCKS

These are the Features Truck Buyers Have Waited For

Wisconsin Motor — Denmo Design, four cylinders cast enbloc; 14 miles to the gallon of gasoline average.

Stewart Carburetor, with hot air tube.

Fedders Radiator, cellular type, carried on cushion spring suspension eliminating to the greatest degree all shocks and vibration.

Thermo Syphon system of cooling.

Splitdorf–Apple two unit starting and lighting system and Model 44 special truck type high tension Dixie Magneto. Storage battery carried in spring suspended cradle of our own invention.

Clutch, single dry plate, disc type.

Transmission, selective sliding gear. Three speeds forward and reverse, carried as a unit with motor.

Lavine Steering Gear, worm and nut type.

Front Wheels, Goodrich Channel Section Steel Felloe construction.

Rear Wheels, S. A. E. Artillery type.

Rear Axle, Torbensen Internal Gear Drive, backed by gold bond guarantee

Springs, front and rear, semi-eliptic. Master leaves made of best grade Vanadium steel.

Tires, solid pressed on type on rear wheels. Demountable clincher type on front.

Governor, Pierce centrifugal type, regulating truck speed only and allowing full power of motor to be used as needed.

Gasoline System, gravity feed. 20 gallon tank under driver's seat.

Lubrication forced feed non splash. Positive and dependable, oil gauge and filler tube easily accessible.

Wheel Base 124". Nine feet of loading space back of driver's seat to end of frame. Frame extends only 16 inches beyond end of rear spring. 21 feet turning radius.

Weight of Chassis 3050 pounds.

100 per cent. complete chassis equipment; Splitdorf-Apple starting and lighting system; rain vision wind shield; spot light; driver's seat; dash and instrument board assembly; tool kit; Stewart Speedometer; Electric tail light, License bracket; Electric front lights; front fenders; spare rim; tire pump; Motometer; bumper ; governor and mechanical horn.

PRICE OF CHASSIS, COMPLETELY EQUIPPED, $1385, f. o. b. CLEVELAND

Platform, stake or express bodies can be furnished at extra cost.

DEALERS

These features entering into the construction of Denmo Trucks are the world's standard of PROVED VALUE. Never before has a truck been offered bearing the COMPLETE equipment furnished with each Denmo Model 10.

Even with the enormous manufacturing facilities at our command it is already clear that the demand for Denmo Trucks will tax us to the limit. Denmo Trucks are now ready for immediate delivery and if you are looking for the best truck dealers' proposition in the field WRITE, WIRE, OR SEND BACK THE COUPON TODAY. Full information will be gladly given you without obligation.

A Denmo demonstration means a Denmo sale.

The Denneen Motor Co.
Cleveland, Ohio,

Gentlemen:

Send me full information and detailed specifications of the Model 10 1¼ ton Denmo Truck.

Name .....

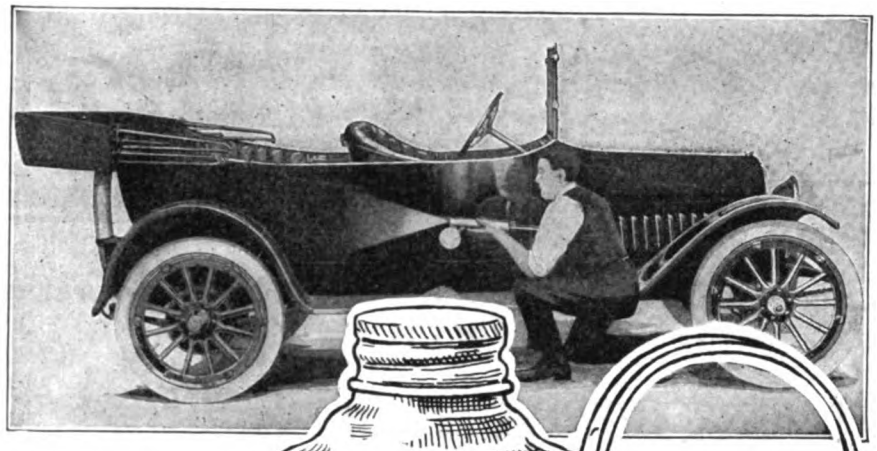
Address .....

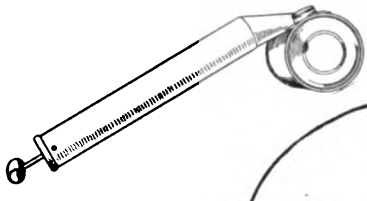
If a dealer check here.....

The Denneen Motor Co. Cleveland, O.

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Non-Combustible Non-Inflammable





ROYAL MIST

Polishes an Entire Car in 15 Minutes—for 5c.

The first two questions users ask about any polish are HOW LONG? and HOW MUCH?

Dealers can better answer these vital points in polish selling, with ROYAL MIST than with any other polish on the market.

ROYAL MIST—in 15 minutes, for 5c—combines the lasting virtues of wax polishes and the quick application of the spray-on feature. It's the easiest to use with best results—the easiest to sell with

Liberal Dealers' Profits

ROYAL MIST is a polish built to the fancy of the trade. Sprays on because car owners prefer the spray. Comes in quart, half-gallon and gallon cans, to suit the convenience of prospects. Gives a lasting polish that holds the trade.

ROYAL MIST replaces the elements of the varnish that are dried up and removed by atmospheric conditions. May even be **successfully applied when the body of the car is damp.** Always in solution. No shaking necessary. Be ready to make ROYAL MIST sales. Our advertising brings in prospects.

Mail the coupon now for free information, details and discounts.

H. G. FAIRCHILD & CO.
Morton Building Chicago

Midget Sprayer Furnished Free for Applying

ROYAL MIST

"The Kind that Sprays and Stays"

1 Gallon with sprayer **$3**

½ Gallon with sprayer **$2**

1 Quart with sprayer **$1.25**

H. G. FAIRCHILD & CO.
Morton Bldg., Chicago

Send me full information, details and discounts allowed dealers handling ROYAL MIST.

Name .....

Address .....

.....

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Our Offer to Dealers

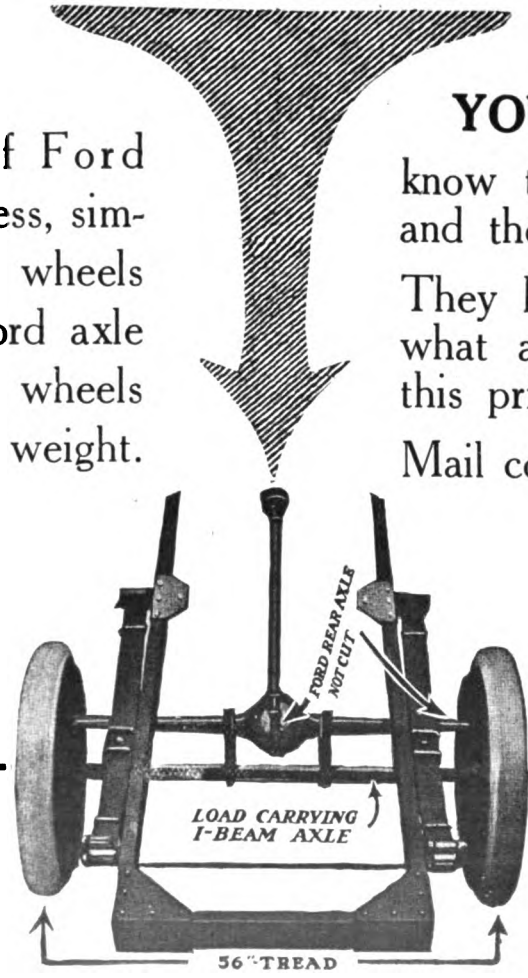
—is Exclusive Territory *permanently*, quick deliveries, and a constant, courteous service, for the

Biggest money-maker in the light truck field—which is the BIGGEST field. The

Internal-Geared RAYFORD

A FORD + $300

retains every bit of Ford strength and compactness, simply putting Ford rear wheels in front and letting Ford axle (untouched) turn truck wheels without carrying a bit of weight. The Rayford I-Beam axle carries the load.



YOUR CUSTOMERS

know the Internal-Gear Drive and they know the Ford.

They know and appreciate what a bargain these are at this price.

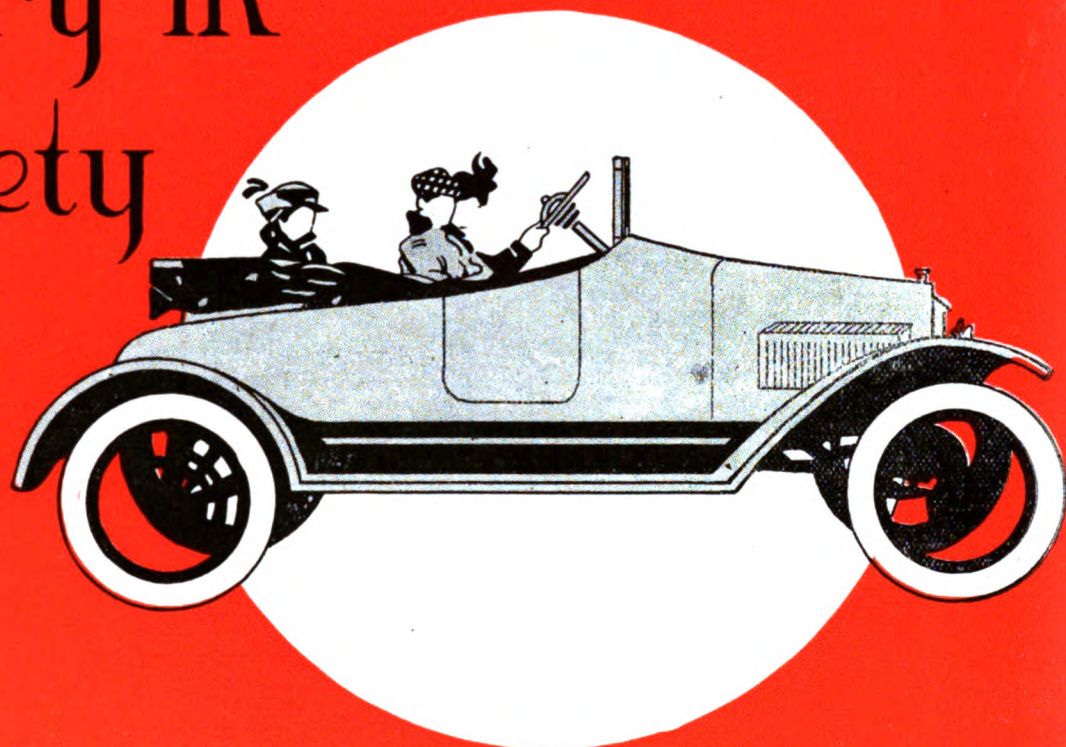
Mail coupon TODAY and get your share of these profits.

Territory is going fast.

RAYFORD CO.,
Palethorp and Indiana Aves.,
Philadelphia, Pa.
Dear Sirs:
Please send particulars regarding agency for the Internal-Geared Rayford.
Name .....
Address .....
.....

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"Henry" in Society

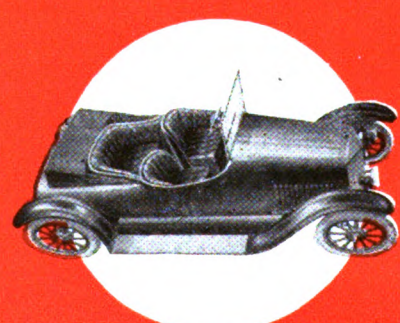


Your Ford Fit For Any Society Now

Ford sturdiness, Ford simplicity and Ford reliability plus Ames style lines, Ames upholstery and Ames appointments mean quality inside and out, pride of ownership coupled with the real pleasure that a lady gets out of a real Paris gown. Put your Ford in the style light now, by mounting on its chassis the stylish Amesbuilt Cloverleaf 3 passenger Roadster Body. Comes with all attachments ready to put on Model T chassis. $200 f.o.b. Owensboro, Ky.

$200

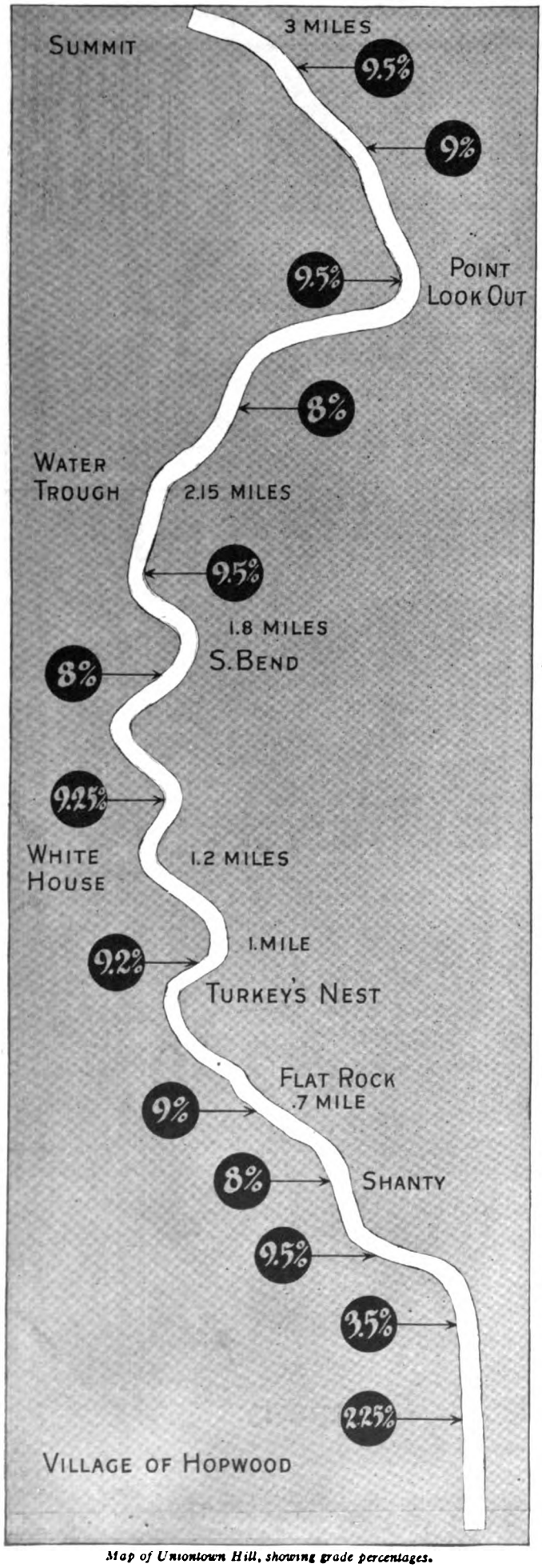
F. O. B. Owensboro, Ky.



The F. A. Ames Co., (Inc.)

Owensboro, Ky.

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Map of Uniontown Hill, showing grade percentages.

Over Uniontown Hill at 42 Miles an Hour

Among the many motor performances on the famous test hill at Uniontown, Pa., a recent one by a Ferro V-type motor stands out as exceptional.

The motor, a stock 8-48 model, took a stock five-passenger Jackson car the entire length of the hill—three miles—on high and carried it over the crest at 42 miles an hour.

The car with which this record was made weighed 3056 pounds, including driver. It had a standard rear-axle gear-ratio of 4¾ to 1. Wheels were 34-inch.

On another trial, the motor took car, driver and a passenger, weighing in all 3270 pounds, up the hill on high and reached the top going 30 miles an hour.

These tests were made in the presence of representatives of a half-dozen well-known motor-car and accessory manufacturers.

The results were convincing both as to the remarkable "lugging" power and speed of the motor.

To these qualities Ferro motors add many other advantages. They are so flexible as to make the gear-shift almost superfluous. They are entirely free from vibration, unusually accessible and decidedly economical to operate.

Four sizes—three Eights and a Twelve—to fit any car from 2000 to 5000 pounds.

Write for full information

The Ferro Machine & Foundry Co.
898 Hubbard Avenue **Cleveland, Ohio**



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This is the Badger Jack Family

They're eight stalwart, cheery fellows who like nothing better than a good, hard lift.

Of course they don't wish you tire trouble, or anything like that; but when it comes they are ready for it. It's sheer fun for any one of them to put his shoulder under your axle and give it a boost.

He'll almost do it alone, without any help from you. All you've got to do is to give him a place for his feet and his shoulder, and then press down on the lever.

Quick, short, easy strokes put your car where you want it—and keep it there till kingdom come. He won't let go until you give him a gentle hint in the reversing lever.

Badger Jack has no use for a junk-jack that'll lay down on a job. He thinks they're a disgrace to the automobile business. He's putting them out of business as fast as he can, which is pretty fast, for he brought joy to 200,000 automobile owners last year, although he's scarcely five years old. And nobody has called him a junk-jack yet.

Badger Jack's mother's name is "Efficiency." He has a sound constitution of steel and iron from Father Shop. There's not a weak spot in his body, or in his disposition. Everybody likes Badger Jack because he's a good fellow who wants to help and knows how.

If by any chance you should get hold of a Badger Jack who isn't up to the family standard, we want to know it. We want to get hold of him, and we want you to get hold of a good one in exchange for him.

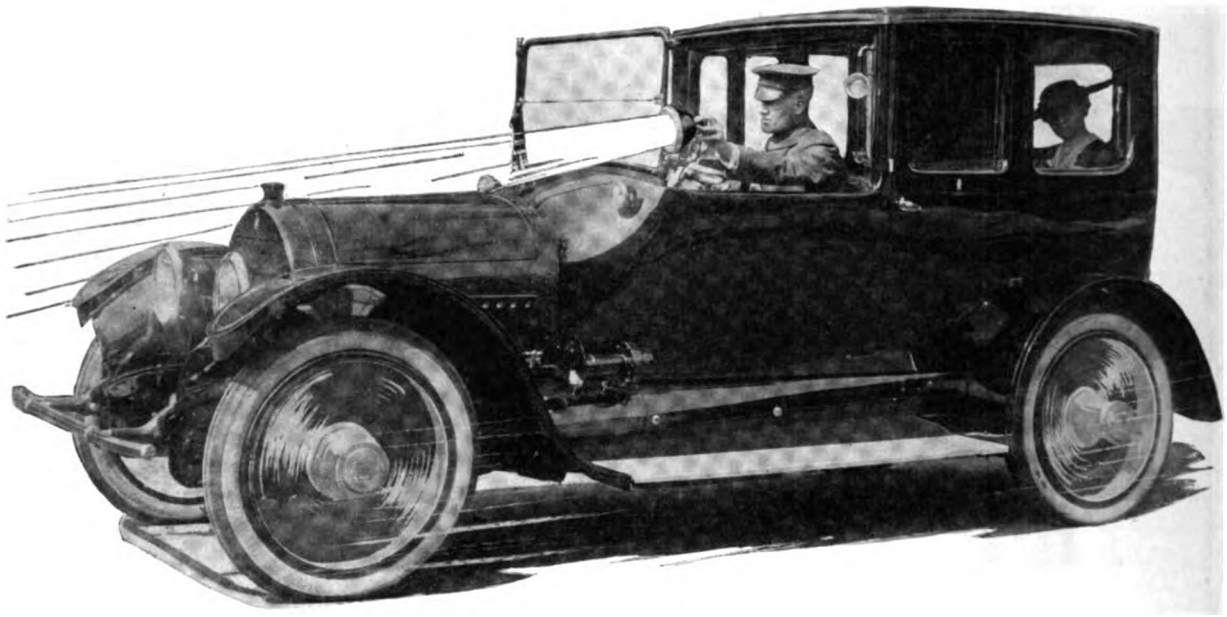
But that isn't likely to happen, because every Badger Jack goes through a grilling test here at home, before we let him start out in life, that's two or three times as severe as anything he will ever go up against among strangers.

There's a book about this remarkable family which you ought to have, and which Badger Jack would be proud to have you read. We'll consider it a privilege to send you one. It's called—"The Story of a Jack."

Walker Manufacturing Company
390 Wisconsin Street, Racine, Wis.

(18)

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FOSTER OWL LIGHT



NOW ONLY

$5

Better Than Ever

THERE is a certain pride to be taken in the ownership of an OWL Light that no other searchlight can supply. The OWL Light adds the finishing touch of refinement to any car. It completes the car's equipment.

The OWL is the most beautifully designed and finished searchlight made. It is clean-cut, compact and pleasingly simple. Nothing complicated nor bunglesome to mar the appearance of the car.

The unique construction of the OWL reflector makes the OWL more powerful and farther-carrying than much larger searchlights.

Sold on 10 Days' Trial—Write

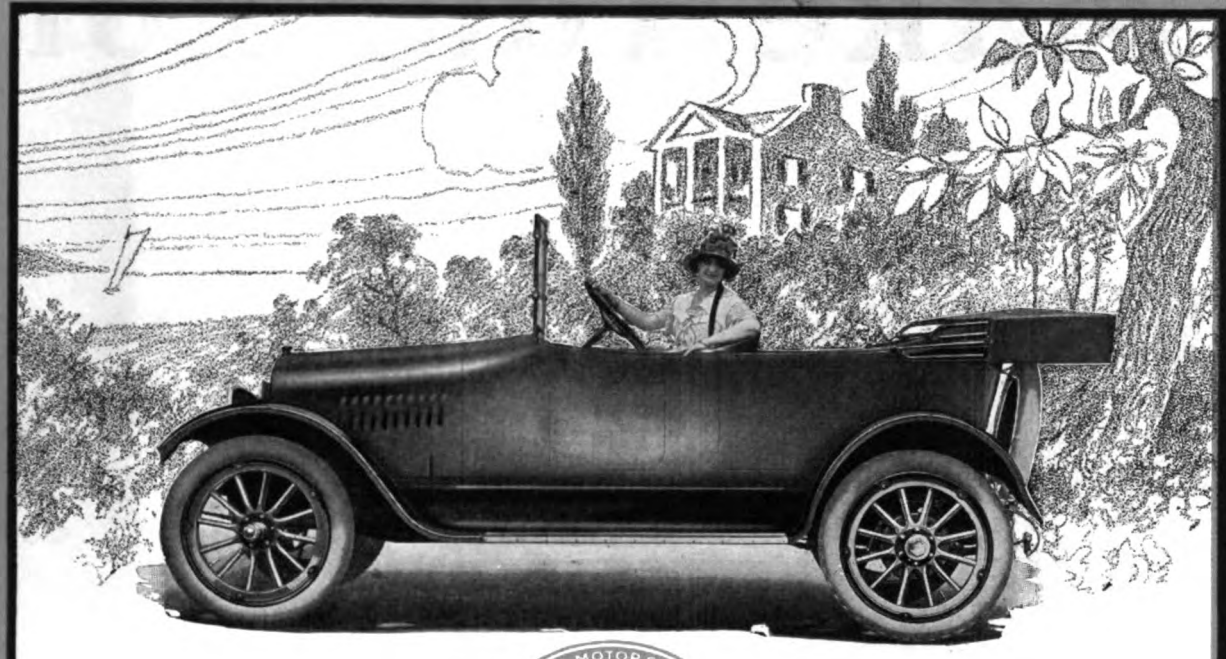
In ordering, don't ask for just a "searchlight." Ask for the OWL Light. Protect yourself by looking for the OWL trade mark. Send for free booklet.

Order from your dealer. If he cannot supply you, write us direct. In ordering, state make, model and battery voltage of car.

C. H. Foster Accessories Co.

2303 Michigan Boulevard **Chicago, Illinois**

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The DIXIE FLYER

1917 Models Now Ready

Five Passenger Touring **Four Passenger Cloverleaf Roadster**

IN the early days of the 1916 Season the DIXIE FLYER was termed by Motor-wise men—"Distinctly the Season's Best Offering." Succeeding months of growing popularity with the public and conservative dealer interests have proven it true.

The 1917 Models embrace all of the mid-season refinements added to the original structure and a number of distinctly new Structural, Mechanical and Artistic features, many of which excel, some of which are exclusive, that lift this car out of the comparative class. *It is Distinctive.*

The *One* reason for the instant popularity of the DIXIE FLYER is that every detail of the structure was painstakingly developed and perfected before offering to the public and the first and every succeeding car delivered has continuously made good with its owner.

DIXIE FLYER popularity is building itself on the permanent foundation of DIXIE performance. It is first of all a *dependable* structure, in every situation it *satisfies.*

These very qualities will help *you* into a larger and more permanent success, and give you a greater profit by reducing your service cost.

These qualities have attracted to our selling organization the cream of the conservative and substantial dealer patronage in the larger motor centers. They realize the DIXIE FLYER is a permanent proposition.

There is behind it a factory covering thirty acres of modern manufacturing facilities, an engineering corps of the best trained men in the industry, an experienced executive and sales organization, three millions of real *spendable* money and a growing dealer organization, including some of the most successful motor salesmen in the country.

If *you* are the best dealer in *your* territory we want *you.* The policy behind the DIXIE FLYER is liberally in your favor. Immediate action on your part may be the means of securing for you an exceptionally lucrative connection. Write or wire today stating territory desired.

Condensed Specifications

Four cylinder Dixie-Lycoming, hi-speed motor, 3¼" x 5". Removable water cooled head. Three point suspension, Unit power plant. Grant-Lees transmission. Dyneto 2-unit starting and lighting system, Bendix drive. Connecticut ignition. Willard storage battery. Carter carburetor. Stewart vacuum feed. Irreversible steering gear. Single flexible Universal. Semi-elliptic and ¾ scroll elliptic, self-lubricating springs. Full floating rear axle. Spiral bevel drive. Tires, 32" x 3½". Wheelbase, 112". Using Bower Roller and S. K. F. ball bearings throughout. Van Sicklen speedometer. Unusual economy in fuel and lubricants. Beautiful coach work. Distinctive decoration. A little extra length, adding to the comfortable hang of the structure. A little extra room and convenience in both front and rear compartments, and enough of smartness, style and quiet elegance to travel in any company.

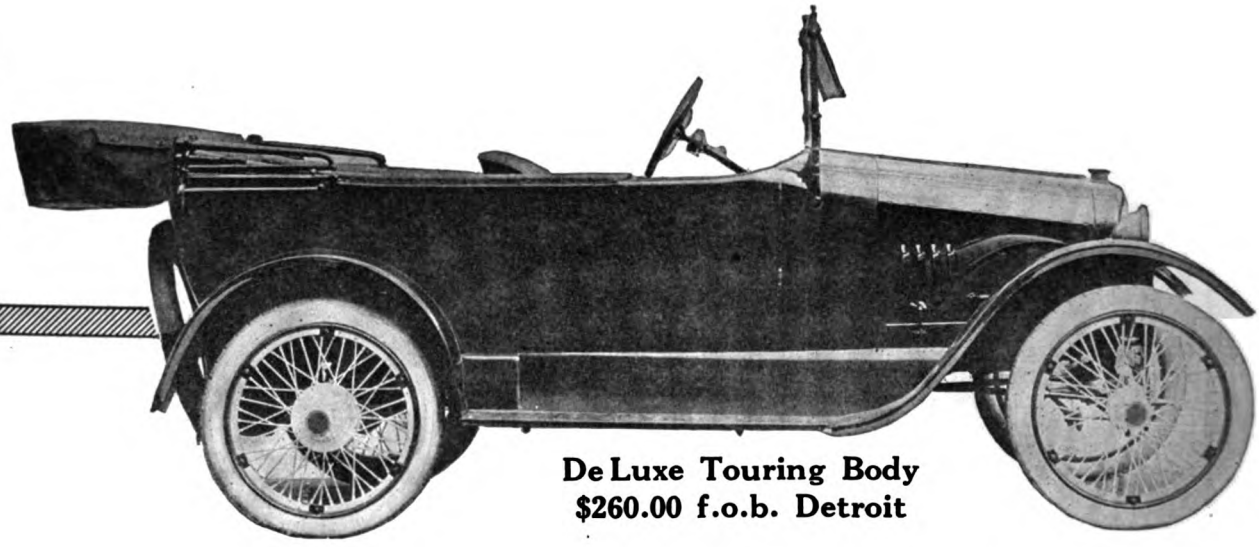
With Compl te Modern Equipment $795 F. O. B. Louisville

LOUISVILLE **DIXIE MOTOR CAR COMPANY** KENTUCKY

INCORPORATED.

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Make Your Ford



De Luxe Touring Body
$260.00 f.o.b. Detroit

DeLuxe Touring Body

Put your Ford in the $1500 class! You have the mechanism—there is no better. This beautiful body includes "V" radiator, sloping hood, 9-inch crown fenders, dust shields, special rain vision ventilating windshield, splash plate, lamp bracket extensions, foot accelerator, special running board hangers, special one-man mohair top, single tire holder, Stewart vacuum gasoline system. Booklet sent free.

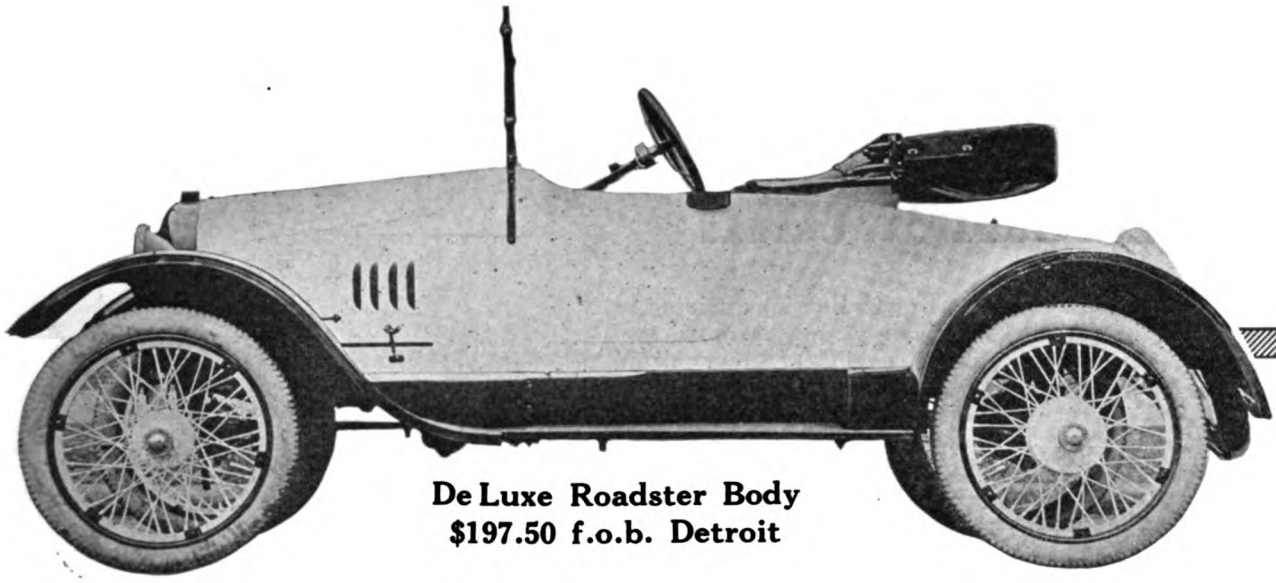
For Ford Cars

Dealers: Send for specifications and discounts

Detroit Auto Products Co.
31 Sherman Street, Detroit

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—Look Like These



De Luxe Roadster Body
$197.50 f.o.b. Detroit

DeLuxe Roadster Body

Here is the snappiest roadster on the road! Get out of "the million" class. Give your Ford, old or new, the individuality that will class you with the high-priced cars. You can't match the De Luxe for beauty under $1500. This Roadster includes all the touring body features mentioned on opposite page except the tire holder and Stewart gasoline system. Send for beautifully illustrated free booklet.

—Old or New

We have some unoccupied territory for live dealers

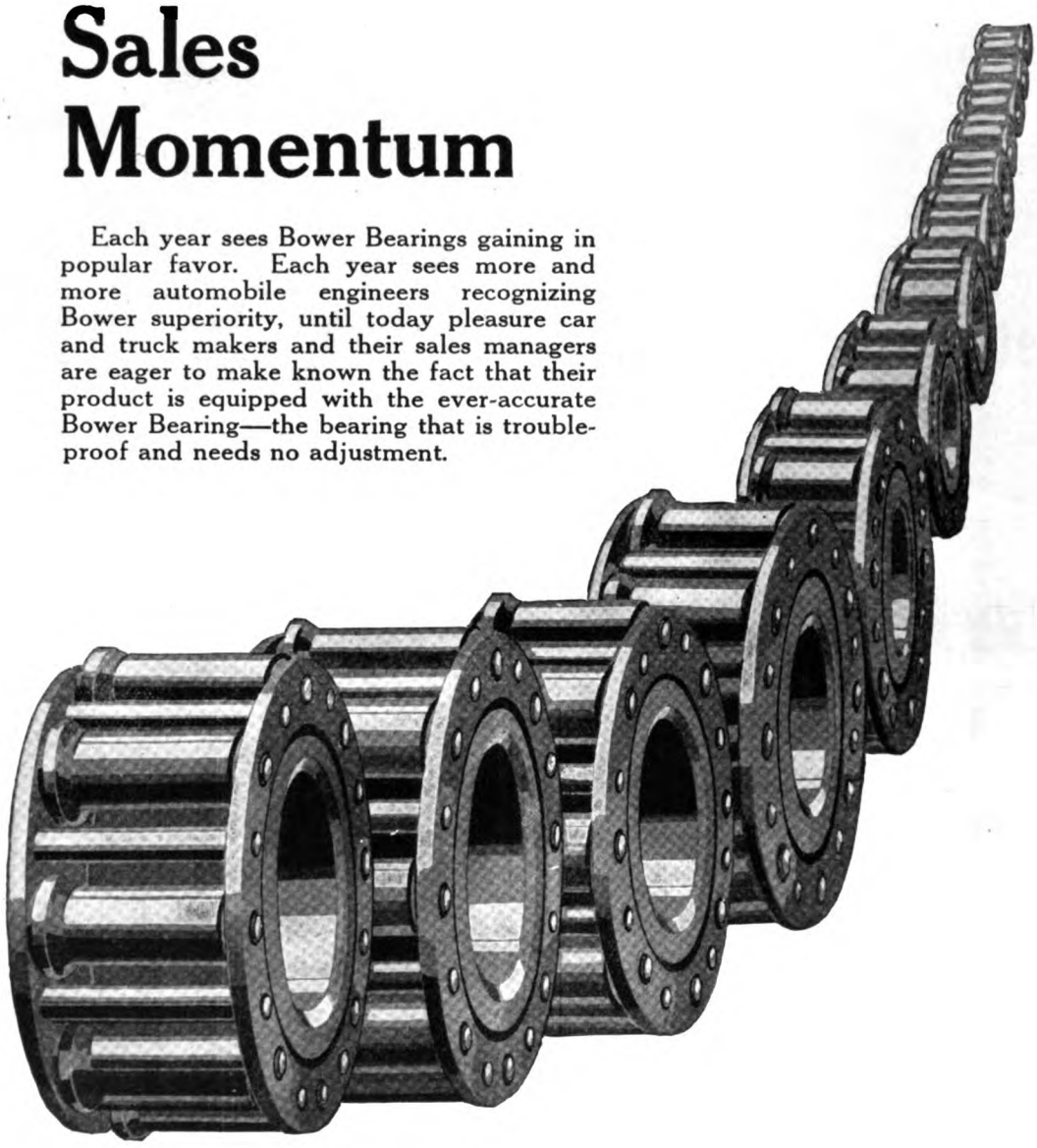
Detroit Auto Products Co.

31 Sherman Street, Detroit

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Sales Momentum

Each year sees Bower Bearings gaining in popular favor. Each year sees more and more automobile engineers recognizing Bower superiority, until today pleasure car and truck makers and their sales managers are eager to make known the fact that their product is equipped with the ever-accurate Bower Bearing—the bearing that is trouble-proof and needs no adjustment.



Bower
Roller Bearing Co.
Detroit, Michigan

BOWER SAVES POWER

BOWER SAVES POWER

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Some Extremely Desirable Territory Open for Dealers With Push

Our Dealers' Proposition Never Fails to Get Across and Bring in Interesting Profits for Dealers

Dealers
Let's Get Together for the Big Drive on

"W'RIGHT" COMPRESSION TIGHT PISTON RINGS

"W'RIGHT" ALLOY ALUMINUM PISTONS

Dealers who formerly *carried* piston rings, and seldom sold them, are now disposing of 300 to 500 W'RIGHT Compression Tight Piston Rings a month at a profit they find altogether worth while.

That's the experience we have to offer a few more good dealers who want to duplicate the profits of the hundreds of dealers we already have established in the past 6 months.

W'RIGHT Piston Rings are alone in their class. They both *outlast and under-sell* competition, and insure lasting efficiency that others cannot give.

Backed up by advertising in leading motor car publications, W'RIGHT Compression Tight Piston Rings are selling fast—making good profits for dealers. Wire or use the coupon for full details.



Pat. Applied for

Motorists everywhere, with cars from seasons gone by, are putting new life into old motors with W'RIGHT Alloy Aluminum Pistons, equipped with W'RIGHT Compression Tight Piston Rings.

The sudden demand, and the rush to fill it, have made W'RIGHT Pistons the selling sensation of the year. Dealers have sent back re-order after re-order for the pistons that insure greater power, economy, quicker pick-up and all 'round motor efficiency at a nominal cost.

Record-breaking business—with profits in proportion—is what W'RIGHT dealers report. It is what awaits more W'RIGHT Dealers in good territory, still open, where there are Ford, Overland, Maxwell, Studebaker, Chevrolet, Hupmobile and other makes of cars.

If you want to reap the advantage of W'RIGHT popularity, class and advertising, get in now for the big drive. *Use the coupon today.*

THE V. A. LONGAKER CO.

448 N. Capitol Ave. **Indianapolis, Ind.**

The V. A. Longaker Company
448 N. Capitol Avenue, Indianapolis, Ind.

Kindly send me full details regarding W'right dealers' proposition.

Name .....

Address .....

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

Runs 200,000 Miles

A Bate-built Mitchell has just completed 200,000 miles. Another has a record of 218,000 miles. Six Bate-built Mitchells have averaged about 165,000 miles apiece—over 30 years of ordinary service.

John W. Bate's idea, when he came with the Mitchell, was a 100,000-mile car. Later he doubled that figure, and attained 200,000 miles. In the Mitchell he is building now he aims at a lifetime car.

These Things Count

In the long run, remember, such are the things that count. The car that outlasts others will in time outsell them.

So will a car which gives most for the money, because of factory efficiency. That is why Mr. Bate is here. That is why we have paid him, year after year, to give us a model factory and a model car.

In this Bate-built factory our making costs have been reduced one-half. In this Bate-built car, after 700 improvements, we have arrived at a car which will hold its prestige, against all the field, and forever.

Time Sells Them

The years are selling the Mitchell in a larger and larger way. In the past year alone the demand for this car has trebled. Now we are doubling our output for the year to come.

And these New Mitchells, every year they run, will add to the Mitchell fame.

Owners will tell how they endure. They will tell of the trifling upkeep, the absence of repairs.

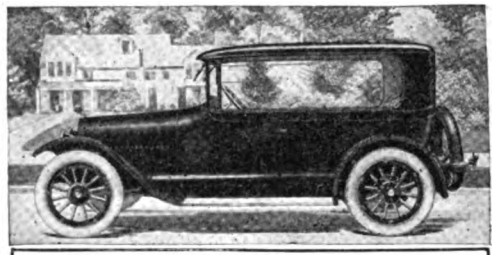
It has taken many years to standardize this car, and to bring every part to perfection. It has taken years to build and equip this plant.

But the result is a car where 440 parts are either drop-forged or steel-stamped.

A car in which every margin of safety is at least 50 per cent. A car rich in Chrome-Vanadium steel. A car with Bate cantilever springs, not one of which has ever broken.

And a factory that saves so much in the making that we spend $2,000,000 this season for extras which other cars omit.

Men who buy cars, and men who sell them, should investigate the Mitchell. The time has come when a car like this must rule.



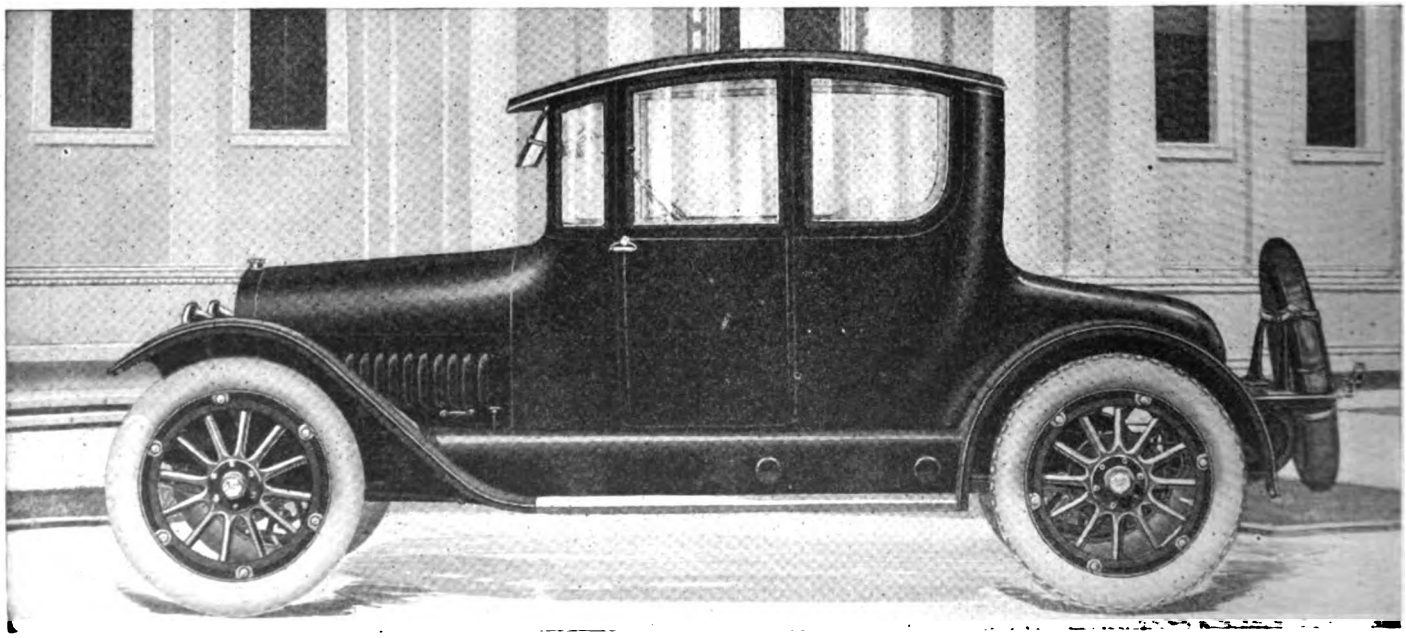
$1325 F. o. b. Racine

For 5-Passenger Touring Car or 3-Passenger Roadster

7-Passenger Touring Body $35 Extra

High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features. Also five types of closed bodies.

Mitchell Motors Company, Inc.
Successor to Mitchell-Lewis Motor Co.
Racine, Wis., U. S. A. (115)

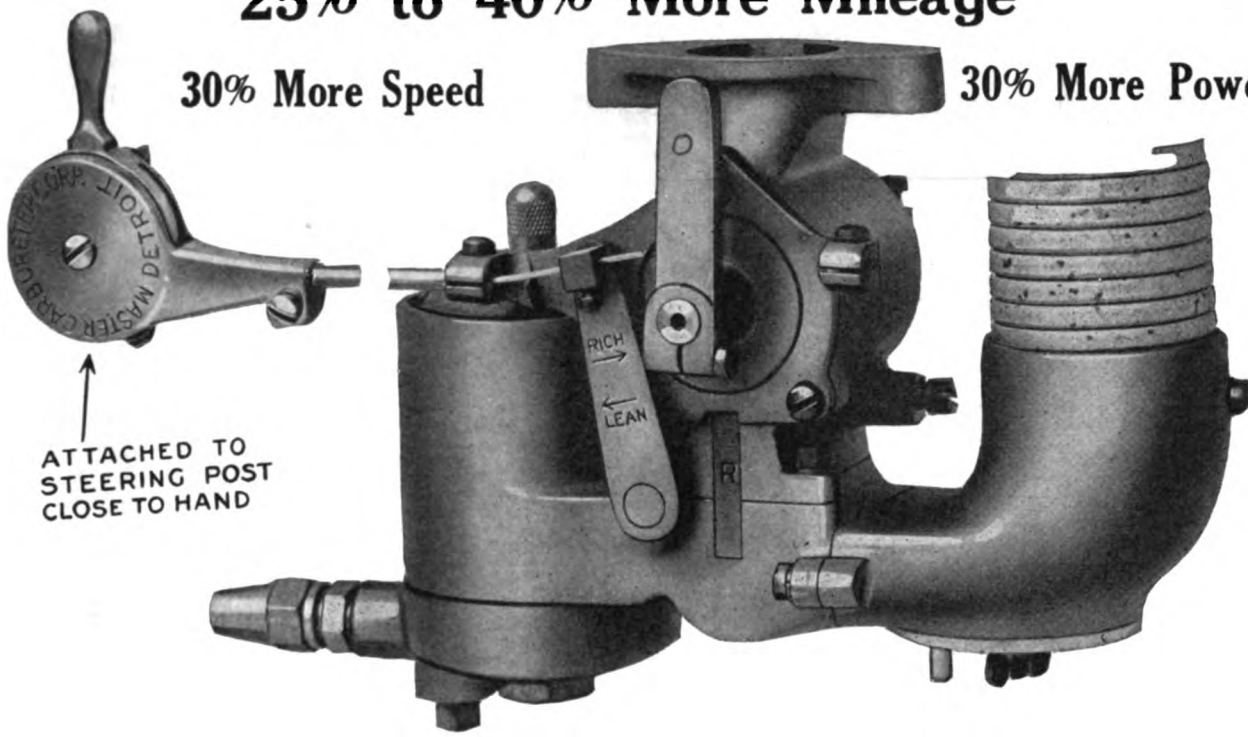


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25% to 40% More Mileage

30% More Speed

30% More Power



MASTER Carbureter WINS

Pike's Peak Climbing Contest

Rae Lentz, driving a Master Carbureter equipped Romano Special, captures Penrose trophy and $2,000 first prize, in Free-for-All.

Distance 12.5 miles; maximum grade 10½%; Average Grade 7½%; Weather, HEAVY RAIN, HAIL and SNOW.

Colorado Springs, Col., Aug. 12—Competing with 15 other contenders for the Penrose trophy and a prize of $2,000 in cash, Rae Lentz, driving a Master Carbureter equipped 8-cylinder Romano Special, today finished first in the climb to the summit of Pike's Peak. Lentz covered the distance of 12.5 miles with its maximum grade of 10½ per cent and average grade of 7½ per cent through a driving storm of rain, hail and snow and the spectators who journeyed up the mountain to watch the drivers shivered in the cold. Goggles worn by the racing crews were so covered with rain and sleet that they had to be discarded. The last five miles was raced through a dense cloudbank. Lentz's time was an average of better than 36 miles per hour over a 10 per cent grade. The altitude of the peak is 14,190 feet, and the starting point at Crystal Creek has an altitude of 7,600 feet.

The value of the steering post control feature of the perfected MASTER Carbureter was never more strikingly demonstrated than in this gruelling test under the most trying conditions. Being able to instantly change his mixture, to command a rich mixture for quick starting and to change with a movement of his wrist to medium or lean to suit every change of altitude and temperature, Lentz had a tremendous advantage over all other contestants whose difficulties were almost entirely carbureter troubles.

Lentz was able to produce in his carbureter, for every yard of his climb, exactly the right mixture for the requirements of the moment. At every altitude he had complete control of his mixture while the effects of the heavy moisture and severe cold were instantaneously overcome by operating the carbureter's air damper simply by moving the steering post control.

PENROSE TROPHY EVENT

Car	Driver	Time
Romano	Lentz	20:55.6
Hudson	Mulford	21:40.5
Chalmers	Juek	22:46.7
Hudson	Hughes	22:53
Cadillac	Mortenson	23:30
Grant	Jones	25:42
Ford	Knowles	26:20
Chalmers	Stentz	26:28
Ford	Petersen	26:32
Studebaker	Morgan	28:23
Duesenberg	Buzano	Out
Saxon	Wetmore	Out
Ford	Henry	Out
Pathfinder	Hughson	Out
Mercer	Parish	Out
Maxwell	Worthington	Out

Steering Post Control

The superiority of the Master Carbureter with its mechanical control operated from the steering post was never so clearly shown as in this remarkable test. Lentz was not obliged to make a single adjustment under the hood. The Master, in fact, has no adjustments. Every change of atmosphere and temperature from the warm weather of the foothills to the freezing cold at the summit, every change in the barometric conditions from rain to hail, was promptly met and overcome by the simple steering post control device.

No matter what car you make, sell or drive, investigate this perfected improved carbureter. Ask us for the name and address of our dealer in your vicinity.

Send This Coupon for FREE BOOK

"Carbureter Troubles" and How to Overcome Them. Write today for proof that the Master actually delivers 25 to 40% More Mileage, 30% More Speed and 30% More Power than old-style carbureters. Just send this coupon.

Master Carbureter Corporation,
1517 West Fort St.,
Detroit, Mich.

You may send me your free booklet, "Carbureter Troubles" and particulars about the Master Carbureter; also name of your dealer in this city.

Name.....

Address.....

.....

MASTER CARBURETER CORPORATION

1517 West Fort St., Detroit, Mich.

Pacific Coast Branch, Los Angeles, Cal., 922-24 So. Los Angeles St.

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THE EXPERIENCE OF OWNERS IS THAT SAXON "SIX" GIVES BETTER SERVICE AND GREATER MILEAGE AT LESS COST

Briefly, this sums up the situation among cars costing $1000 or less. Saxon "Six" superiority is a fact.

Motor car buyers have reached this conclusion after critically comparing the road-service records of all cars during the twelve month period just past.

In the beginning, selection of the car costing less than $1000 which offered the best investment presented a perplexing problem. There had been insufficient time clearly to demonstrate the relative values of the various makes.

And sincere but over-enthusiastic salesmanship, by printed word and word of mouth, had contrived to cast an illusion of fine quality around many a mediocre car.

As soon, however, as the mileages began to mount claims were replaced by records and phrases gave way to facts.

It was at this point that Saxon "Six" began to pull up into a position of leadership in the opinion of purchasers.

Verified reports from hundreds of owners showed that Saxon "Six" coined 21 to 26 miles of arrowswift travel from a gallon of gasoline. It wrung more than 150 miles from each quart of oil.

It was shown that Saxon "Six" had a wealth of "pick-up pep"—that it could go from a standing start to 45 miles per hour in less than 24 seconds.

It was shown that Saxon "Six" had a wonderfully powerful motor—able to climb an 18 per cent grade, mile long hill in one minute and two seconds.

It was shown that Saxon "Six" could "burn up" the highway like a racer or idle "on high" at a mile and a half an hour. And, do either with effortless ease.

And it was shown that the fine construction and skilled engineering in Saxon "Six" had endowed it with uncommon strength and ruggedness. Its freedom from repairs and replacements caused marked comment.

So now all motordom knows that our positive belief expressed at the outset, that Saxon "Six" would give better service and greater mileage at less cost has been completely justified in competitive service.

"Six" Touring Car	*$815*
"Six" Roadster	*815*
"Four" Roadster	*395*
Delivery Car	*395*

Canadian Prices, f. o. b. Windsor, Ontario: Standard equipped "six," $1115; detachable top, $200; standard equipped "four" roadster, $530; electric equipment, $70; detachable top, $75.

WRITE FOR INTERESTING BOOKLET "SAXON DAYS". ADDRESS DEPT. N

SAXON MOTOR CAR CORPORATION, DETROIT

THE SAXON MOTOR CAR CORPORATION DOES NOT ANNOUNCE YEARLY MODELS

(510)

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"CARSPRING" TIRES ARE MAKING MILEAGE RECORDS UNDER SERVICE AND "CARSPRING" DEALERS ARE MAKING NEW RECORDS ON THE CASH REGISTER.

ARE YOU MAKING NEW RECORDS IN YOUR TIRE BUSINESS, AND, IF SO, WILL THE BUSINESS BE YOURS "FOR KEEPS"? ARE YOU BUILDING FOR YOURSELF OR SOMEONE ELSE?



¶ "CARSPRING" methods answer these questions in the affirmative for every Dealer. They give him a splendid tire in the first place, one that makes satisfied customers and upholds his reputation.

¶ In the second place, "CARSPRING" methods give you an opportunity to put in your very best selling efforts without factory branch interference.

¶ "CARSPRING" methods mean liberty to you, they mean the widest latitude in making adjustments, the authority to appoint your own sub-dealers and to manage your territory in your own way—**helped** by us in every possible way but **not hampered.**

¶ And "CARSPRING" methods mean a future for you, the full results of your own efforts without fear of having one foot of territory or one cent of profit taken away later on.

¶ You can't grow "too big" to suit us—we are **for** our Dealers—now and **all the time!**

Quick action on your part means money. There is only just so much territory to be allotted, and it is going fast. Write at once and find out whether or not your territory is still available.

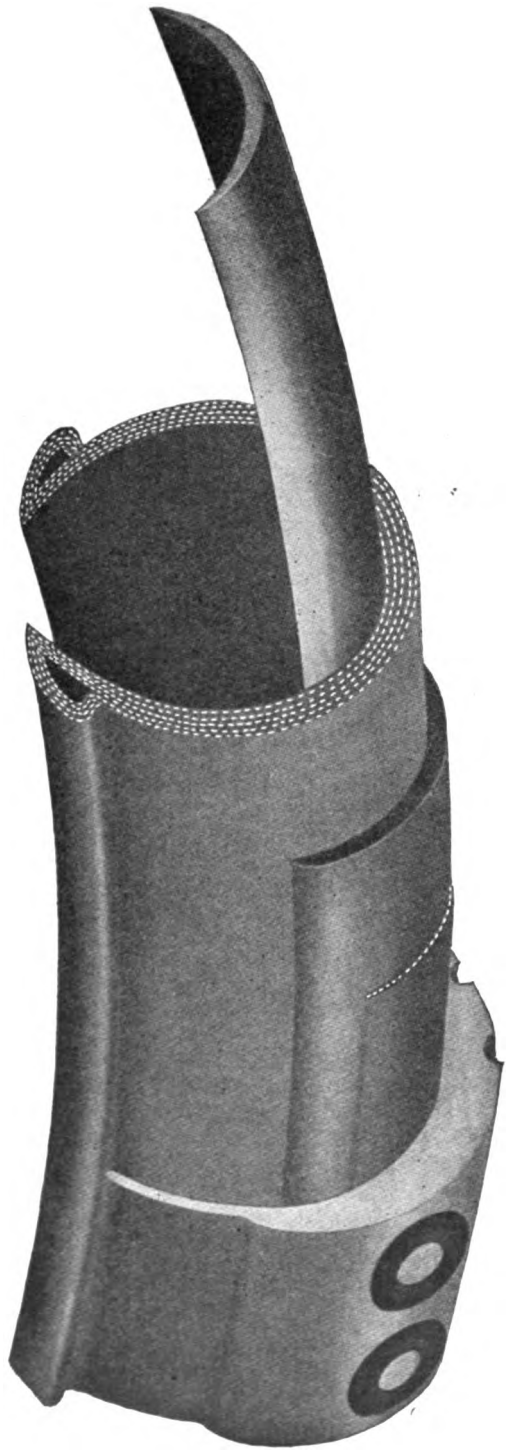
NEW JERSEY CARSPRING & RUBBER COMPANY

JERSEY CITY, N. J.

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MAKE MORE MONEY

Woodworth "Live Long and Serve Well" Tubes are made of tough, elastic, live rubber, of the highest quality. There are none better made.



—and at the same time hand your customers something that will **make good with them.**

Ours is a REAL GUARANTEE.

We know that the Woodworth Trouble-Proof Tire will travel day in and day out without any sign of puncture or blow-out, so we **promptly and cheerfully pay up** when the very extraordinary thing happens and we are called upon to make good.

Entirely apart from its puncture-proof addition, the Woodworth is a tire of extremely high quality. The finest material is used, expert workmen are employed and the greatest care is exercised in its manufacture.

WOODWORTH TROUBLE-PROOF // TIRES //

The Woodworth is not a freak—its qualities of general wear and resiliency are equal or superior to those of any other tire on the market—and the puncture proofing is provided by a strip of non-heating chrome leather, placed on the inner side of the casing **after the tire proper is finished.**

Our Dealer Proposition will vitally interest you. Write for it at once while some good territory is still available.

The

Leather Tire Goods Co.

Niagara Falls, New York

When writing advertisers please mention Motor World

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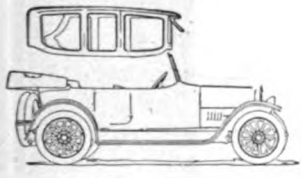
Hundred Point Six

KISSELKAR dealers are finding that never has a car enjoyed such instant popularity with the critical car buyers everywhere as the ***Hundred Point Six***—the Car of a Hundred Quality Features and Kissel-built from the ground up.

Kissel's original "two-in-one" idea—the ALL-YEAR Car—insures all-year business to Kissel Kar dealers.

If the opportunity of becoming a KisselKar dealer appeals to you we advise getting in touch with us at once.

KISSEL MOTOR CAR CO.
HARTFORD, WIS.



The ALL-YEAR Car

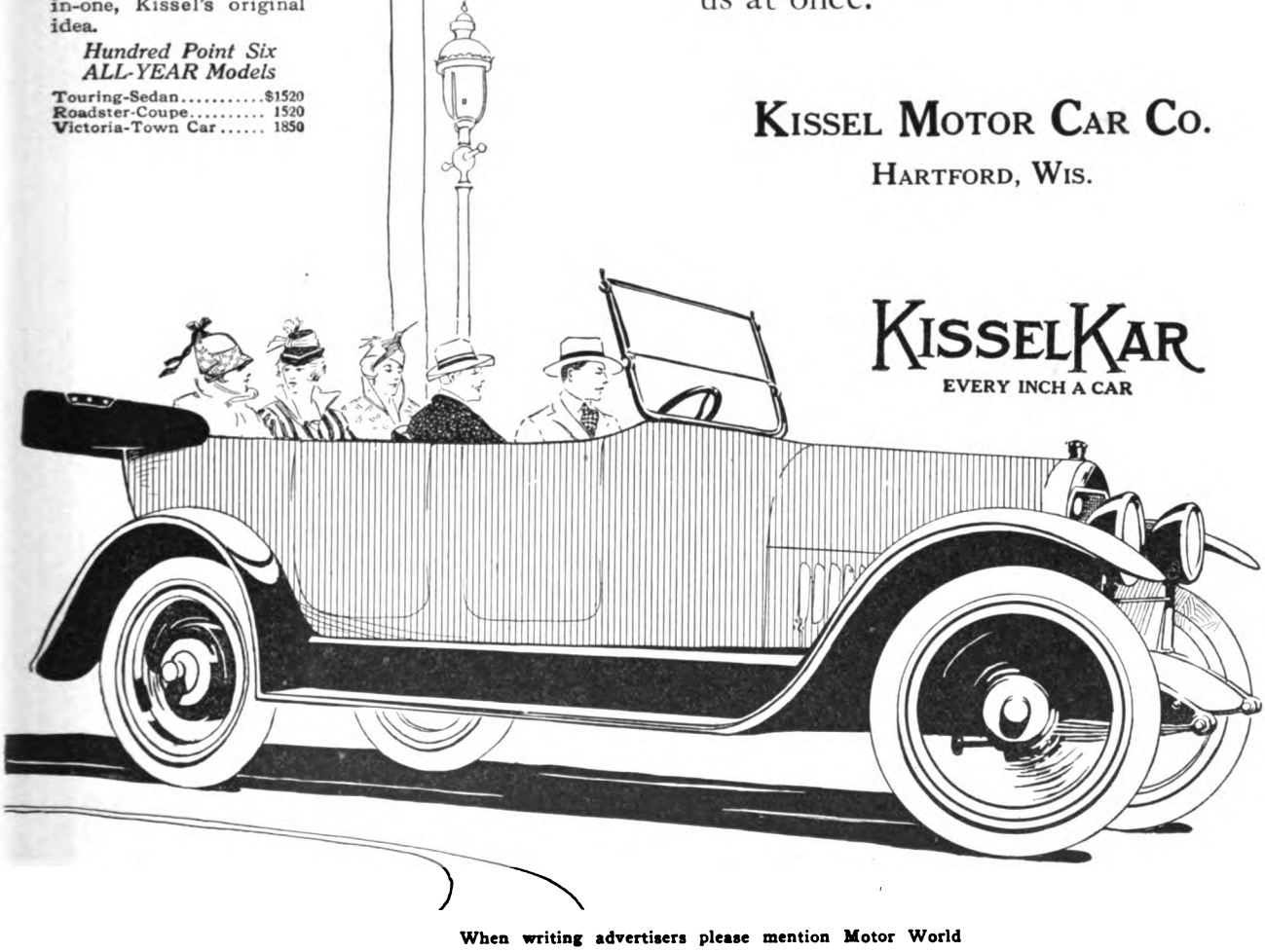
To fully enjoy fair weather touring you must **not** have a roof on your car.

The ALL-YEAR Car is a **sightly and complete** open car for summer and a closed coach for winter—the two-in-one, Kissel's original idea.

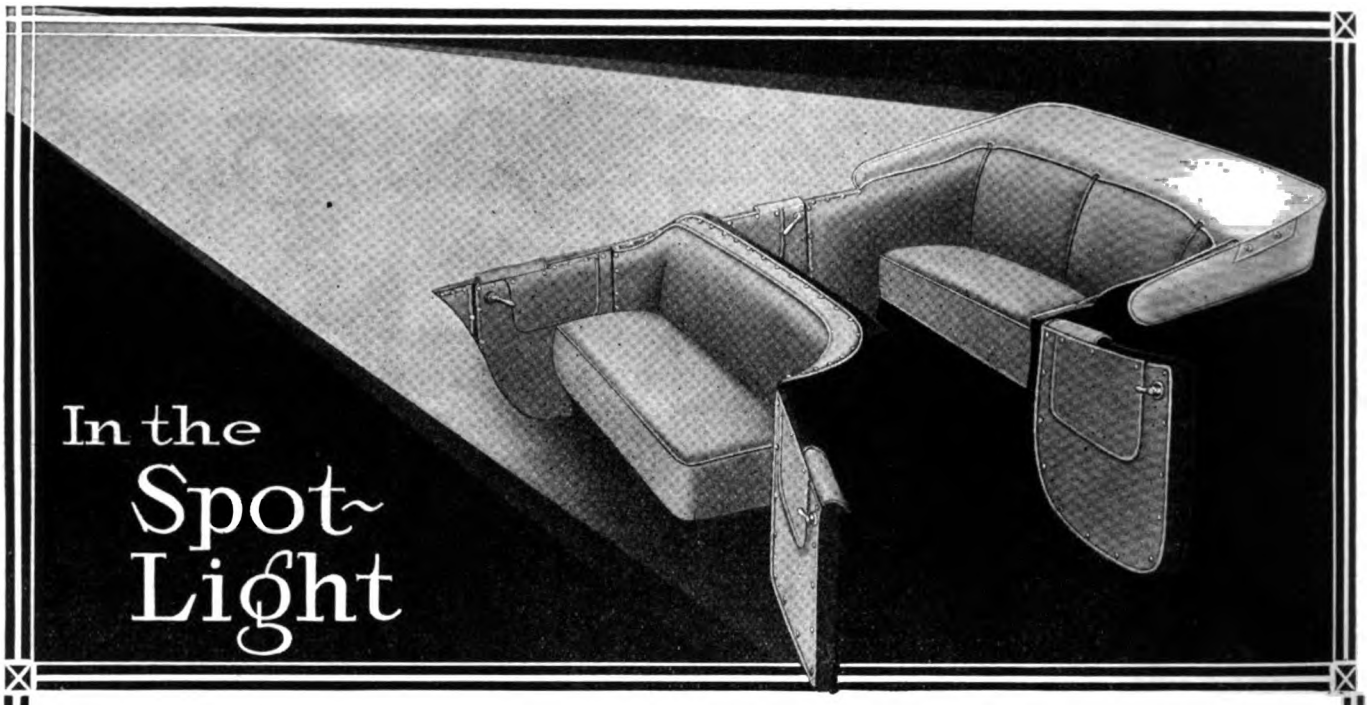
Hundred Point Six
ALL-YEAR Models

Touring-Sedan.....$1520
Roadster-Coupe..... 1520
Victoria-Town Car..... 1850

KISSELKAR
EVERY INCH A CAR



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GO where you will, you will find the spotlight of popular approval centered on Warner Auto Upholstery Covers. From coast to coast and from Canada to the Gulf, the discriminating motorists are demanding them and the progressive dealers are selling them.

WARNER AUTO UPHOLSTERY COVERS

FIT LIKE A GLOVE

DUST-PROOF WEAR-PROOF

The covers are ***tailor made*** of the best materials, and guaranteed to fit ***your*** car—no matter what make or what year. Scientifically shaped and strongly put together in the largest plant in the world devoted exclusively to the manufacture of auto upholstery covers and tops. Easily and quickly cleaned. On and off in a jiffy. Fit like gloves. They keep new cars looking new and restore the new look of old cars.

DEALERS: Our full page ads in this and other leading motor publications are read by thousands of owners whose business is worth going after. Our price-lists, based on fair dealing for the consumer and the trade, get the business and give you a certain and a legitimate profit. Write for our price protection contract.

THE WARNER AUTO TOP COMPANY

1640-1644 Central Avenue Cincinnati, Ohio

Established Thirty Years

When writing advertisers please mention Motor World

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This is What You Need, If—

Your motor is hard to start, or
It is slow to pick up, or
Explosions are uneven, or
Your ignition gives less than maximum efficiency in any way whatever.

It is the

EISEMANN
MAGNETO

The Magneto you can count on—strong, serviceable, dependable—the Magneto that gives a red hot spark at any speed, even the lowest!

THE EISEMANN MAGNETO CO.

Sales and General Offices:
32-33rd Street, Brooklyn, N. Y.

Indianapolis, Ind.
415-417 N. Capitol Ave.

Detroit, Mich.
802 Woodward Ave.

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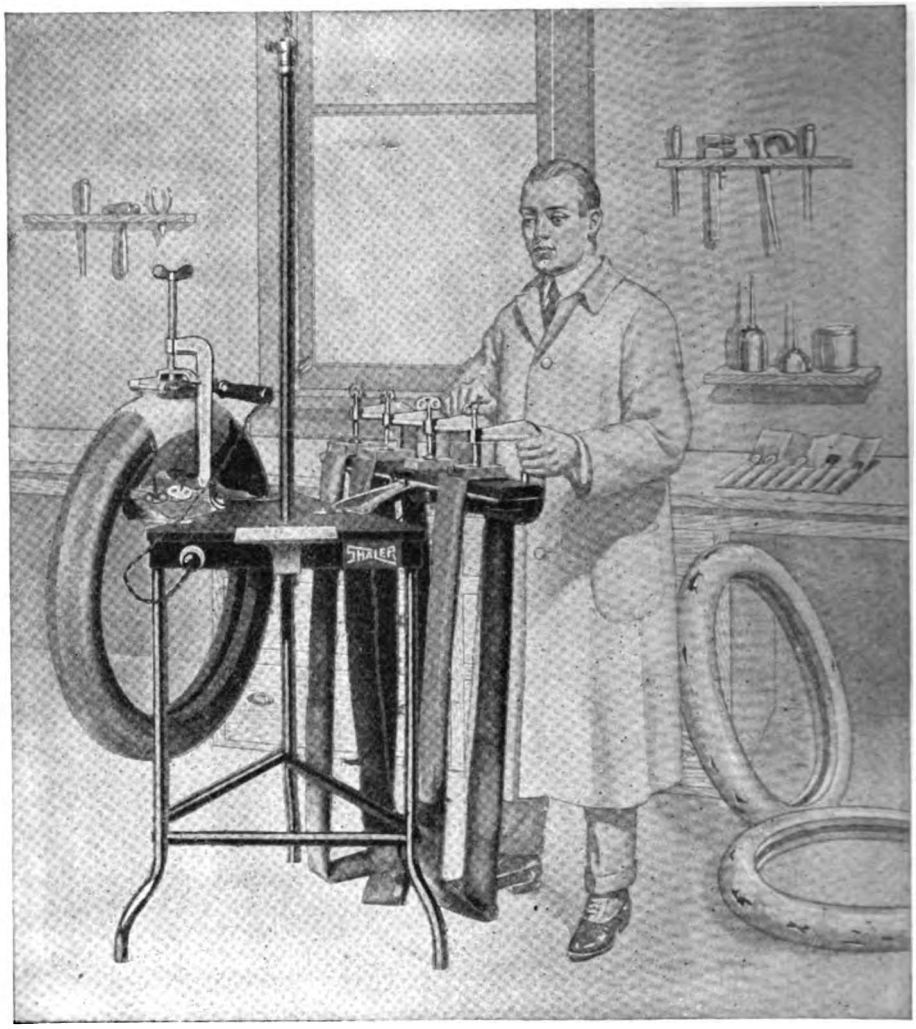
SHALER

Electric

Shop Vulcanizers

$60

Subject to Trade Discount



A Money Maker for Every Garage

Your garage, where every part of the automobile is repaired and cared for, is the logical place to mend tires. Thousands of ambitious garage owners realize it and are increasing their revenue as a result. They utilize the spare time of their help thereby reducing their overhead expense.

Every car you store, repair or adjust means eight prospective tire repair jobs because every car means eight tires per year on the average. These tires need daily attention because they blow out or puncture constantly.

Wrapped Tread Method

This simplifies tire repairing and makes every casing and tube repair perfect and permanent. It is the same method that is used and indorsed by the big tire makers. The Shaler is acknowledged to do better work than the high priced complicated machines.

It is so easy to repair tires the Shaler way that anybody who can clean or wash a car can operate a Shaler the first time and make perfect repairs. It heats from city electric light—uses very little current and requires little bench room.

Automatic Temperature Control

This, together with thermostat attachment, is an exclusive Shaler feature that controls and maintains the temperature of the Vulcanizer exactly at the right point for every type of repair without watching or regulating and without fear of overcuring or undercuring the tire.

Tubes can be repaired simultaneously with casings yet each unit is complete in itself and may be used independently. In casing repairs the Shaler retains the original pattern of any non-skid tread and makes the repair the strongest part of the tire.

Write Today for Complete Catalog

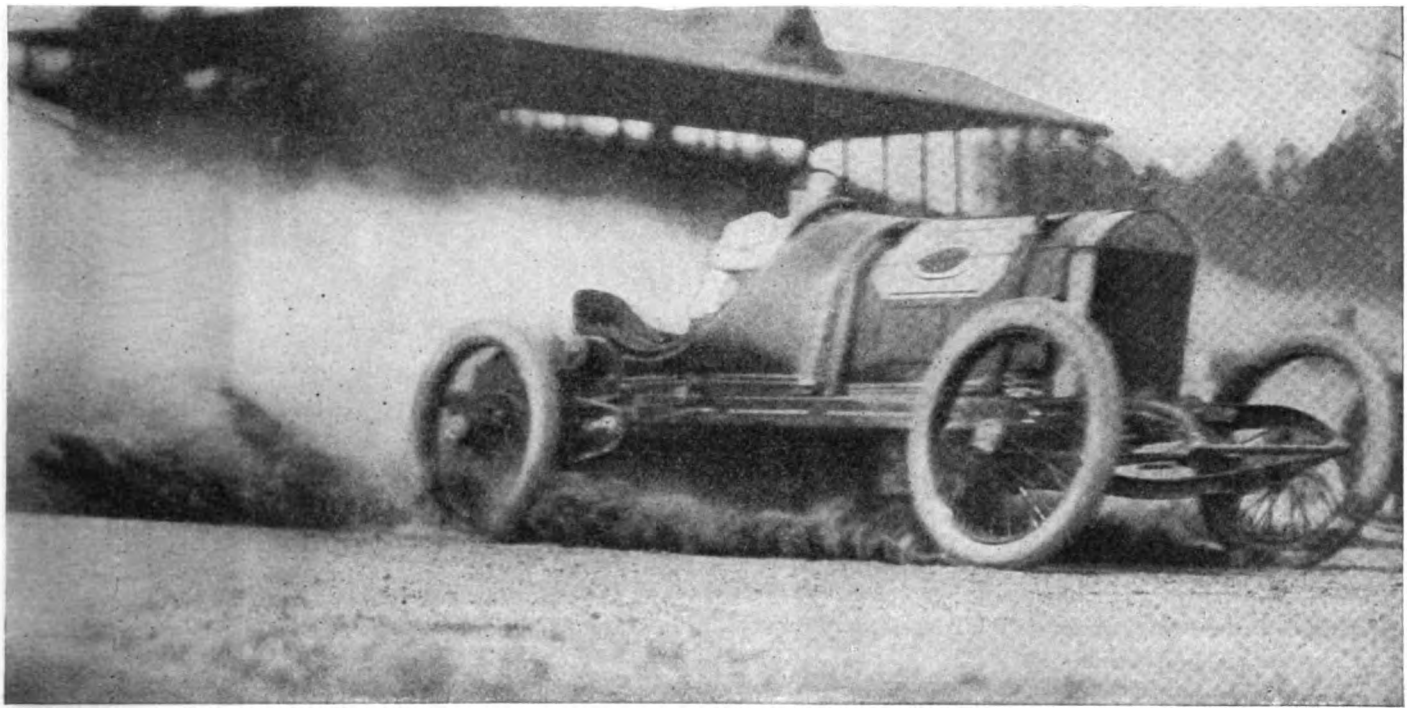
Send at once for the new Shaler Catalog of Shop Vulcanizers and investigate this extra avenue of profit for garages. You'll be surprised how easily and quickly you can add to your revenue. Steam heated vulcanizers furnished if you have no electric current. Mail your letter tonight.

C. A. SHALER CO., 428 Fourth St., Waupun, Wis.

The Largest Manufacturers of Vulcanizers in the World

Canadian Distributors: JOHN MILLEN & SON, Limited, Toronto, Winnipeg, Montreal, Vancouver.

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Eddie Hearne in a Bosch-Equipt Racing Car. This car has been in 592 races, and in 191 of them it never was headed. In all, nearly 4000 miles were traveled in contests against Father Time, every mile at better than 60 m. p. h. This car has been in three "smash-ups," the last in the Vanderbilt Cup Race of 1915, with Burman driving. It never has been out of a race nor failed to finish because of ignition trouble. Of course, it uses Bosch Magneto Ignition and the same Bosch Magneto first installed is still doing its work. That's ignition service.

Use Magneto Ignition On Your Car

EVERY MOTOR CAR RACE of importance run during this year has been won by a car using a Bosch Magneto for ignition. Practically every big race run for the past six or seven years has been won by a Bosch-Equipt car.

Why?—Because, merely a spark in the cylinder would not satisfy the exacting drivers—because the manufacturers of the cars they drove could not take a chance. While they wanted the utmost in speed from their engines, they desired reliability first—that is an important reason why most races, whether for motor cars, motor boats, or motor cycles, are won by engines using Bosch Magneto Ignition—Bosch Ignition is reliable ignition.

These plain facts are good proof why the Bosch Magneto is superior to other forms of ignition. The test by racing is severe and gruelling, and Bosch Magnetos always come through without a falter, but the CLIMAX of PROOF lies not in the continuous demonstration of Bosch Magneto superiority in contests, but in the fact that there are more than

TWO MILLION BOSCH MAGNETOS IN USE

The superiority of Bosch Magneto Ignition is further shown by the increasing demand for Bosch Magnetos to replace other ignition systems depending directly or indirectly upon batteries. Special consideration has been given this problem, and with a view to facilitating installations on battery-equipt cars, special attachments have been designed and can be obtained for those cars for which Bosch Magneto Ignition is most in demand.

Correspondence Invited

BOSCH MAGNETO COMPANY, 224 West 46th Street, NEW YORK

CHICAGO . . . . . DETROIT . . . . . SAN FRANCISCO . . . . . TORONTO

Why Bosch Magneto Ignition

?

The question is answered in the booklet on Bosch Magnetos. Send for it.

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YOU FORD OWNERS
HAVE LOOKED FOR THIS CARBURETOR



Cuts gasoline consumption 25%. Adds power and snap to motor. Prevents carbon accumulation.

GARDNER *thermostat* CARBURETOR

Makes your Ford motor more flexible—it will run slower and faster with wonderful smoothness.

SCIENTIFIC PRINCIPLE

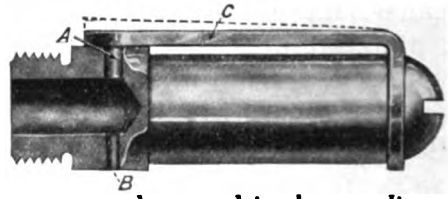
This wonderful, new-departure carburetor does big things because of the Thermostat (see explanation below). It's built upon a practical, scientific principle. Makes a surprising difference in economy, flexibility, power and cold-weather starting. Produces a rich mixture when motor is cold, then automatically leans mixture as motor warms up. Nothing to get out of order—no constant adjustment. The simple, sturdy construction makes it practically indestructible—guaranteed to last the life of your car.

DEALERS

The price of $10 for this carburetor makes every Ford owner a hot prospect. We offer you liberal discount and will stand back of every Gardner Carburetor you sell. Write or wire today for particulars.

RESULTS GUARANTEED

Installed in a few minutes and sold on a money-back guaranty. If it doesn't give at least 25% more mileage, greater power and flexibility, we'll gladly refund your money. Thousands have installed Gardner Carburetors on the same guaranty that we offer you. Remember, this isn't a mere plug which screws into the manifold—it's a scientific and practical carburetor built to successfully operate under all conditions. A trial will convince you. It pays for itself in no time. Order today and begin reducing your gasoline costs.



Thermostat, submerged in the gasoline, is controlled by the temperature and acts as the temperature changes.

A—Thermostat gasoline feed gradually closes as engine warms up.

B—Fixed engine feed.

C—Thermostat variation .001″ for every 12° F.

GARDNER CARBURETOR AGENCY

684 Woodward Ave. **Detroit, Michigan**



$10



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There Are No Bumps Ahead of the Stone Ten-Dollar Shock Absorber

This shock absorber has proved itself. When we first announced it at the amazing price of ten dollars, lots of motorists would not believe that it was as good as we pictured. But lots of them tried it. And they were soon convinced. It does not take news like that long to spread amongst enthusiasts. So now thousands are using the Ten-Dollar Stone. And urging other thousands to use it.

Stone Shock Absorbers—Ten Dollars the Pair

Study These Points

Double-coiled springs of finest material, giving greatest liveliness with greatest strength.

A two-inch play instead of an inch and a half. This stops jolts that get by others and practically does away with any chance of a broken leaf spring.

Four bearing parts instead of two. This preserves alignment and prevents side wear.

An adjustment load which permits a load range of 1500 pounds, for varying load and road conditions.

They are made to fit all cars without bothering about different sizes. Bushings and Washers will take care of that.

They are easily adjusted. Merely knock out the shackle bolt of the spring and put in the absorber bolt. It is done in a few minutes.

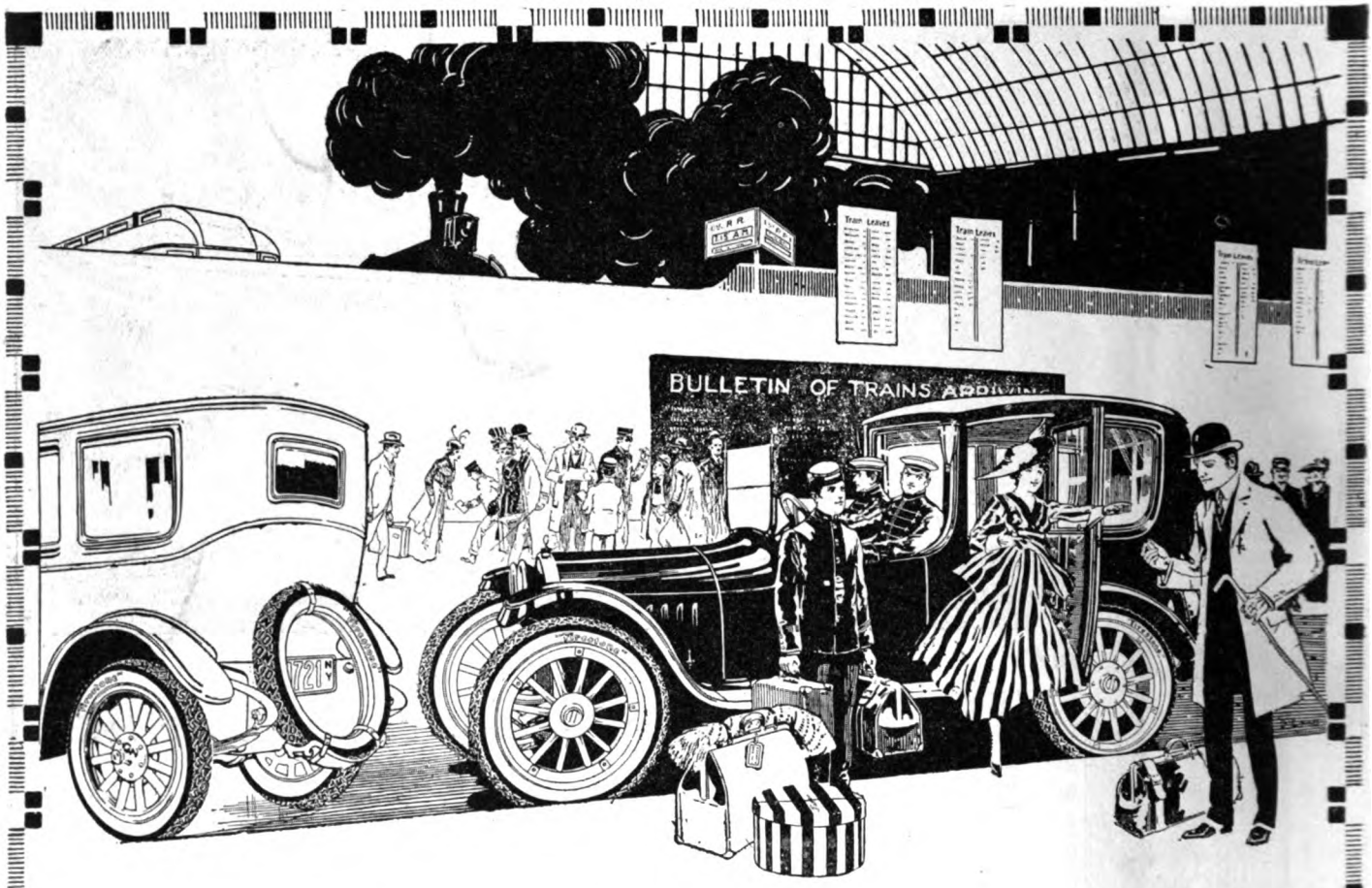
New Business—New Friends

Owners now go to the dealer that can supply the Ten-Dollar Stone. This means that you can have a chance at new customers if you carry this absorber. Every pair you sell creates a favorable impression for you. Owners like the man who fits them out with the Stone. They go back for other things. Write your jobber at once for further information. If your jobber cannot supply, write us.

Made and Guaranteed by **UNIVERSAL RIM CO.** *Makers of the Baker Rim*

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Make Travel Sure With Firestone Equipment

TRAIN and Boat, like "Time and Tide," wait for no man. Tire-delay and trouble have spoiled many a touring trip. When demands of travel are imperative—then is the time you should have the ever-reliable service of

Firestone

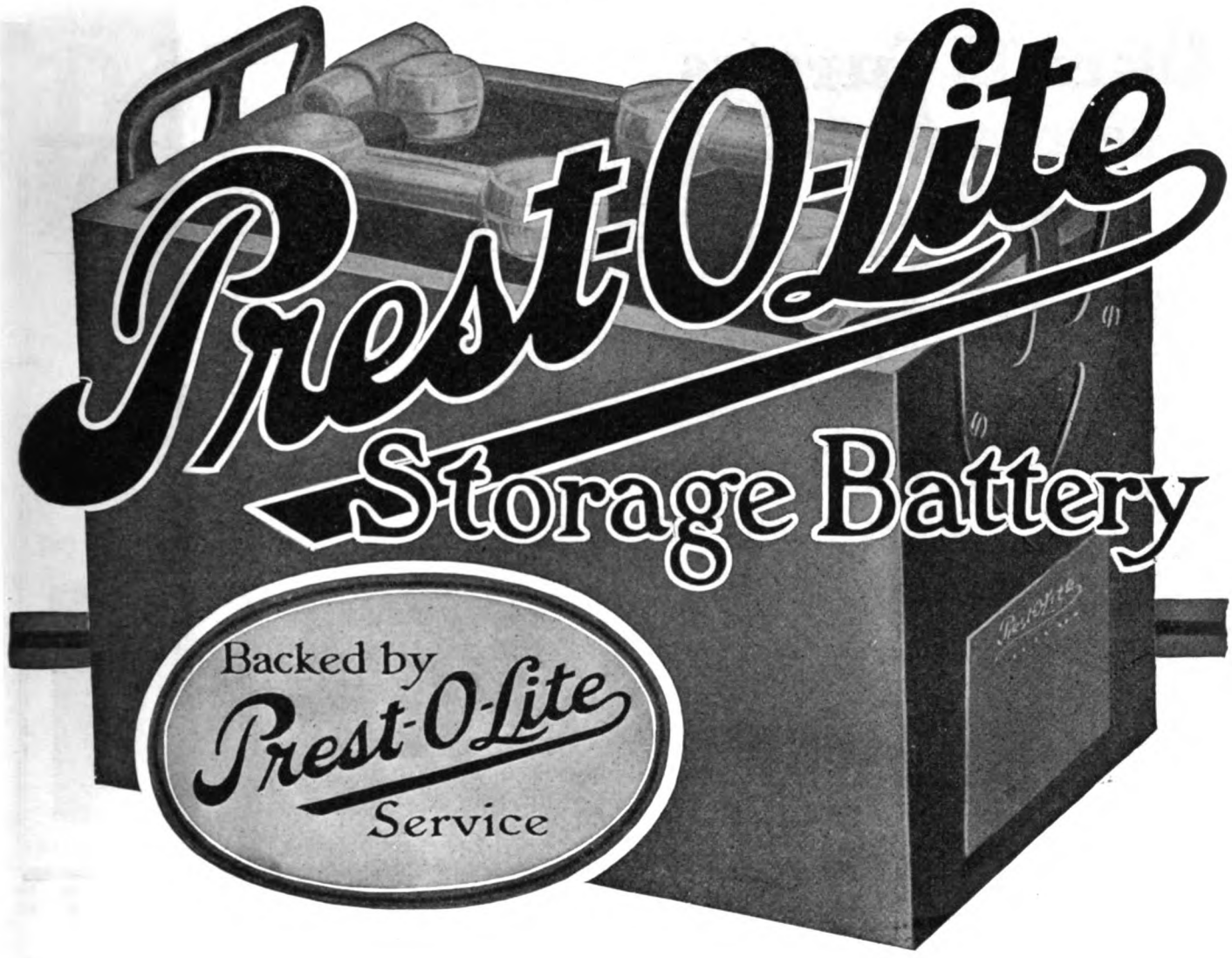
RED Side Wall BLACK Tread Tires

For cross-country work or spin along boulevard—for hot weather, when the road grinds like an emery wheel, or rain that makes the boulevard glassy, Firestone Non-Skid Tires are the answer.

DEALERS—Firestone gives quality in product to begin with and sales-helps without end. Send for latest book of Dealer Helps.

Firestone Tire and Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere

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A Battery to Suit Your Car—
A Service to Suit Your Needs

There is a Prest-O-Lite Battery of correct shape, size voltage and capacity for every make and model of car, and for every starting and lighting system which is or ever has been in general use.

The Prest-O-Lite Storage Battery will give high discharge rates for longer periods, and maintain its voltage better, with less internal heat developed, than any other battery of relative size.

Prest-O-Lite batteries have a superior value in better design, construction and efficiency.

And every Prest-O-Lite battery is backed by Prest-O-Lite Service.

The Prest-O-Lite Company, Inc., maintains more Direct Factory Branches than all other battery makers combined. They form the nucleus for the largest amount of actual service obtainable in the storage battery field.

Prest-O-Lite Service back of Prest-O-Lite Storage Batteries means the beginning of the end of your battery troubles. It offers a business-like, profitable proposition for every automobile dealer as well as insuring the greatest satisfaction to the owner.

Even those dealers who do not intend to equip for battery repair service will find financial interest in our battery proposition. Write for it today.

The Prest-O-Lite Co., Inc., 902 Speedway Indianapolis, Ind.

FACTORY BRANCHES—Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Davenport, Denver, Des Moines, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, St. Louis, St. Paul, San Antonio, San Francisco, Seattle and Syracuse.

Each of these Factory Branches is fully equipped for Battery Repairs and Service

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Order a can from your dealer and prove the truth of our claims.

Our Money Back **guarantee** is printed on every can.

Dealers, if you are not already **getting your** share of this business write at once for terms.

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February twenty-sixth
Nineteen-Fourteen

American Oil Products Co
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Gentlemen:-

We have just completed a test of your OPCO carbon remover, and we are glad to report that the solution seems to accomplish the purpose for which it is intended quickly and thoroughly, and without the accompanying risk of damage and inconvenience common to ordinary carbon removers

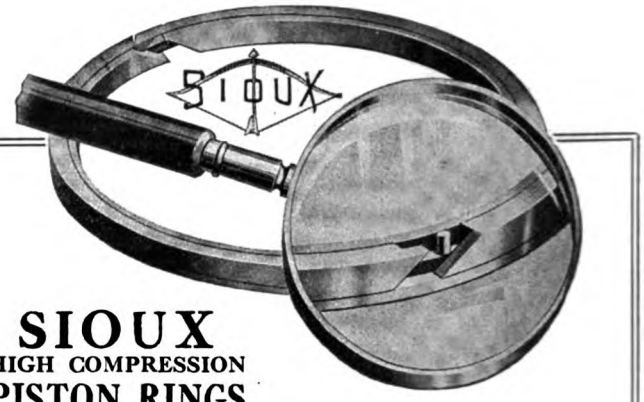
The fact that the composition has an oil base makes it possible to run the engine after the carbon remover is applied without danger of damaging the cylinders, and also prevents the solution from getting past the pistons and spoiling the oil in the base, as sometimes happens with ordinary carbon removers A single application will loosen and remove the carbon, clean the plugs and, in the instance of our test, increase the power and efficiency of the motor at once.

Kindly send me ten cans.

Yours truly,
Glenn H Curtiss

GHC:G

AMERICAN OIL PRODUCTS CO.
BUFFALO, N. Y., U. S. A.



SIOUX
HIGH COMPRESSION
PISTON RINGS

Pay Dealers Well

The piston rings you sell your customers hold in their success or failure the good will or displeasure of their owners.

Quality and accuracy in piston rings, for all time, are essential to success and satisfied patrons.

SIOUX Rings are guaranteed against breakage from any cause. They will always hold compression and still lubricate the rings enough for any speed. Note the patent fastening. It is the secret of SIOUX success.

Dealers already making big sales and good profits from liberal discounts.

Dealers write for valuable booklet, giving size of piston rings for the different makes of cars.

Write for free illustrated literature and details.

Sioux Rings Installed on Any Piston



Albertson & Company
Sioux City Iowa

Over 40,000 Sold in Four Months!

Orders from owners of 1915-16 Model Ford cars have poured in from all parts of the world for concentrators. The reasons are obvious. Its price—only $2—simplicity and troubleproofness—ease of installation and absolutely automatic operation.



Only **$2**

VAN SICKLEN
AUTOMATIC
HEAD LIGHT CONCENTRATOR
FOR FORD CARS

At all engine speeds below 15 m.p.h. the CONCENTRATOR automatically short-circuits the right headlamp and supplies *double current* to the left lamp. At 10 m.p.h., for instance, the left lamp is burning as brightly as it would be at 20 m.p.h.

Send for free booklet. Order through your dealer, or if he cannot supply you, write us direct.



DEALERS: One dealer disposed of 200 Concentrators the first month. Act now. Wire or write for dealer's proposition.

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Dealer Co-operation!



This full page in The Saturday Evening Post of Aug. 26, will sell more O-SO-EZY for YOU

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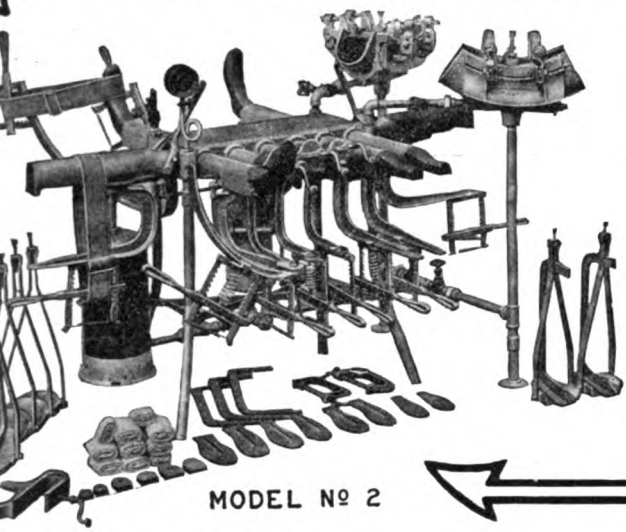
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AN ALL YEAR VULCANIZING BUSINESS

The **ARTHUR VULCANIZER** has advanced vulcanizing from a mere one-season business to an ALL YEAR BUSINESS.

It secures repair work during even the months that were formerly the dull season.

No repair man can afford to close his shop part of the year.



THE ARTHUR MODEL No. 2 FOOTWEAR & TIRE VULCANIZER is the outfit that has opened the way to success. It handles all kinds of repairs to rubber foot wear and repairs to inner tubes and casings.

Write for full information and catalogue.

THE ARTHUR VULCANIZING MACHINE COMPANY

Griswold St. Warren, Ohio

Quality, Service, Price

—are the distinguishing features of our methods, as well as our output.

Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.

Years of steady, unremitting effort have concentrated in

VULCAN QUALITY

SPRINGS a Quality of material and workmanship seldom equalled.

Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.

Our determination to divide fairly with dealer and consumer alike has fixed our prices at the lowest level commensurate with good business practice.



Write us today for liberal proposition in territory still open.

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1402 Chestnut St., St. Louis, Mo.

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SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

Rooms, with Bath, $2.50 Per Day up. Suites, $4.00 Per Day up. Rooms $1.50 Per Day up

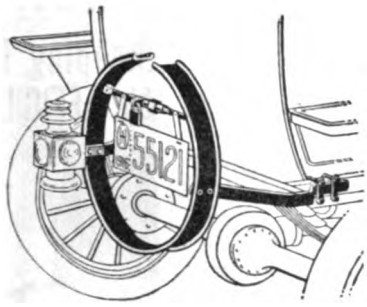
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"Sly Perfect," a new rear tire holder for all Fords and Chevrolet "490." Interchangeable. Quickly adjusted to any Ford sized tire—or demountable rim. Place for lock, lamp and number plate. Price, $3.50 single, $4.50 double.



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NEW ERA Indestructible Sparking Points. For replacement on coils and magnetos. Guaranteed for life. A wonderful seller. Stops weak and miss firing.

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GUARANTEED PRODUCTS

NEW ERA "Better" accessories is a line of business getters.

Dealers throughout the country who stock and are pushing NEW ERA "Better" accessories report a much repeat business.

NEW ERA products include:

Auto Leaf Springs,
Twin Elliptic Radius Link Shock Absorbers,
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Overland-Reo, Maxwell, Dodge, Buick Tire Locks,
Bumpers

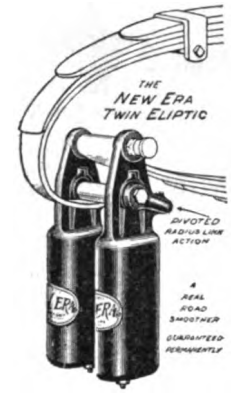
and the following high-class "better" Ford accessories:

"Sly" Interchangeable Combination Rear Tire Holders,
New Era Shock Absorbers,
Foot Accelerators,
Fender Braces,
Gasoline Reserve Valves.

ALL POPULAR PRICES
POSITIVE GUARANTEE

Dealers and Jobbers: Write for catalog containing full particulars covering complete line.

New Era Spring & Specialty Co.
879 Woodward Ave., Detroit

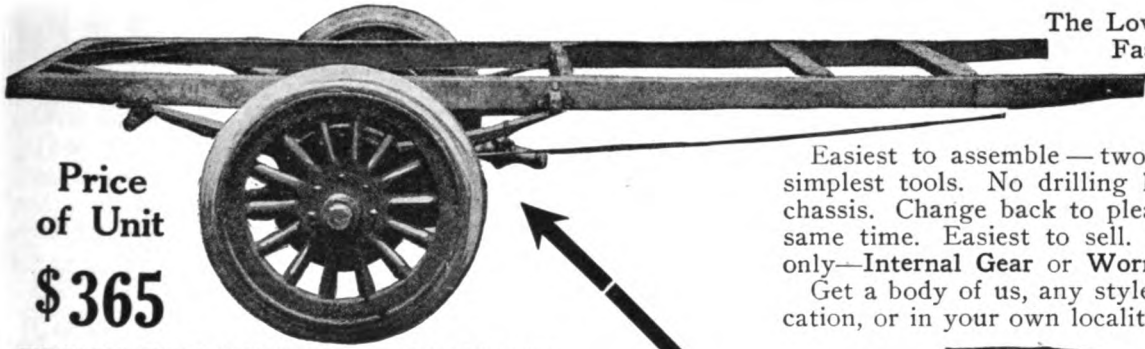


Radius Link Shock Absorbers—NEW ERA Twin Elliptic. A new principle shock absorber unexcelled for its freedom of action and easy riding. Handsomely finished, easily attached. Permanently guaranteed. For light, medium, heavy and extra heavy weight cars. Prices, $12.00 to $15.00. Sold on 10 days' free trial.



NEW ERA Automobile Springs. AAA quality—the jobbers' line—made right—priced right—sold right. For all makes of cars. A line of steady, sure profit. Stops the breakage.

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The Lowest Priced, Fastest Selling Truck Unit Made

Price of Unit $365

Easiest to assemble—two hours' job, simplest tools. No drilling holes in car chassis. Change back to pleasure car in same time. Easiest to sell. **Shaft drive** only—**Internal Gear** or **Worm Drive.**

Get a body of us, any style, on specification, or in your own locality.

TRUCK EFFICIENCY and ECONOMY

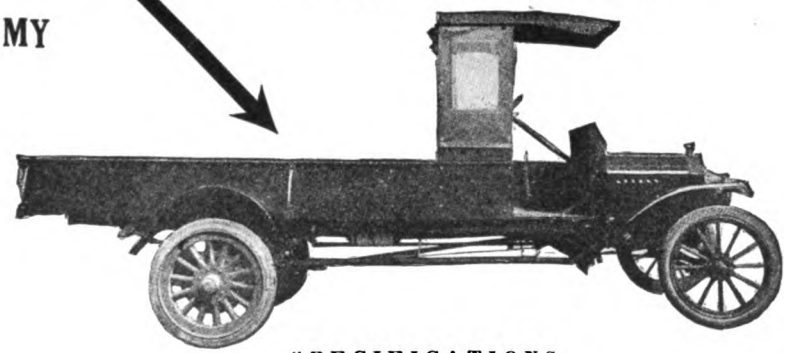
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Sales and Executive Offices:
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Factories: Joliet, Ill.



SPECIFICATIONS

Carrying capacity, 3000 lbs. Carrying space—regular 9 feet, more if desired; wheelbase, 127 inches, more if desired; tires, 32x3½ inch solid; speed, 15 to 25 miles per hour; gear ratio can be adapted to any conditions under which truck is to be used; brake on rear wheel, 1⅞-inch face, 16-inch drum; tread, standard 56 inch.

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Irate Customer—"Send the Proprietor here."
Conciliating Waiter—"Sorry sir, he's out to lunch."

Experience teaches us what we don't want as well as what we want.

Kelly-Springfield Automobile Tires—Hand Made

FEW buy Kelly-Springfield Tires until they have had experience with other tires and learned to measure tire values in terms of mileage rather than initial cost.

Every Kelly-Springfield Tire you see is a certificate attesting: "This is an experienced motorist."

It testifies: "This man has driven other cars, measured the wearing qualities of tires, and learned to purchase mileage at the minimum cost."

The reason is simple. Kelly-Springfield Tires cost more. They are hand-made—to be sure that mileage is built into them. They are excess-mileage tires.

So they are found on new cars of the better class only, as special or optional equipment when the car buyer knows tire values and appreciates that the car manufacturer has paid the price necessary to provide the best service to be had.

Kelly-Springfield Tires cannot be made to meet the price allowed for tire equipment on lower priced cars, when buyers expect only guaranteed mileage. So they are not found on cars until the car buyer has learned to ignore initial cost and guarantees and considers cost per mile.

Because the public expects a guarantee, Kelly-Springfield Tires are guaranteed for 5,000, 6,000 and 7,500 miles, according to type. But they yield 8,000, 10,000 and often greater mileage. Cases where adjustments are necessary are rare.



Few who have once used Kelly-Springfield Tires ever change to other tires, except when they buy new cars equipped with other tires chosen by the manufacturer.

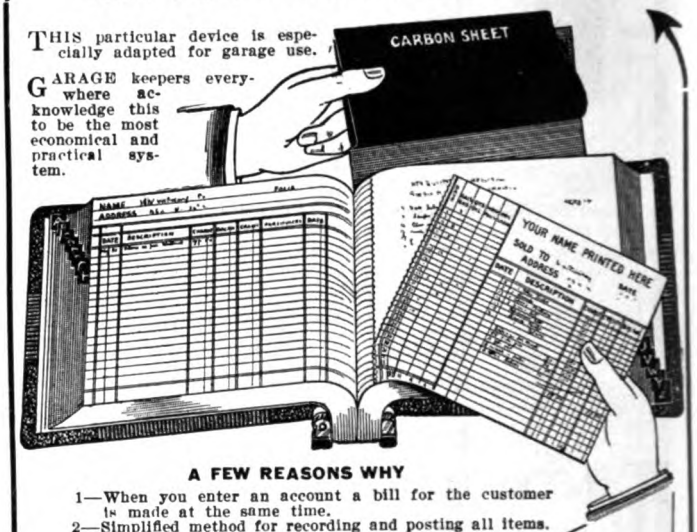
Kelly-Springfield Tire Co.
Factories in Akron and Wooster, Ohio
Executive Offices:
Broadway and 57th St., New York
Send 10 cents for the new game, "Going to Market"

SAVE TIME AND MONEY

Our SPECIAL GARAGE Bookkeeping Plan Gives You the HIGHEST Possible EFFICIENCY

THIS particular device is especially adapted for garage use.

GARAGE keepers everywhere acknowledge this to be the most economical and practical system.



A FEW REASONS WHY

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2—Simplified method for recording and posting all items.
3—Avoids the necessity of posting each item.
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Loose Leaf Specialists

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As for the car, the best judges of motor car values have already pronounced it "The most powerful motor car in the world, the most perfectly controlled."

Twelve Cylinders—Bore 2⅞", Stroke 5"
Wheelbase 135 inches
Tires 34 x 4½ inches

Seven Passenger Touring Car	$2100
Four Passenger "Shamrock"	$2300
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Universal Joints
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Complete Set. Two Joints and Shafts.

Compact, Durable and Powerful. Self-Contained
Simple, Neat and Easy to Disassemble

Made in four sizes up to 100 H.P. Angle of Drive up to 15°. Shafts up to 2½" Diameter. Send for Data and Prices. Reasonable Deliveries

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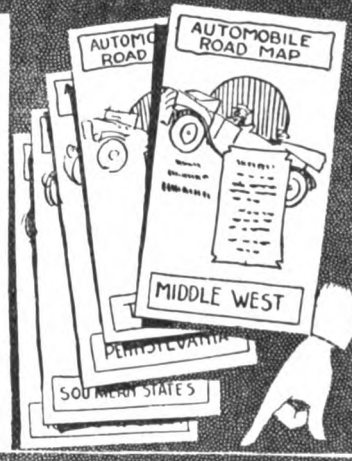
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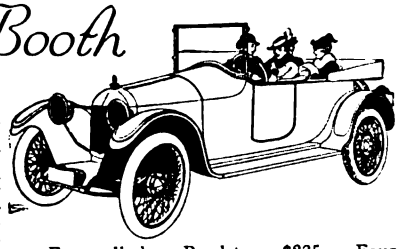
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Because we made it for our own use, after trying others with disappointing results.
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In both the four-cylinder and the eight-cylinder models, Scripps-Booth combines the height of motor luxury with light weight, in a way never before achieved. The resulting comfort and economy have given Scripps-Booth a unique position with a highly desirable clientèle.

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Detroit, Mich

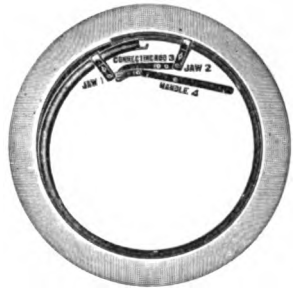
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Makers of K. P. Foot Rest Heater, K. P. Universal Rim Tool and other specialties soon to be announced.



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Kester Crystal-Core Solder

Kester Self-Fluxing Solder is a seamless tube of solder the core of which is a soldering flux that flows as solder is used. CRYSTAL CORE being especially adapted for AUTOMOBILE work. Tube is a series of cells, each cell is filled with the proper amount of flux. Kester Crystal-Core Solder is cheaper to use than wire or bar solder, as no time is lost in preparing or applying the acid.

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Magnetos, electric starting and lighting outfits, ammeters and ignition service in its every detail, at your call at our branches in leading cities.

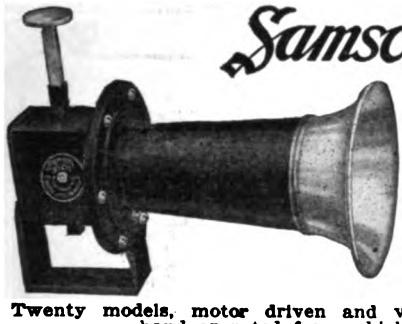
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Splitdorf Plugs are made in all sizes and in types to suit every car, motor cycle, motor boat, tractor and aeroplane.



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The hand operated horn you should be supplying your trade. A neat, substantial, reliable auto signal. *Samson* horns in stock now will assure you of mid-season profits. Get our liberal trade proposition now.

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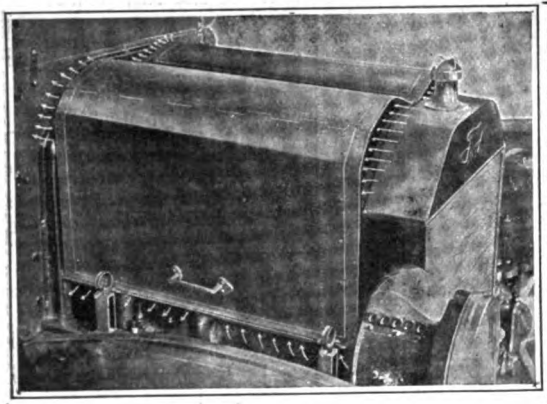
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Free Sample



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SOLDERING PASTE

The fact that electrical supply houses use this flux in preference to all others is convincing testimony.

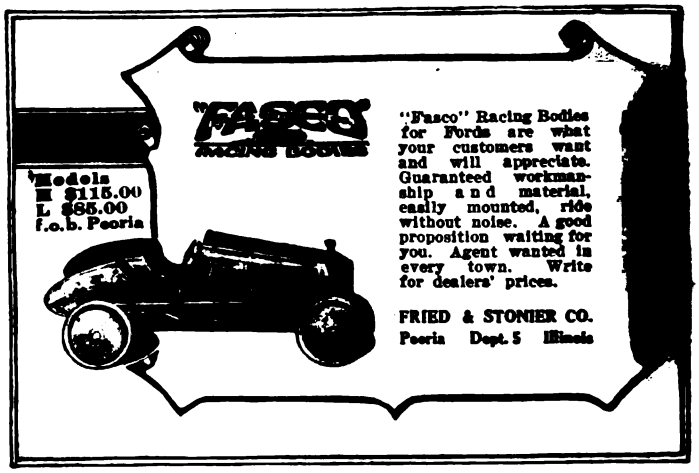
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Cleanest
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Makes every Road a Boulevard



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A precision instrument giving permanently, exact carburetion for your car.

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MUNCIE Inter-State INDIANA

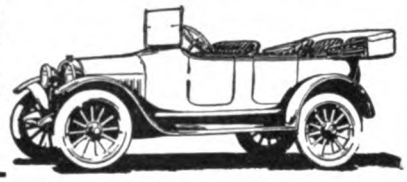
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LONG HORN
INVENTED BY G.F. LONG
"Always Warns"

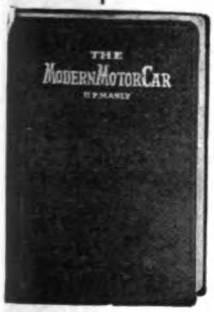
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"Tells the Motor's Secrets"

Manufacturers
THE G. PIEL CO., Inc.
Long Island City, N. Y.

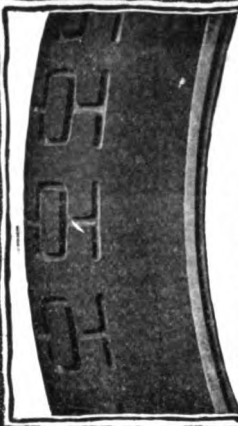
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The "Hold-On" Tread

are as superior in quality to ordinary tires, as the Combination liberal sales policy is superior to the "cut and dried" ordinary selling policy under which the ordinary tires are sold.

Get the exclusive territory proposition.

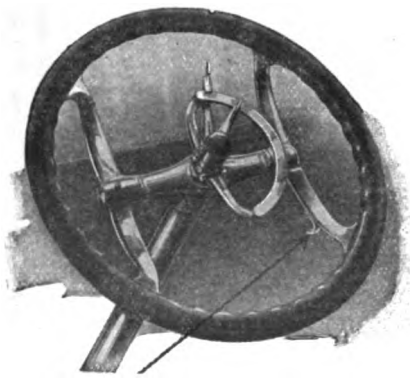
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Manufacturers of High-grade Rubber Products for 50 Years
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The new Condensite heated steering wheel. Write for details and open territory.

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Pouvailsmith Corporation
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Lever controlling Tilting feature

Saves Gasoline
Increases Power
Gives Greater Speed



This valve is the best selling accessory of the season. Every dealer should get in touch with our proposition for selling the well-advertised

BRUGAN $4
Economy Valve

it automatically admits air to the intake manifold cutting down fuel consumption 15 to 35 per cent. It improves combustion, gives greater power, quicker response, and less cylinder carbon.

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The Brugan Company, Bangor, Maine

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"SOOTLESS" SPARK PLUGS

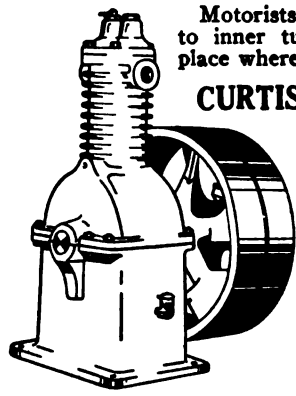
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Special plugs for Ford, Buick, Overland, Winton, Packard and other leading cars.

Prices and discount on request.

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CURTIS AIR—FREE FROM OIL

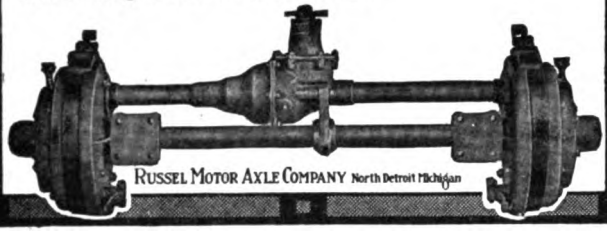
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Price is right.
A result of 25 years' experience in compressor manufacturing.
Send for Bulletin C-5.

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Internal Gear Drive Axles

Let us send you the history of the Internal Gear Drive Axle and tell you how the RUSSEL has been a big factor in its success.



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Ford Motor Company
Detroit, Michigan

HORN and FAN Combined

MOTOR DRIVEN



$5

Oakes

Gets the Roads

No gears, motor, batteries or wires to give trouble. Gives warning signal by merely pushing the button at driver's seat. Increases efficiency of fan and motor. Keeps radiator cool. Never fails to sound. Long life. Is easily interchangeable with fan on any Ford in a minute's time. Most reliable and safest horn. Write for dealer's proposition.

Also Oakes Cranklock 50c. and $1.00

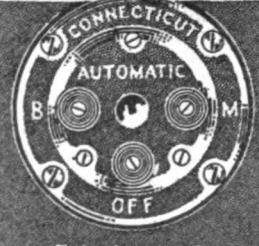
The OAKES COMPANY
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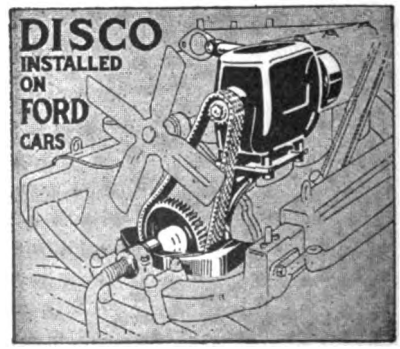
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Gives the most effective spark at every speed for four, six or eight cylinder motors.

Delivers hottest spark at low speeds and a better spark than the magneto at high speed.

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STARTING
AND
LIGHTING
SYSTEM
FOR FORD CARS

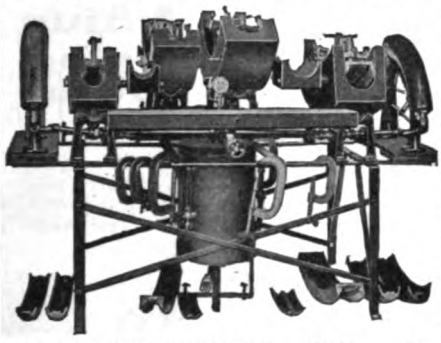
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$75 Complete

Dealers Write for Agency
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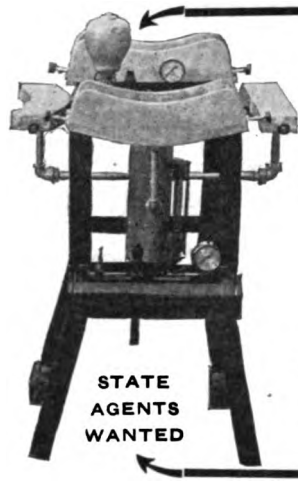
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Our steam vulcanizer takes care of sectional repairs on all tires ranging in size from 1½" bicycle tires to 37" x 5" Automobile Tires. Capacity 3 casings and four tubes. Complete, with set of tools

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BROWN—LIPE
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YOU NEED THIS

Gardner air pump in your garage. It is simple, durable and dependable. Lubrication by an automatic oil splash system. No oil or grease cups used.

The Gardner "Gee Gee" is completely described in booklet AC-15, as is the complete Gardner line of air pumping machinery. Ask for it today.

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PLUGS PUNCTURES AUTOMATICALLY

Bales Puncture Plugger is a semi-liquid, fibrous compound that will instantly and automatically plug punctures in pneumatic tires, and is "guaranteed" not to injure or stick inner tubes or casings, and will not harden, gum or dry up.

Write today for literature and our Territorial Proposition.

Bales Distributing Company
National Distributors
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$740 PULLMAN MOTOR CARS $990

THE new Coupe De Luxe with C-H Magnetic Gear Shift, built and beautifully finished primarily for women, is a splendid example of the products of the Pullman factory. ($990)

Pullman cars are attainable in a Five Passenger Touring model, a Three Passenger or Clover Leaf Roadster model, and a Two Passenger Roadster—all on one standard chassis (114-inch w.b.) at $740.

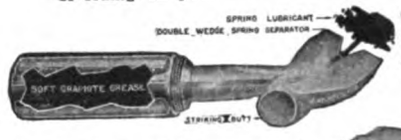
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Makes Spring Lubrication Easy. It will increase the comfort of riding in your Car 100% and stops the squeak.



One blow of the hammer, a twist of the wrist and the trick is done.

Price $1.00

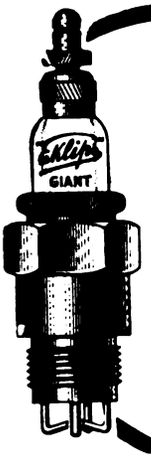


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Tomahawk Graphite Spring Lubricant, sufficient for 2,000 miles. Price 40c. per tube.

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Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

Write for full description, prices and discounts.

THE FULTON CO.

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STANDARD

for

Chevrolet "Four-Ninety"



Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

Guaranteed country-wide service assures your lasting satisfaction.

$15 ***DEALERS Write for Proposition***

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National REDWALL Speedway Type TIRES



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SPARTON SAFETY SIGNALS get instant attention on city streets or country roads. The clear, vibrant Sparton call is quickly adapted to every motoring situation. Use Sparton.
Model "F" $4 Finished in satin, black and nickel, or all black.

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NEW PROCESS DIFFERENTIALS and ACCURATELY CUT METAL GEARS

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N.P.R.H. REGISTERED

NEW PROCESS GEAR CORPORATION

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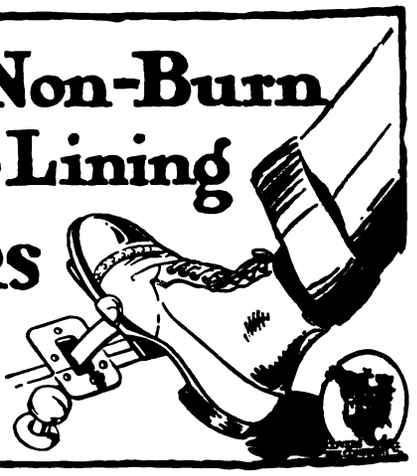
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31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
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32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
32x4	7.00	1.60	35x5	8.50	2.00
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32x3½	8.20	9.65	34x4½	17.10	18.75
32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
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Advertisers' Index

A

Adamson Mfg. Co. ... 48
Ahlberg Bearing Co. ... 97
Ajax Rubber Company ... 97
Albertson & Co. ... 78
American Electric Co. ... 85
American Oil Products Co. ... 78
Ames Co., F. A. ... 55
Anderson Steam Vulcanizer Co. ... 89
Arthur Vulcanizing Machine Co. ... 80
Auto Pedal Pad Co. ... 97

B

Backus Novelty Co. ... 85
Bales Distributing Co. ... 89
Benford Mfg. Co. ... 47
Blake Signal & Mfg. Co. ... 97
Bosch Magneto Co. ... 73
Bower Roller Bearing Co. ... 62
Brown-Lipe-Chapin Co. ... 89
Brugan Co ... 87
Burnley Battery & Mfg. Co. ... 86

C

Cassidy, E. A. ... 87
Champion Ignition Co. ... 83
Chicago Auto Supply House ... 97
Chicago Solder Co. ... 85
Combination Rubber Mfg. Co. ... 87
Connecticut Tel. & Elec. Co. ... 88
Corbin-Brown Speedometer Co. ... 3
Craven Co., E. T. ... 84
Curtis Pneumatic Mchy. Co. ... 88

D

Denneen Motor Co. ... 49 to 52
Detroit Auto Products Co. ... 60-61
Disco Electric Starter Co. ... 88
Dixie Motor Car Co. ... 59

E

Eisemann Magneto Co. ... 71

F

Fairchild & Co., H. G. ... 53
Fedders Mfg. Co. ... 89
Ferro Machine & Foundry Co. ... 56
Firestone Tire & Rubber Co. ... 76
Fisk Rubber Co. ... 2
Ford Motor Co. ... 88
Foster Accessories Co., C. H. ... 58
Fried & Stonier Co. ... 86
Fulton Company ... 90

G

Gardner Carburetor Agency ... 74
Gardner Governor Co. ... 89
Gibson-Hollister Mfg. Co. ... 84
Goodman Auto Body Co. ... 84
Grossman Co., Emil ... 86
Gulf Refining Co. ... 83

H

Hartford, E. V., Inc. ... 86
Harton & Co., Inc., T. J. ... 82
Hôtel Marie Antoinette ... 80
Houk Mfg. Co. ... 89
Hyatt Roller Bearing Co. ... 84

I

Inter-State Motor Co. ... 87

J

Jenkins Vulcan Spring Co. ... 80
Johns-Manville Co. ... 90

K

K. P. Manufacturing Co. ... 84
Kelly-Springfield Tire Co. ... 82
Kelly Convertible Truck Co. ... 81
Kissel Motor Car Co. ... 69
Koehler, H. J. ... 86

Digitized by Google

Advertisers' Index

L

Laird & Lee 87
Leather Tire Goods Co 68
Lewis Electric Welding Mfg. Co 9
Longaker Co., V. A 63
Lozier Co., H. A 82
Lumkenheimer Co 99

M

Manzel Co., Chas. W 90
Master Carburetor Co 65
Merchant & Evans Co 83
Michigan Auto Trailer Co 97
Mitchell Motor Co 64
Mosler & Co., A. R 90

N

National Motor Vehicle Co 43
National Rubber Co 90
New Departure Mfg. Co 84
New Era Spring & Specialty Co 81
New Process Gear Corp 90
N. J. Carspring & Rubber Co 67

O

Oakes Co 88
Oakes & Dow 88
O-So-Ezy Products Co 79

P

Picard Co., A. J ..... Front Cover
Pouvailsmith Corp 87
Prest-O-Lite Co ..... 77 and 87
Pullman Motor Car Co 89

Q

Quaker City Rubber Co 86

R

Rayfield Carburetor Co 44
Rayford Co 54
Ross Automobile Co ..... Back Cover
Russell Motor Axle Co 88

S

Saxon Motor Co 65
Scripps-Booth Co 84
Shaler Co., C. A 72
Sheldon Axle & Spring Co 84
Silvex Co 97
Sparks-Withington Co 90
Splitdorf Electrical Co 85
Standard Thermometer Co 90
Stevens & Co 99
Stewart-Warner Speedometer Corp ..... 2nd Cover
Studebaker Corp 1
Stutz Motor Car Co 100
Swinehart Tire & Rubber Co 88

T

Torbensen Gear & Axle Co ..... 3rd Cover

U

United Engine & Mfg. Co 98
U. S. Ball Bearing Co 46
Universal Rim Co 75

V

Vanderpool Co 89
Van Sickien Co 78
V-Air Valve Co 86

W

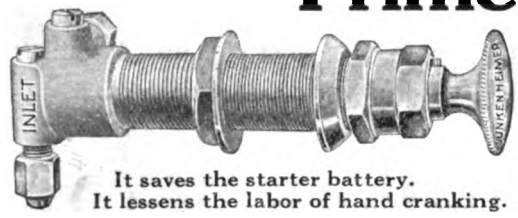
Walker Mfg. Co 57
Waltham Watch Co 45
Warner Auto Top Co 70
Willys-Overland Co 4

Z

Zenith Carbureter Co 87

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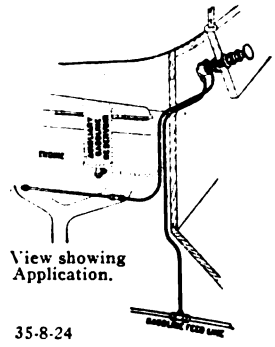
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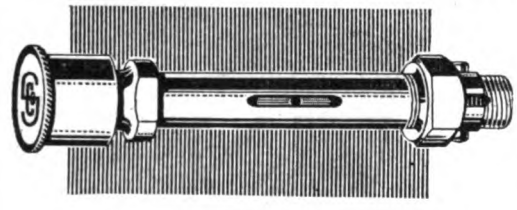
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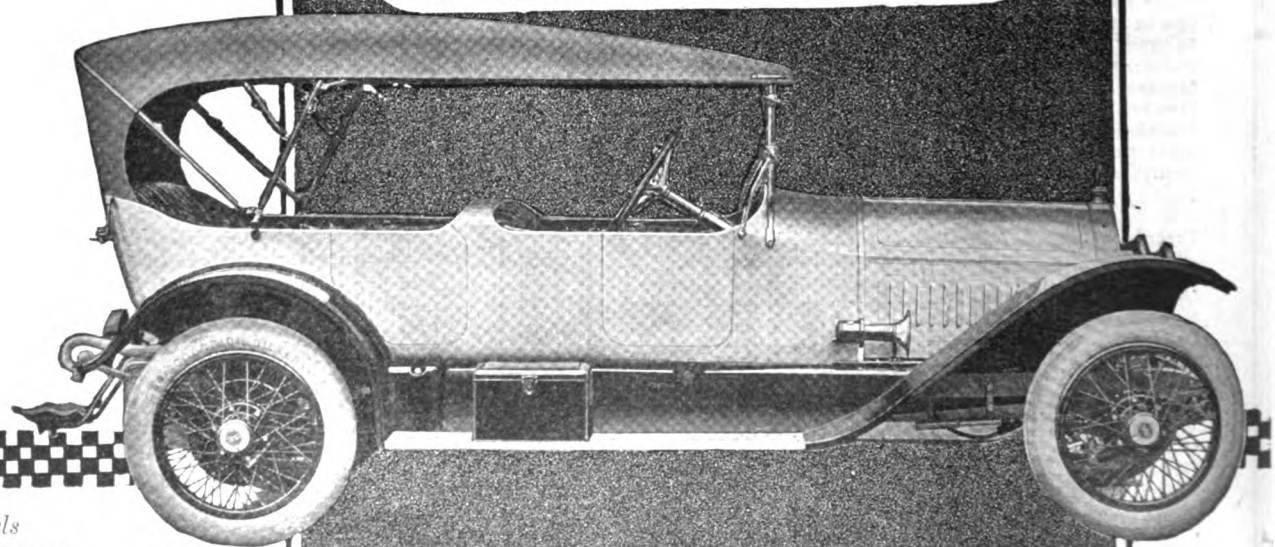
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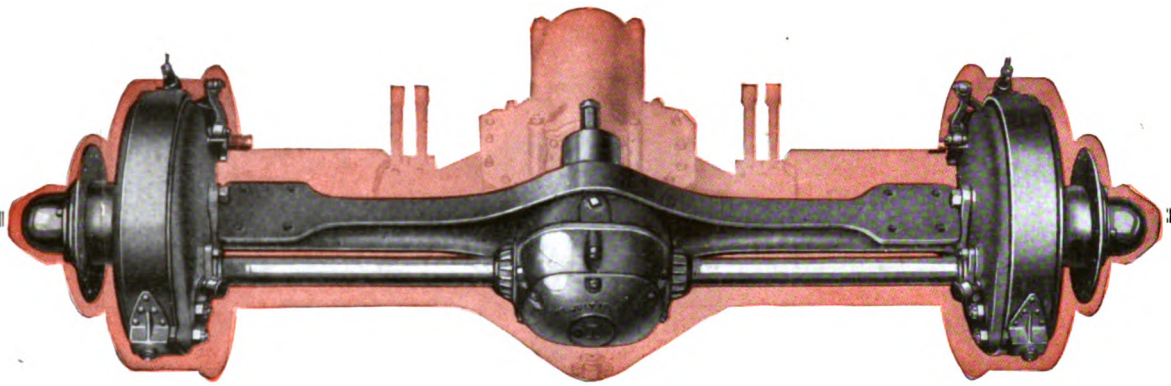
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$2,275 and $2,550
Literature on request

STUTZ MOTOR CAR CO.
Indianapolis Indiana

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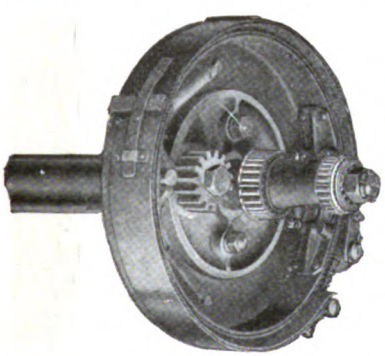
TORBENSEN DRIVE



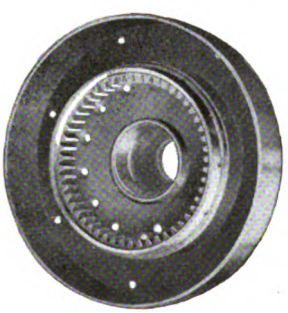
Greater Strength and Efficiency with Half the Weight of Other Types of Motor Truck Axles

IN the construction of an axle for heavy duty, sheer bulk and weight do not indicate greater strength or efficiency. The reverse is more nearly true. The above illustration, for instance, shows the comparative size of a Torbensen Drive Axle and another type axle of equal rated capacity.

Torbensen Internal Gear Axles are from one-third to one-half lighter in weight than other axles designed for the same service. A solid forged steel I-Beam supports the load instead of a cumbersome cast housing. The I-Beam is far stronger, yet lighter.



Torbensen Drive Brakes are large and powerful. Actual tests conclusively prove that they give far more reliable and satisfactory service than the brakes on any other form of final drive.



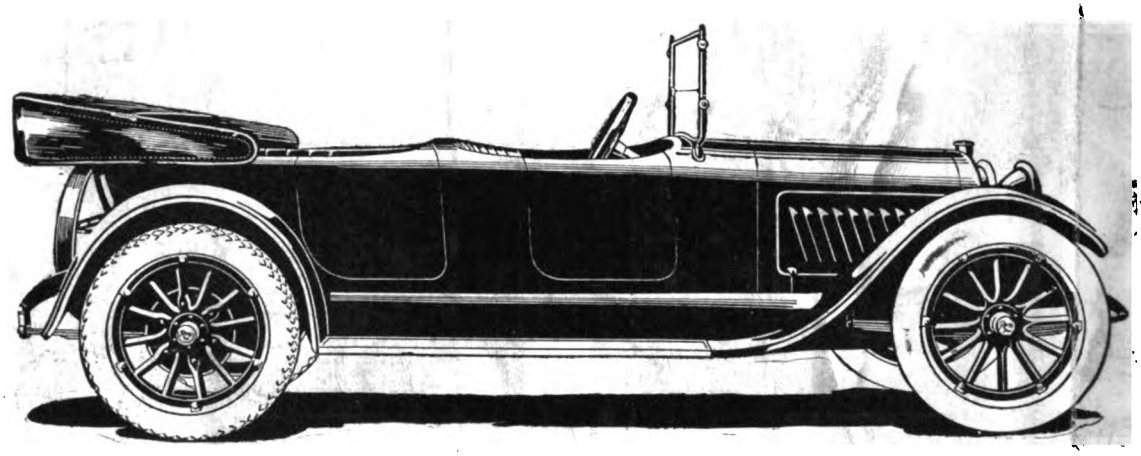
Torbensen Drive transmits the power to the wheel, halfway between the rim and hub, through a live axle. This jack-shaft member is flexible and no damage can result to the differential or bearing through flexing of the I-Beam on account of excessive loading.

Extremely low maintenance costs and a big saving in tires and gasoline consumption are assured in trucks equipped with Torbensen Drive. The simplicity and accessibility of Torbensen Drive are features that raise their value to commercial car dealers still higher. Full information and literature will be gladly sent on request.

TORBENSEN GEAR AND AXLE CO.

CLEVELAND, OHIO.

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A Big Seven-Passenger Car with a Motor Equal to Any Occasion

Here is a car that will appeal to your imagination.

It has a swiftness that is extraordinary and it has slowness that is equally extraordinary.

Throttle it down in the city or on the road and still it pulls with a steadiness and evenness that will give you a new conception of power. It is like a race horse controlled by a silken thread.

It is the embodiment of gentleness, tractability, docility.

But, step on the throttle and, presto! she becomes a very demon of speed, capable of faster mileage than you would care to make.

Yet it is this very excess of power that gives it the capacity for such easy, slow speed without any change of gears anywhere.

Every unit of the Ross Eight is built to harmonize with its 80-Horsepower Motor.

The use of the costliest materials, however, permits all the necessary strength combined with light weight—3250 pounds complete.

The Ross Seven-Passenger body challenges any car for style, luxury and completeness.

And, considered in connection with other details of Ross construction, makes the Ross price, $1350 F. O. B. factory, seem ridiculously low.

When you know that the Ross Eight is drawing to its standard many of the ablest dealers in the country who formerly sold cars of much higher price, you will appreciate why we urge an acquaintance with the Ross Eight before you purchase any car.

ROSS EIGHT

Write for Complete Information

Ross Automobile Company, Detroit, Mich.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 9

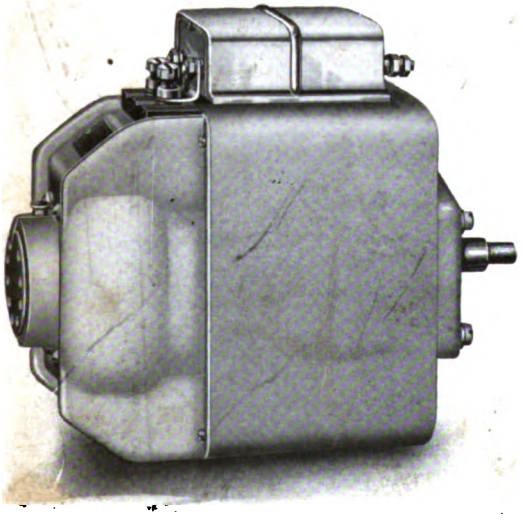
New York, August 30, 1916

Ten cents a copy
Two dollars a year

GRAY & DAVIS

Starting, Lighting, Ignition System

THE judicious selection of a car affords gratification when its accessories meet motoring requirements without annoyance or added expense.



With no need of fast driving to charge the battery and unhampered by danger of overcharging at high speed, the Gray & Davis dynamo delivers uniform current at all driving rates and conserves the battery.

The dynamo, designed to deliver full output at unusually low speed, operates with quiet efficiency, giving increased durability to the bearings.

Every Machine Is Right.

GRAY & DAVIS, Inc., Boston, Massachusetts

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A Cowl Board With Every Speedometer for Ford

Just what every Ford owner needs, and wants—a Cowl Board beautifully finished in black enamel with a Stewart Speedometer, set off with a heavy nickel flange, mounted in the center.

It's a beautiful job.

And it gives a finished appearance to the Ford dash—and brings the speedometer up in a position where it can be easily read—even at night.

Ford owners are going to literally snap up this new Stewart product as soon as they see it. It is put on so easily—and is such a marked improvement. And the price complete is only a trifle more than the cost of the speedometer itself.

Dealers. think of the market this new Stewart Product opens up for you.

Speedometer for Ford $10

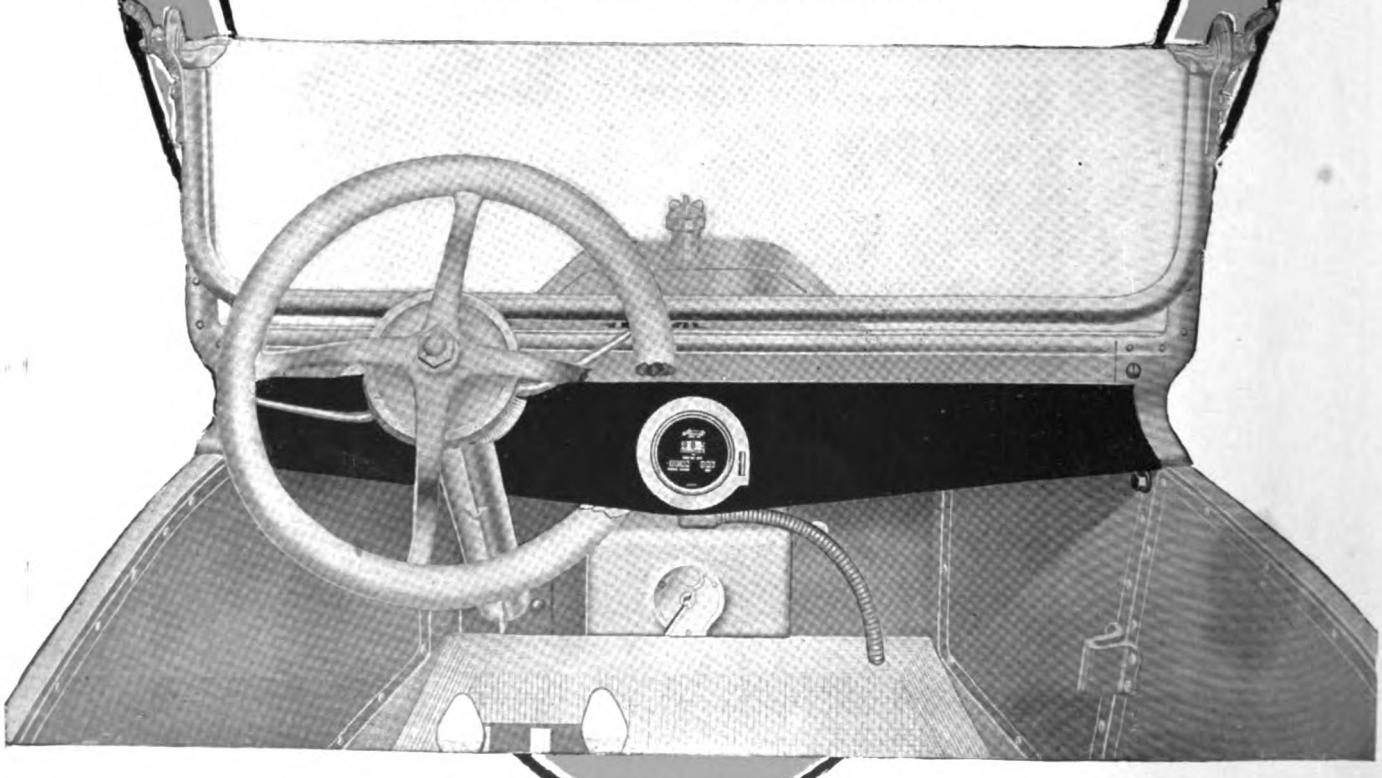
Cowl Board $1.25 Price Complete $11.25

"It will pay you to see that the car you buy is equipped with Stewart Products"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

Stewart

Speedometer and Cowl Board for Fords



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He Spells Success this way: S-t-u-d-e-b-a-k-e-r

That concentration of selling effort on one line of motor cars is far more productive than the scattered attention that a diversified line demands, is convincingly demonstrated in the case of Mr. C. L. Grinnell, the Studebaker dealer in Newport, R. I.

The successful record that Mr. Grinnell has established in that territory is one that any motor car dealer might well take pride in, for to date, his selling activity as a Studebaker dealer has resulted in his placing more Studebakers on the streets of that fashionable resort than any other one make of motor cars. Further evidence of his energetic campaign in behalf of the Studebaker line is found in the fact that Mr. Grinnell increased his contract three times within the past year.

The success of this dealer proves beyond all question that the value and stability of Studebaker cars are sources of bulging profits to the man who will take hold of the line and push it vigorously. There are still a few opportunities left for progressive men who can measure up to the standard set by 6500 Studebaker dealers. The facts are yours if you will write for them.

STUDEBAKER

Detroit, Mich.

South Bend, Ind. **Walkerville, Ont.**

Address all correspondence to Detroit

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"Word of Honor"

When a man puts his name on a product he gives a pledge to the public which only Quality can make good. The value in a well-established name, therefore, is in the honor and good faith for which it stands.

On every Firestone tire there is stamped the name of the founder of the world's largest exclusive tire company—H. S. Firestone, the president of the Firestone Tire and Rubber Company.

For 16 years this name has stood for all the best possible in up-to-date tire service, maximum mileage, easy riding and economy.



The Value to Dealers in the Firestone Name

—is the value in high ideals; in the spirit of co-operation and mutual aid toward good business and the square deal.

Write for data on the Firestone "Selling Helps." Also copy of new book, "Mileage Talks." Be ready.

Red Side Wall—Black Tread

The Distinctive Firestone Trade-Mark

Firestone Tire and Rubber Company

"America's Largest Exclusive Tire and Rim Makers"

Akron, Ohio

—Branches and Dealers Everywhere

Firestone
NON-SKID TIRES

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
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Editorial Contents

Sick Baby of the Institution.....6-7
That's what Ackerman calls the used car department of a dealer's business. But he cured the baby and it's growing fast.

Dealers Who Have Made Good..... 9
John Van Benschoten of Poughkeepsie, N. Y., makes his bow.

Think Tractor Construction.....10-11
This article, by Stanley P. McMinn, who has made a study of the tractor situation, tells why the dealer must study construction.

The New Stutz..... 8

The New Dixie Flyer.....18-19

The New Hackett..... 33

The New Premier.....34-35

Milwaukee Dealers Start Tour..... 39
The annual "boost" has started and Ray W. Sherman of Motor World staff is along to report it.

Here's $50 for You..... 12
There's a fake subscription man working in Pennsylvania and if you catch him it will bring you $50.

South American Article.....14-15

Motor World Guide.....42-43
This has been corrected and brought up-to-date.

Simplified System of Accounting.....16-17

Repairshop Short-Cuts.....20-21

The Latest in Accessories.....22-23

Scientific Garage Construction.....24-25

Dealers' Legal Status..... 27

Regular News Department.....37-41

Association News..... 36

Questions Answered..... 26

Editorial Observation..... 28

Advertisers' Index on pages 96-97

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(PATENTED)
BALL BEARINGS



The limits of service of a machine are set by its weakest part. To protect against bearing troubles and failures, the most widely known and dependable ignition apparatus, lighting generators and starting motors made in America, are fitted by their makers with "NORMA" Long-Service Bearings.

Are Your Electrical Accessories "NORMA" Equipped?

THE NORMA COMPANY OF AMERICA
1790 BROADWAY —— NEW YORK
BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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El Paso Overland Business Eighteen Times Bigger

25 cars in 1911, 468 in 1916. That tells the story of Overland conquest in El Paso, Texas.

Yet this is only *one* example of business building through the Overland.

Other dealers in other parts of the country are making records just as good—and profits just as substantial.

"Made in U. S. A."

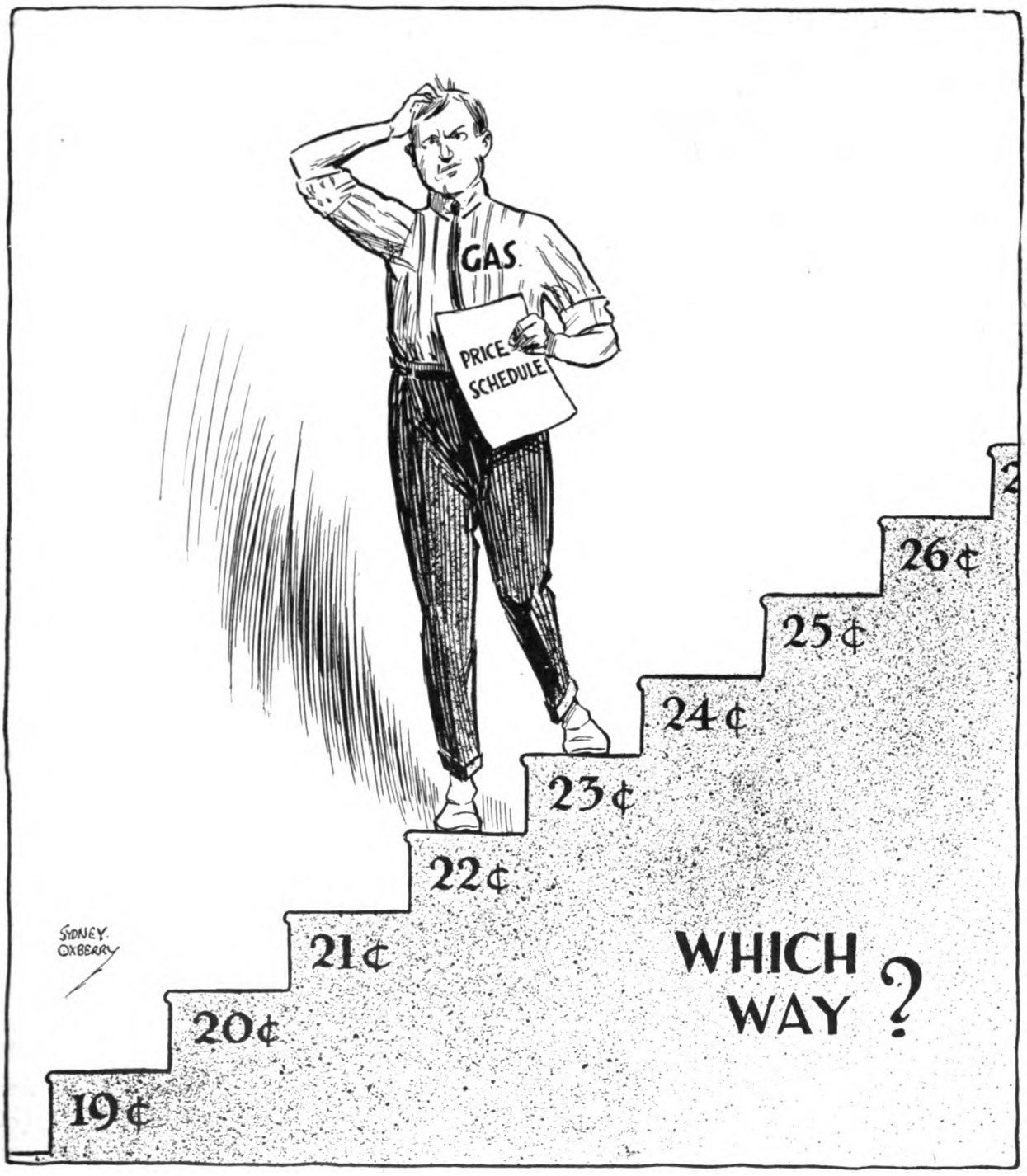
The Willys-Overland Co.

Toledo Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII | New York, U. S. A., Wednesday, August 30, 1916 | No. 9



Yes, which way? We would all like to know. First up, then down. And each time there is the old reason—"Supply and Demand."

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"The Sick Baby of the Institution"

THAT'S what C. A. Ackerman, manager of the used-car department of the New York branch of the Studebaker Corp., calls the used-car business. Because it was sick it needed doctoring and the medicine of merchandising, and in spite of its being sick it must carry all the burden—mistakes, criticism, leaks and losses.

ACKERMAN is turning a loss into a profit by giving the customer always a square deal and by employing trained and highly specializing used-car salesmen. This is how he is doing it.

WHEN Ackerman first took a hold of the used-car business of the New York branch of the Studebaker Corp., he faced a net loss of nearly $60 on every used car sold. Something had to be done and it had to be done quickly. So Ackerman set about the difficult task of putting this department on its feet—of turning the loss into a profit.

In a year he has doubled the used-car business of the branch. In a year he has reduced the net loss per car from nearly $60 to just about $6. In a year he has built up a sales organization of highly specializing men who know how to sell used cars.

Now the business is going ahead by leaps and bounds. Ackerman is in the same fix as a good many dealers in new cars; he cannot get used cars to fill the demand. And in a very short time, perhaps only a month or two, the used-car department will show a profit instead of a loss.

And then, probably, Ackerman will be taken away from the New York branch and put to doctoring up the sick baby of some other institution. For he knows how to do it. He has been for more than a dozen years specializing on the sale of used cars.

His methods are simple; there is no sleight-of-hand or ledgerdermain in them; they are simply plain, common sense, coupled with a degree of executive ability. And for this reason the story of his success is worth the reading.

Success Based on Policy

Ackerman bases his success, first, on the policy of the Studebaker organization. This policy spells a square deal to everyone. Every purchaser of a car, new or used, must be thoroughly satisfied. He must never be misled by a salesman. He must never misunderstand the salesman. He must never be dissatisfied. In brief, he must get the squarest kind of a square deal. And Ackerman sees that he gets it.

Ackerman always displays cars "as is." That is to say, they are put on the floor in exactly the condition they are received. This is one of Ackerman's ways of making sure the customer receives a square deal. He sees the car the way it came in; no more or less fictitious value added by a coat of paint; no tinkering with the mechanism of the car.

There is another reason for showing the cars the way they come in. Ackerman has found from experience that it does not pay to spend a lot of money on a used car in having it all fixed up, because generally the man who buys it will want something that has been done, done another way and the work has to be done again.

Keep the Owners Satisfied

Ackerman is so anxious to make certain that the purchaser will be satisfied with the car he buys that on several occasions he has actually succeeded in getting a car back from a man who was abusing it. In one case he went to the purchaser and told him frankly that he was abusing the car and that he would not get real satisfaction from it. The man reformed. In another, he got the purchaser interested in a later model car—one that was better able to stand the abuse—and made the exchange.

"Keep the owners satisfied" is Ackerman's slogan. When a car is purchased it is put in good running condition, but it is not overhauled or rebuilt unless the customer requires this work and will pay for it. Small things, such as grinding the valves, repairing upholstery, tightening nuts and bolts, etc., are done as a matter of course.

But everything the salesman promises to do, or that the purchaser requests done must be entered on a form provided for the purpose (Fig. 1). This avoids all disputes and makes it impossible for the purchaser to claim something was promised when it was not.

In other words, the purchaser then knows exactly what he is going to get. Furthermore, if the work cannot be done by the time the purchaser wants the car, he has the privilege of taking it over to the Studebaker service station in Long Island City within 10 days, when the work will be done for him.

Making certain that the customer always gets a square deal and is not promised things that the car cannot perform or the service department give for nothing, has had a tremendous effect on the cost of doing business. Customers go away satisfied with their cars; they know that they have gotten their money's worth and when they want something else they pay for it willingly.

It is impossible for a salesman to misrepresent. Proper representation of the car exactly as it is has been made a frame of mind with the salesmen. Ackerman does not believe his men could misrepresent if they would, and this means dollars and cents to his used-car department.

.....1916

Tag .....
Make..... *Model*.....
Motor No.....
Serial No.....
Del. Date.....

The following repairs and work are necessary:

1 .....
2 .....
3 .....
4 .....
5 .....
6 .....
7 .....
8 .....
9 .....
10 .....

The above work and changes I ask you to do as a matter of courtesy to me, and should you not find it important or necessary to do all of it, I agree to take delivery, by paying in full and removing the car from your building on the above delivery date, with the understanding that the above work will be completed at your Long Island Service Station, should I present the car within 10 days from date.

There are no other agreements other than this, either verbal or written.

Accepted.....

Witness.....

(Fig. 1)

When a used car is sold the purchaser must sign this form showing the work that must be done on the car. This avoids disputes and assures the customer a square deal

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The second important factor upon which Ackerman bases his success is his salesmen. These are all picked men, trained for this special service, and they have all had years of experience. For example, one salesman was for 12 years the Studebaker dealer in a nearby town. Another has been promoted from a demonstrator. Another has been recruited from the ranks of another concern.

Real Used-Car Salesmen

But they are all, first and foremost, used-car salesmen. Ackerman does not believe that a new car salesman can sell used cars. He believes that this requires a different type of man. This is the way he explains it:

"A man selling new cars has a set of stock phrases and arguments which will fit any car he is trying to sell. He has only a certain number of sales points which he can make, or that he need make. He can talk beauty and service and the reputation of the company and then dilate on the mechanical advantages of the car, and that is about all.

"But when this same man attempts to sell used cars he has all his props except one—the reputation of the house—knocked out from under him. He has only promises to sell the car on. If you let him alone he will sell the car on promises—promises that in nine cases out of ten neither he nor the car nor the house can live up to.

Promises Prove Boomerangs

"And right here is where the used-car business gets a black eye. The promises the salesman has sold the car on are a boomerang, or a series of boomerangs. The purchaser can never be happy as long as he remembers those promises.

"Another thing: When a salesman accustomed to selling new cars attempts to sell used cars he always tries to sell first the best-looking ones, or those that are in the best mechanical condition. This is natural, because they are easiest to sell. The result is that after a short time there is nothing left in the shop but junk. The new-car salesman can't or will not sell this.

"Your true used-car salesman, on the other hand, isn't a bit concerned over the appearance or the condition of the car he is selling. He knows that the car is worth what we are asking for it, and that the purchaser will get a square deal and there is an end to it. He simply does not care whether he is selling an A No. 1 used car or one that has been abused. It's all the same to the salesman."

And because Ackerman's men are real salesmen, and because they know the used-car business from A all the way through to Z, they are getting better prices for their cars than are many other organizations. This is one big reason for Ackerman's success.

Ackerman employs eight salesmen at the present time, and they are all paid on a straight commission basis. He starts a man with a drawing account, but if the man has not got some money coming to him at the end of two months he is let out as being not good enough.

Used Cars Always Abused

The way used cars are abused, not only by those who purchase them, but by everyone else connected with an organization, is one reason Ackerman has called the used-car business the sick baby of the institution. The purchaser feels that he does not have to give the car the care he would give a new one. And repairs that could be made on a new car for $10 or $12 would cost twice that much on some of the used cars he sells. Again, chauffeurs "don't give a hang about used cars," to use Ackerman's language. They drop the clutch in and slam the brakes on and up goes the repair bill. Further, members of an organization are apt to rob a used car just because it is a used car. Someone needs a hub cap and it is stolen from some used car. The purchaser will never notice the difference. But it shows up on the books against the used car when it has to be replaced. Used cars are continually neglected and abused and the cost comes back on the used car department.

Ackerman appraises all the cars taken in by the department. He uses only his own experience and allows only what the car actually will bring in cash when sold. At least two-thirds of the cars handled are Studebakers, and Ackerman very seldom has to sell a car for less than he allowed on it.

Used Cars for Used Cars

Not all the used cars are taken in trade for new cars. Some are taken in on used car deals, and this part of the business, says Ackerman, is its salvation. In other words, he would have to allow a purchaser of a new car say, $300 on a certain used car. But if the purchaser wants a used car he will only allow $200. And he always tells the customer this. He explains the deal by telling the customer that he cannot afford to allow more than the $200 in this case, because the used car he is purchasing has been taken in for exactly what it is selling for.

Here's an example of Ackerman's insight into human nature. He had a number of 1916 six-cylinder cars that he could not move at $600. So he prepared the ad. which is illustrated herewith (Fig. 2), and moved them all at $720. Why? Simply, he says, because the ad. was gotten up in the same way as an ad. for a new car. There is a picture of the car and complete specifications just as they are given for a new car.

Forty Per Cent of Business on Time

The ad. also states that time payments will be considered. Ackerman says that fully 40 per cent of his business is done on this basis. The company handles all its own paper, taking one-half the purchase price down and the balance in four to six equal installments. It has been necessary to replevin only one car since the plan was adopted.

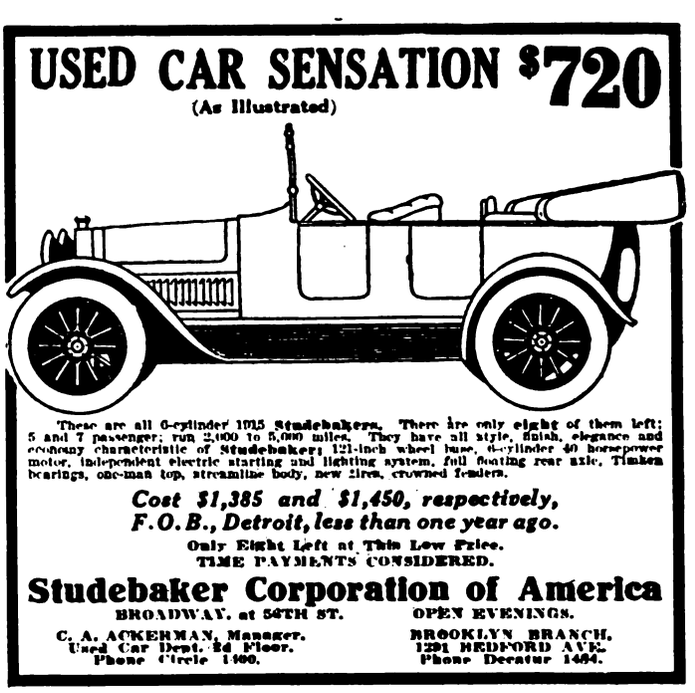


Fig. 2—Ackerman used a set up like this to move a lot of used cars. It moved them because the ad looks and reads like a new-car ad

Undertakers Buy 17 Cars

LOUISVILLE, KY., Aug. 26—The Association of Louisville Undertakers, in changing from horse-drawn to motor vehicles, has contracted with the Kentucky Automobile Co. of this city to furnish seventeen eight-cylinder Cadillac cars of the newest model.

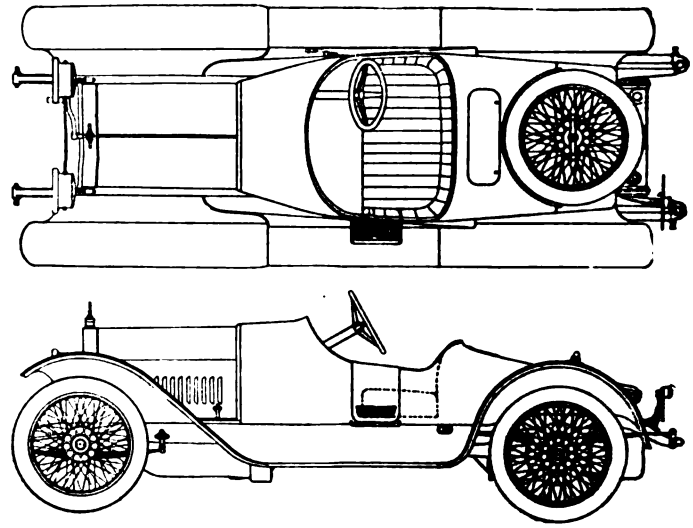
Of these, twelve are to be limousines and five special chassis for mounting hearse and wagon bodies. The amount of the order is in the neighborhood of $51,000 and is said to be the largest of its kind ever given in this section.

100 Cars in Auction Sale

DULUTH, MINN., Aug. 28—John M. Ford, a dealer, held an auction sale of used cars lasting 2 weeks and sold nearly 100 cars. They were turned in by all the dealers.

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Stutz Evolves 16-Valve Four Speedster Model



The 16-valve motor will be installed only in a speedster model like this

FOR some time it has been predicted that the tendency observed in racing toward multi-valve cylinders would find its reflection in vehicles intended for ordinary use. The Stutz company bears out this prediction in announcing a sixteen-valve four-cylinder motor, placed in a roadster intended for high-speed work.

High volumetric efficiency is naturally the object in the greater number of valves per cylinder, and the gain is not noticeable except when the ratio of piston speed to displacement becomes such as to require exceptionally high gas speeds. Therefore, in order for an engine of this type to be of use to the average individual who does not expect to travel over the highways at 90 m.p.h. we would expect a power plant with large cylinders.

This is the case in this new Stutz job, which has a displacement of 360.8 cu. in., with its bore of 4⅜ and stroke of 6. This gives a formula rating of 30.63 hp. based on the 1000 ft. per minute piston speed. As the engine is intended for high-speed work, this rating is exceeded to a very large extent. The cylinders are cast in a single block, which is a departure from usual Stutz practice. In spite of the compactness of the casting, extra large water spaces surround each cylinder and the exhaust ports are all separated, having eight separate entrances into the manifold.

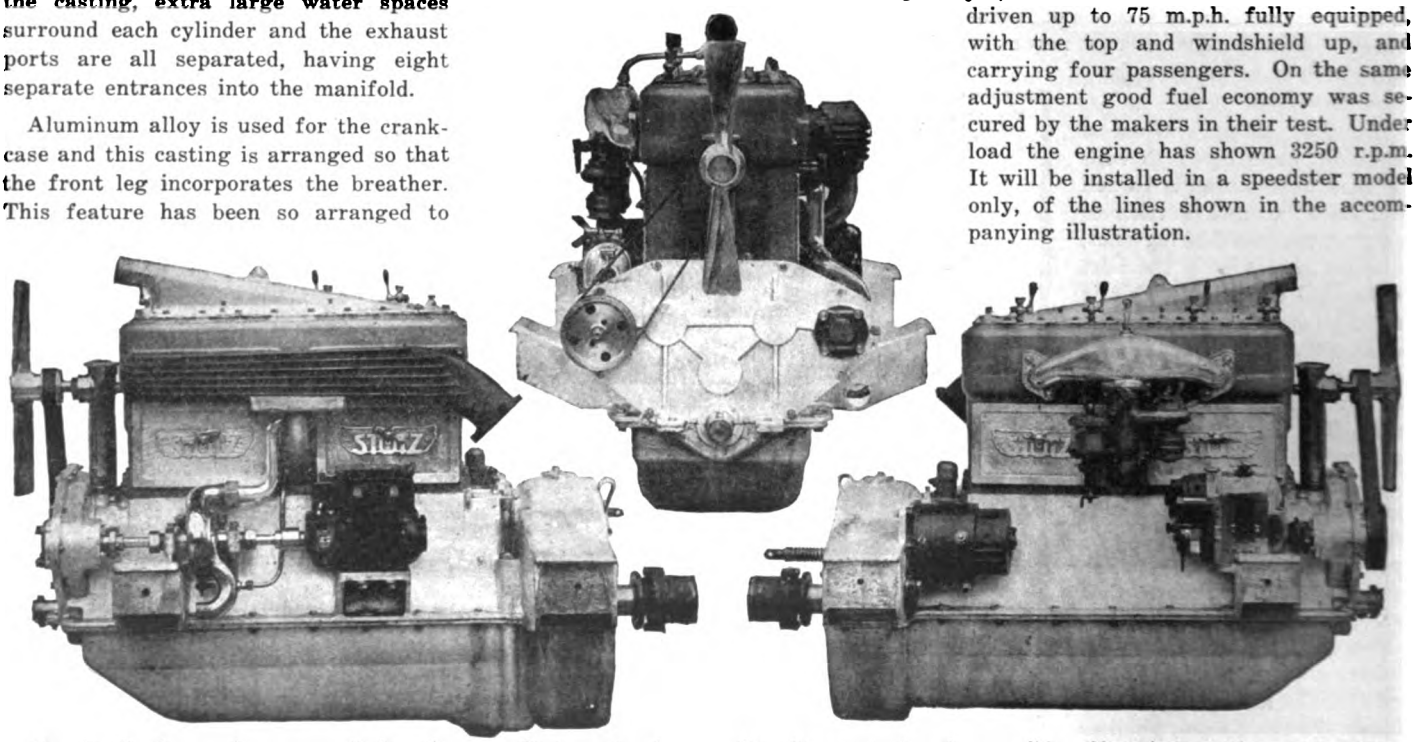
Aluminum alloy is used for the crankcase and this casting is arranged so that the front leg incorporates the breather. This feature has been so arranged to prevent the accumulation of oil vapor over the exterior of the engine, thereby cutting down the collection of dust. The bolts holding the main bearings in place are through-bolts with a collar countersunk into the crankcase also holding the cylinders in place.

Nickel steel is used for the crankshaft, which is supported on three extra long main bearings. In mounting these, the bearing seats, as well as the bearings themselves, are carefully scraped in so that the solid backing is given the shaft supports. The valves are all operated by roller lifts from the camshaft.

Lubrication is by pressure feed through a hollow crankshaft. Oil is pumped from the reservoir in the crankcase through a main duct cast integral with the crankcase to independent ducts leading to each crankshaft bearing. The stream of oil then passes through the hollow shaft to the lower rod bearings which are fed by a constant flow. The pistons are lubricated from the main and rod bearings, the oil filler is incorporated with the fan bracket, and a gage is provided on the side of the crankcase showing the amount of oil in the reservoir.

The fan is a two-blade aeroplane type of an aluminum alloy, mounted on an annular ball bearing with an eccentric bearing for adjusting the tension of the fan belt. The intake manifold, which is water-jacketed, is so designed that the carbureter is very close to the cylinder ports and very accessible. Hot air is taken directly from the exhaust manifold by a hot-air tube extending between the middle two cylinders.

This engine has been in a car for some time and driven several thousand miles. The particular car in which it was installed for trial was a four-passenger job, which the makers state has been driven up to 75 m.p.h. fully equipped, with the top and windshield up, and carrying four passengers. On the same adjustment good fuel economy was secured by the makers in their test. Under load the engine has shown 3250 r.p.m. It will be installed in a speedster model only, of the lines shown in the accompanying illustration.



Despite its four valves per cylinder, the new Stutz motor is exceptionally compact and accessible. Very large water spaces are provided. The motor speeds up to 3250 r.p.m. under load and the car has done 75 m.p.h. with full equipment and carrying four passengers

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The second in a series showing

Dealers Who Have Made Good



John Van Benschoten

Poughkeepsie, N. Y.

"JOHN VAN BENSCHOTEN, Distributer of Automobiles and Supplies," is the way he styles himself. "Sarsaparilla Van" is what his friends call him—and he has many friends. He is a great, big man physically and financially. He is known the length of the Hudson River and for a good many miles inland on both sides.

At present he operates a big establishment in Poughkeepsie, with branches, operated entirely independently, however, in Newburgh and Kingston. He handles Packard, Chalmers, Studebaker and Dodge cars, in addition to doing a big wholesale and retail trade in accessories.

He was born 46 years ago on a farm 6 miles from Poughkeepsie. From the farm he graduated to the clothing business, and in 1891 entered the bicycle business "on his own hook."

For 25 years he has been in business in the same street. In 1896 he built the big building that now houses his business and in 1900 started selling the Mobile steamer. Then he sold the famous curved dash Oldsmobile and later the Autocar. Afterward he sold the Thomas for a while, and with all these cars he controlled the entire Hudson Valley, including seven counties; he still controls the greater part of this territory.

Latterly he has taken an active interest in the Pouvailsmith Corp., Poughkeepsie, and will direct the sales policy of the company in addition to his other responsibilities.

The Why

He is a staunch believer in upholding the list price. If he has anything to give a man, he gives it after the sale is made and not before.

NEVER MISREPRESENT, Van Benschoten pounds into his salesmen, and they don't.

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The Tractor Dealers Must

THINK

TRACTOR CONSTRUCTION

By Stanley P. McMinn

Motor World Staff Representative with the Tractor Circuit

THIS IS THE SIXTH of a series of articles on the merchandising and service problems peculiar to the farm tractor dealer. Previous articles have discussed tractor service and the merchandising possibilities of tractor accessories. The seventh article will appear in a following issue.

GET IN your mind a picture of a farm—level or rolling land, or hilly. Get OUT of your mind the picture of a broad highway and pneumatic tires.

Visualize rough going over fields, sun-hardened into humps and bumps and hillocks. Think of traveling over freshly plowed land, soft and yielding, of plowing through sand and mud a foot deep.

This will give you some idea of what the tractor designer must have in his mind, and what the farmer ALWAYS has before him.

The farmer must have a tractor which will work on that kind of land.

Farms are more or less alike, yet there is no similarity between the tractors made by any two manufacturers. There is NO PREDOMINATING TYPE. There is no type built for a particular type of soil or topographical condition. All manufacturers are building for all conditions. Yet each is working along his own particular line, and every one of the tractors is pulling its plows.

In the motor-car field it is different. Every standard motor car has four wheels and a more or less standard motor.

All Kinds of Tractors

In the tractor field we have two-wheel tractors, three-wheelers and four-wheelers; tractors without any wheels, strictly speaking, endless tracks taking their place, and tractors with drums.

Similarly, in the engine field we have one-cylinder vertical and one-cylinder horizontal, two-cylinder opposed, longitudinally or transversely, two cylinders together horizontal, four-cylinder opposed and four-cylinder vertical, some of the latter transverse and some longitudinal, and six-cylinder transverse and longitudinal and eight-cylinder.

As a general rule, the manufacturers of tractors equipped with massive single and two-cylinder motors are the old-line implement manufacturers, while the newer machines in the field, those produced by makers who put out only tractors, and no other implements, more closely resemble the conventional motor car, in that they have four-cylinder vertical motors placed either transversely or longitudinally in the frame.

There are exceptions. Some of the old-line implement manufacturers are producing tractors which closely resemble an automobile but are of comparatively recent development. Similarly, some of the newer manufacturers are producing tractors with heavy two-cylinder opposed motors.

The Two-Cylinder Predominates

In point of numbers produced the heavy two-cylinder opposed motor predominates, but in view of developments during the past year it seems likely that the four-cylinder vertical type, placed either transversely or longitudinally in the frame, but preferably longitudinally, may soon become as popular as the other type. The fact that the majority of newcomers in the field, many of them representing experience in the motor-car and commercial-vehicle fields, seem to prefer this type carries with it a certain significance. It is impossible to overlook, however, the long experience which the older manufacturers of tractors have had with the two-cylinder opposed type and the satisfaction which it has been giving.

Some manufacturers are on the fence on this question, and one even has placed his tractor on the market equipped with either type of motor at the option of the purchaser; the four-cylinder motor is slightly more powerful than the two, in this case, though the tractor is otherwise unchanged.

As to Vibration

On the score of vibration, there may be something to choose between the two types which would favor the four-cylinder, though in actual operation there is not a noticeable difference when plowing at normal speed. I have plowed with machines of the two types, drawing three and four bottoms, and it was practically impossible to note any difference, either in vibration or pulling ability. Provided a two-cylinder opposed motor is properly designed and balanced, vibration should not be noticeable.

The number of wheels a tractor may have, judging by the demonstrations, does not appear to have an important bearing on its ability to plow, provided the soil is dry and firm. Two-wheelers, the plow itself forming the third point of bearing on the ground; three-wheelers, with the third wheel—or drum, in some cases—either in front or rear, and four-wheelers appeared to work with equal facility.

Little Good Comparison

There was no rain during the demonstrations, and in consequence there was no opportunity to compare the work of the various machines in wet soil. It is conceivable that there might be some advantage with the machine having two drive wheels widely separated, in that it might be possible to pull the machine out of a mud hole if traction could be got with one wheel and provided there was no differential or a means of locking the differential. Actually, however, a condition such as this would seldom be encountered.

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Some manufacturers favor the use of a differential and others do not. The latter point out that when the machine is turning on the headlands it is not pulling any load worth consideration and one wheel can always slip slightly.

Traction a Moot Question

The question of obtaining traction is more or less mooted, and farmers and dealers are likely to ask themselves whether such and such a small tractor—a really little one—could get sufficient traction to pull its plows. They are apt to judge the tractive effort of a machine by its apparent weight, though they cannot arrive at a proper conclusion if they do so.

Tractive effort is a matter of design—the width and diameter of the drive wheels and balance. The farm tractor is different from the pleasure car and the motor truck in this respect. In these vehicles the diameter and width of the wheels remain practically constant. Traction is governed, to a large extent, by the weight on the driving wheels.

In the farm tractor, traction is governed rather by the pressure exerted by the wheels on the earth, and this pressure, in turn, is determined partly by the weight of the machine but to a greater extent by the design of the machine and the load it is pulling.

Designed to Give Pressure

In other words, most tractors are so designed that the load they are pulling tends to increase the pressure between the driving members and the earth, and so to increase traction. This is because the plow hitch is arranged so as to give a downward pull. In fact, when the plows are dropped into the soil the tendency is for the front of the tractor to lift, and for this reason it is important that the weight of the machine be properly proportioned.

If insufficient weight is up front there will be no counterbalancing effect to the downward pull of the plows and the desired increase of pressure between the driving wheels and the ground will be partly lost. Furthermore, with the front wheel, or wheels, tending to bounce slightly it would be difficult to steer the tractor, owing to lack of sufficient contact between the steering wheels and the ground.

Wheels Must Be Well Designed

The question of weight is more important where the tractor is working on plowed land. In this case the load is not as great as when plowing and, generally speaking, there is not the downward pull given by plows. In consequence a tractor which may have no trouble in getting sufficient traction to pull its plows may spin its wheels more or less when pulling a lighter load on plowed ground.

In either case, however, it is important that the diameter and width of the drive wheels be properly proportioned. If too small in either particular the weight of the tractor will cause the wheels to sink in—slightly in the case of plowing, owing to the harder soil, and to a considerable extent when working on plowed land—thus imposing an additional burden on the motor.

Weighing a tractor, or merely judging of its apparent effectiveness in these particulars without seeing it actually at work, is not satisfactory. It is essential that the tractor be actually tested out on the various kinds of soil.

Ease of operation is, or should be, an important matter. The farmer is accustomed to horses that are trained to follow a furrow, easily guided, and will stop and start at a word. Contrast this with some tractors which require constant vigilance on the part of the operator and permit of practically no attention being bestowed upon the plows.

To drive a tractor imposes a certain mental strain and an even more certain physical strain that it should be the object of the designer to eliminate in so far as possible. Consequently the ease with which a tractor can be guided and stopped and started is important.

Three Steering Methods

There are three principal methods of guiding a tractor. Two of them employ the familiar worm-and-gear arrangement that is used on motor cars. The other employs chains which are wound on a drum. In one of the two former types the reduction between the hand steering wheel and the ground wheels is considerable, and in steering the tractor the hand wheel must be "spun" or turned several revolutions to move the ground wheels a few inches.

In the other, which more nearly approaches in action the motor-car steering gear, the reduction is smaller and the hand steering wheel is moved little more than in the case of a pleasure car. Obviously, in this case more effort is required to turn the wheel.

In the chain type of steering gear the action is quite different. One chain is always slack. When it is desired to turn the tractor the slack is merely taken up, thus slacking off the other chain, and the movement of the machine over the uneven ground turns the wheels. The effort required to turn the hand steering wheel is slight.

How Wheels Run

In some machines having four wheels the right front wheel runs in the furrow and the machine becomes virtually self-steering. It is practically impossible for the wheel to get out of the furrow to the left, though some attention is necessary to prevent it running off to the right and onto the plowed ground. Furthermore, unless the wheel is watched it will tend to cramp against the side of the furrow and thus consume power. The same applies to three-wheel machines which have the third wheel in front and running in the furrow.

Front Wheel on Hard Ground

In other machines the front wheel does not run in the furrow, but is on the hard ground. In this case it is necessary to guide the machine constantly in order to keep the plows in the proper position. Quite a number of manufacturers, however, equip their machines with an auxiliary front wheel connected to the steering wheels and running in the furrow. This wheel controls the steering wheels and practically eliminates the necessity for attention.

In machines with the chain type of steering gear the right front wheel generally runs in the furrow and, with both chains fairly slack, the machine becomes virtually self-steering.

Plan Big Union Service Building

NEW YORK, Aug. 28—Plans for a big storage and service building in New York are being formulated by interests identified with W. C. Durant, president of the Chevrolet Motor Co. and of the General Motors Co. It will provide close to a half-million square feet of floor space and solve the storage and service problems of many New York dealers and distributers.

According to the plans, this building will occupy a plot of ground on Eleventh Avenue extending from West Fifty-fifth to West Fifty-sixth Street, with a 200-ft. frontage on the avenue and on each street. The title to this property is now vested in Durant.

A modern fireproof building is to be erected of steel and concrete or steel and brick. The plan first called for eight stories in height, but those dealers and distributers who learned of the plans recently have shown such interest that it is likely four more floors will be added. Special high-speed elevator facilities will be provided and in all other respects this building will be designed, constructed and equipped for the particular purposes it is to serve.

It is planned to divide the 40,000 sq. ft. on each floor into eight units, each unit being designed to provide both storage and service facilities. Some of the larger companies along Broadway will require several units. Not a few of them at present have their storage and service quarters divided among a number of small and unsuitable buildings in different parts of town, and this is both expensive, inefficient and inconvenient.

Erie May Have Show

ERIE, PA., Aug. 28—The Erie Motor Club will hold a show this winter if a suitable building can be secured.

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$50 Reward If You Get This Faker For Motor World

HE took a dollar from F. W. Lindig of Lewisburg, Pa., and another from T. G. Copeland of Kain, Pa., who is a jeweler. Lindig says the faker traveled in a motor car and seemed an authentic agent. He is NOT. The first time he signed himself "W. E. Lipsey"; the second time he signed "Wm. H. Marshall." He seems to be operating under half a dozen different aliases.

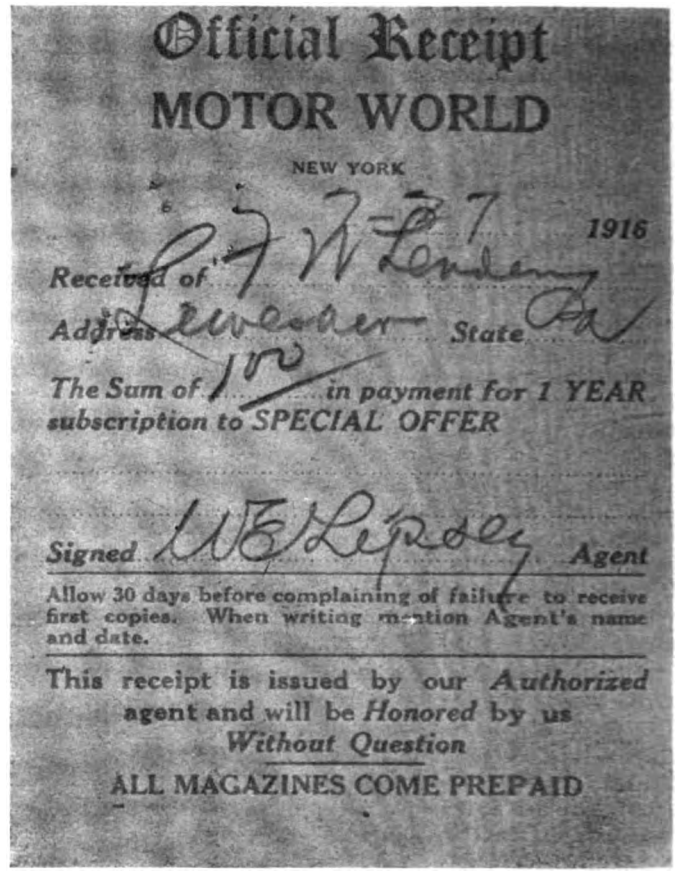
Motor World has circulation men who travel in motor cars and before this has had trouble with fakers of the type of the man who has been "working" in Pennsylvania.

All Motor World men carry the regular Motor World receipt which is shown at the bottom of this page, and the receipt carries no apologies or advice to "wait 30 days before making complaint."

The Motor World Publishing Co., 239 West Thirty-ninth Street, New York, will pay $50 to anybody who will grab this faker and hold him until we can start action against him.

A BIG POINT to remember is that our authorized subscription solicitors don't sell the paper at cut rates, but at the regular price of $2 a year; nor do they EVER solicit persons not directly connected with the motor car trade.

Get us the number of the car if you can. Get us any data you can on this man, and if you are able to do it, have him held by the police.



Official Receipt
MOTOR WORLD
NEW YORK

1916

Received of F W Lindig

Address Lewisburg State Pa

The Sum of 1.00 in payment for 1 YEAR subscription to SPECIAL OFFER

Signed W E Lipsey Agent

Allow 30 days before complaining of failure to receive first copies. When writing mention Agent's name and date.

This receipt is issued by our *Authorized* agent and will be *Honored* by us *Without Question*

ALL MAGAZINES COME PREPAID

This is a FAKE Receipt

This man is obtaining money under false pretenses. He is a crook. If he comes into your place of business, detain him on some pretext and immediately TELEPHONE THE POLICE. You prefer against him the charge of getting money under false pretenses AND THEN WIRE US.

This is the appearance of a GENUINE Motor World Receipt

IMPORTANT

We can serve your personal interests to better advantage if we have definite information as to your connection with the trade—Kindly mark X beside each line that you are connected with.

	Dealer
	Garage
	Repair Shop
	Supplies
	Salesman
	Manager
	Manufacturer

SUBSCRIPTION RATES

United States - -	$2.00 per year
Canada - - -	4.00 per year
Foreign Countries -	4.00 per year

MOTOR WORLD

The Dealers National Weekly

239 WEST 39th STREET NEW YORK CITY

THE MOTOR WORLD PUBLISHING CO.
New York City

Gentlemen:—Please enter the name appearing below as a MOTOR WORLD subscriber. The Two Dollars enclosed herewith to pay for the first twelve months' subscription of 52 complete issues.

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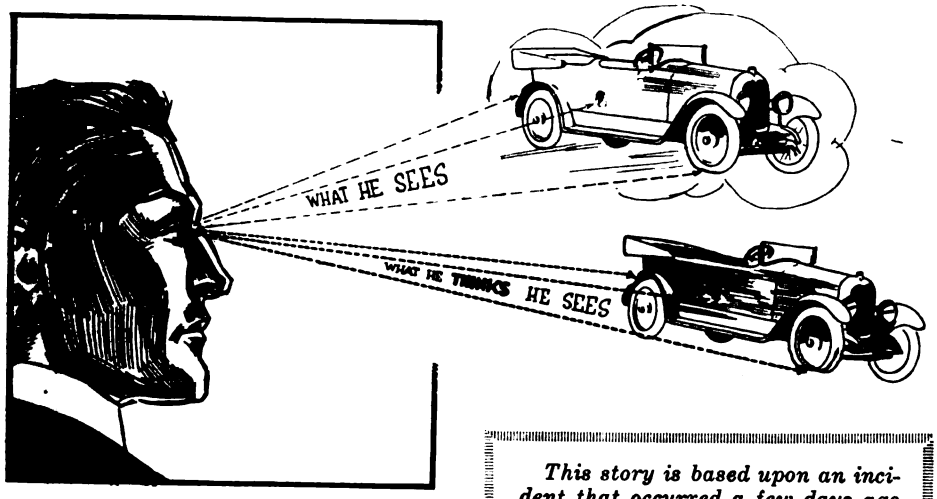
KINDLY ATTACH YOUR BUSINESS CARD

NOTE: We do not solicit subscriptions from car owners.

Form 1146

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What He Thinks He Sees Counts



This story is based upon an incident that occurred a few days ago on Broadway.

By Ray W. Sherman

"I WAS going to buy a Redman car," said Sheft, as he handed Reilly a check in final payment on the Sennett he was about to drive home in.

"Yes?" was the Sennett dealer's noncommittal reply.

"Yes, I was—but I didn't. I decided just in time that I didn't want one. You see, it's like this," he continued. "Del Mathewson bought one the other day. He lives next to me out at Croftman. I was going to buy one, too, until Del found he didn't like the car as well as he thought he was going to.

No Foot-Rail

"Del drove it home last Tuesday and on the way discovered that there wasn't any foot-rail in the tonneau. He also found that the horn wouldn't blow half the time and that the speedometer rattled. There were one or two other little things, so he called up Henry Bennett, the Redman dealer, and told Henry about it. Henry said to bring it in.

"Del left it at Henry's in the morning and Henry said he could have it at half past four that afternoon. But when Del got there the car was 40 min. coming out of the shop. There were five of us who had to wait that 40 min., for Del was giving a bunch of us a ride home in the new bus.

"When the service man left the car in front of the salesroom while Del paid the bill, the service man took the pencil out of the magneto so we couldn't run away with it. That's second-hand dealer stuff, not gentleman work.

Still No Foot-Rail

"Then, the foot-rail wasn't in. Bennett explained that all the brackets he had were two lefts. He said in the morning that he hadn't put the rail in because he wanted Del to drive the car a few days and get his leg distance fixed.

"Then, the horn didn't blow at all after it had been fixed, and the speedometer had been taken off and sent to the speedometer factory.

"There was a bill for 16½ hr. labor and 60 cents for material. The material was itemized at eight washers for the horn and a piece of insulation on a broken wire. That wire, Reilly, was broken when the car was delivered. And we counted the washers on the horn and there were only six. They charged for eight.

"Come Back Again"

"Henry said to bring the car back the next day and Del told Henry to go plump. It's about the rottenest car I ever saw. Wouldn't have one on a bet."

Sheft got into his new Sennett and drove away.

"Gee! But that was a rotten deal, wasn't it?" exclaimed Tommy Trumbull, Reilly's junior salesman, as Sheft drove away.

"Rotten, but not of much consequence from Henry's viewpoint," replied Reilly. "It's just a few little things, but they have become magnified in the eye of the buyer. That's always the way. It isn't what a man sees or hears that counts—it's what he thinks he sees or hears.

Imagination Does It

"You read in the paper that a man ran down the street, and you picture him going at 60 miles an hour. The chances are he went at a dog trot. But you imagine him going at top speed and when you find that he didn't you say the newspaper lied. Your imagination lied, Tommy, not the newspaper.

"The same way with this Redman car. Henry should take better care of his business. He should pay closer attention to his service. He should see that his cars are right before they go out. If he doesn't, he's hurting no one but himself.

"There were three defects in the car—the horn, the speedometer and the foot-rail. The car's a darned good car, no question about that, and Henry's a pretty good dealer, but the buyer doesn't see it that way.

Defects Magnified

"The buyer has pictured the enjoyment he would get from the car, and when his enjoyment is marred he sees only the defects—and even they are magnified. Our impression of things is not what we see, but what we think we see. Something comes to our brain and is there reorganized into our impression of that object. Our impression as reorganized in our mind may be entirely different from the reality.

The Little Become Big

"So it is with these cars we all sell. To the owner comes a complete visual story of the car, but by the time he has reorganized it and formed it into his impression it may be something entirely different. In this case, in his impression he subordinates the good things and sees the bad things, and his impression of the car is one of bad.

"And that's why I like to keep an eye on the little things as well as the big things. That's why I have all complaints passed on to me. That's why I make myself accessible to every Sennett owner. And it's the reason I make a periodical snoop all through the place. I can't afford not to."

Haynes So-Sha-Belle Has Successor

KOKOMO, Aug. 29—Deliveries have been going on since early in August on a new four-passenger Haynes roadster mounted on either the twelve or six chassis. It is a successor to the Haynes three-passenger So-Sha-Belle model, and although of greater capacity, resembles it. The front seats are divided and the rear seat is wide enough for two passengers. The rear passengers are given an extra amount of leg room by sloping the backs of the front seats downward towards the brake and clutch pedals. The seats and the sides of the tonneau are upholstered in hand-buffed leather, which in turn is covered by gray waterproof seat covers of soft cloth. The body is low and the runningboards have a ground clearance of 10 in.

Special attention has been given the comfort of the driver in that the pedal pads may be brought to the desired position and the seat moved forward or backwards. By grouping all the cowl instruments on a compact board the controls are moved up within easy reach.

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Argentina Wants Our Accessories—but in Her Own Style

By David Beecroft

THIS story is the fifth of a series on South America by David Beecroft, managing editor of Motor World, who spent ten weeks on the southern continent, investigating the possibilities there for American cars and allied products.

The Argentine has the car and now wants the accessories, but they must be put up and sold in the Argentine way. The U. S. A. way—for so Argentina terms the U. S.—is the same to him as his would be to us.

BUENOS AIRES, Argentina, July 15—As stated last week, we shall now make a brief resume of the accessories field in Argentina, Brazil and other South American countries to show what lines of goods are most in demand.

Before doing so it may be in place to remark that chauffeurs are large factors in buying accessories here. Nearly all of the cars used in this city and in other cities are driven by chauffeurs. *These chauffeurs demand 10 per cent commission on everything they buy and have generally been getting it. There is general talk of stopping it, but the dealers cannot get together,* and if one stops the commission and the others do not, that one is on a pretty sure road to lose all of his business. There is just as much accessory rivalry here as in Chicago or Minneapolis. The accessory trade here is an old business.

Reverting to the possibility of selling accessories for the 30,000 cars in Argentina: *There are many accessories which we manufacture that will prove popular there and are proving good sellers to-day.* In perhaps twenty supply houses in ten or twelve different cities in three different countries, I have gone over a good percentage of the accessory stock on hand to see what U. S. A. goods are being carried and also seeing what lines are proving good sellers. I have found a fair representation of U. S. A. goods and find many articles that are big sellers. There are many lines of French and German goods and also many English, Italian and Belgian lines. Some of the best U. S. A. sellers are:

Hand horns,
Soaps,
Body polishes,
Spark plugs,
Speedometers,
Batteries and
Dry cells.

Hand Horns Good Sellers

Hand horns are very good sellers, but we rarely see more than one or two different makes. *Each of the 30,000 cars in Argentina is a prospective market for a hand horn.* The field is large enough to warrant our large horn makers starting after it. They should at least get their feet firmly on the ground.

Very often when you ask where the dealer bought the goods he remarks: "From a New York exporting house."

As to why he did this, the answer is that so *many of the U. S. A. accessory makers are hard to do business with. They have not Spanish stenographers, they do not know how to properly pack goods for ocean shipment, and there are other excuses.*

These dealers are willing to pay an exporting house 2.5 per cent more solely because it is easier to do business in that way than with the manufacturer.

Our 1916 Exports

If our accessory manufacturers are asking themselves if it is worth while going after export business, let them not forget that during the fiscal year ending June 30, 1916, practically 8.5 per cent of our entire U. S. A. automobiles manufactured were exported. Where these exported cars go our accessories should follow.

We are today becoming an exporting nation of such proportions that our makers must seriously consider this export question.

As to Polishes

Metal and body polishes are good sellers here, where many of the chauffeurs wash and polish their own cars. It is very common to do this, particularly where the cars are kept in individual stalls under lock and key, as illustrated last week in Motor World. The driver is entirely responsible, and if a single scratch appears he is held responsible. This means a very wide market for polishes.

Soaps and Cleaners

There is a brisk market for soaps and hand cleansers. Where each chauffeur becomes a body polisher, it is essential that he have plenty of soap. More soap is needed per car per month than with our system of washing, where four or five men in one garage wash 100 cars. WE NEED SOAP FOR FOUR MEN, WHEREAS SOUTH AMERICA NEEDS IT FOR 100.

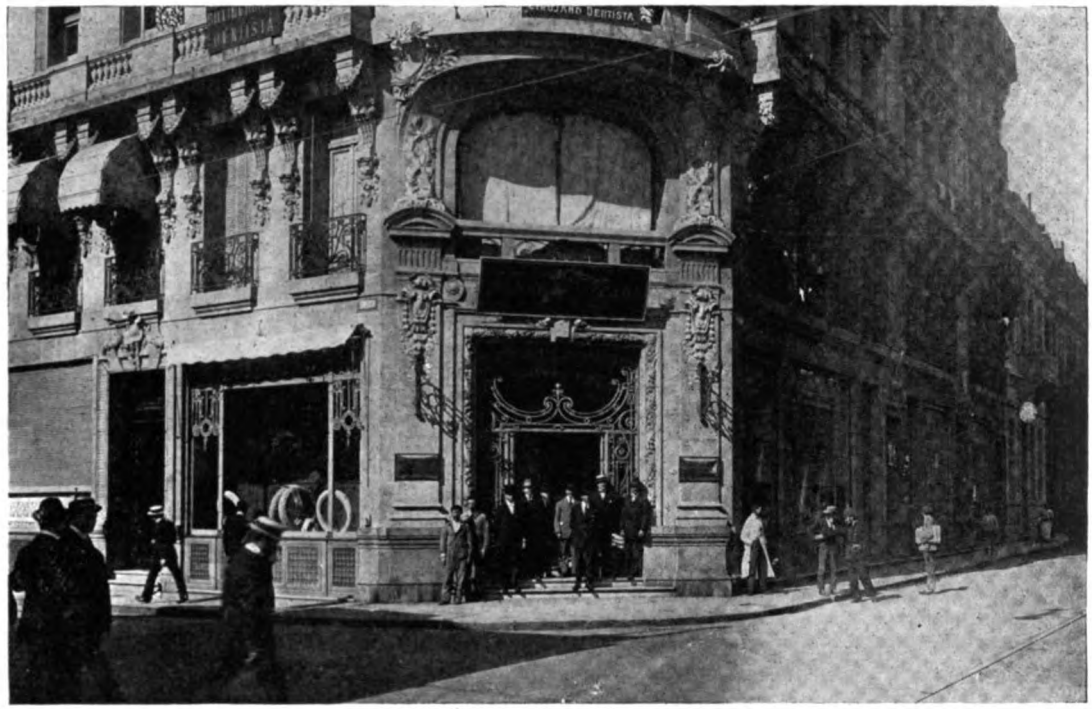
Spark Plugs

Spark plugs are fine sellers. In nearly every supply house you see three or four makes of U. S. A. plugs, three or four French makes, one or two German, a couple of English, and perhaps one Italian. One criticism applies to nearly all of our plugs sent to Argentina and Brazil, namely, that PRICES ARE MARKED ON THE CASES.

The same pasteboard boxes seen in our Chicago or Kansas City supply houses are seen in Buenos Aires, Rio, Sao Paulo. THIS IS A BAD FEATURE.

If a spark plug sells for $1 in New York, it is a certainty that it cannot sell for $1 in Buenos Aires. The sign $ is the same in Buenos Aires that it is in New York, but the $ in Buenos Aires stands for only 44 cents of U. S. A. gold. In Buenos Aires that plug may sell for $4. You readily see the difficulty

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The Goodyear Tire & Rubber Co. in Buenos Aires occupies a building that compares well with those on Broadway or Michigan Avenue. The company got under way less than a year ago and is making progress

of a dealer trying to induce the buyer to pay $4 WHEN THE SIGN IN PLAIN FIGURES ON THE PASTEBOARD BOX IS $1.

Asbestos Products

There is a good market for various makes of U. S. A. asbestos-copper brake facing and facing of other compositions. You meet with one or two makes, but frequently find that a supply house is short of many sizes. Keeping an adequate stock is a problem.

Priming Cups

We find very general requests for priming cups and grease cups. Solely because you have to cross the equator to get here is no reason to imagine that it is always hot here. Argentina has its seasons, just as we have. It has its winters and they are cold. It gets very cold here, and you feel it more so because the buildings are not heated. Garages are not heated and naturally a car gets very cold and priming cups are an essential.

Grease Cups Needed

Grease cups of all sizes are needed. For European cars the metric thread is best, but for U. S. A. cars our standard threads will do. It would be beneficial to us if we used the metric threads on all of such parts.

Bearings Not Well Represented

Our bearing concerns are not well represented. One of the surprises that meets your eye when looking through large accessory supply houses and in many garages here is the large stock of bearings carried. I have seen two shelves over 12 ft. long each piled nearly 1 ft. high from end to end and for nearly a foot in width with various sizes of French, English and German, Swiss, Italian and Belgian ball bearings. You soon see the reason. Argentina is 3 weeks from Europe and it is necessary to keep very large stocks.

Electric Repair Lamps

A brisk demand is noted for hand electric repair lamps. So many of the European cars use acetylene lighting that the electric repair lamps are good sellers. There is in this connection a good possible market for the individual electric searchlight which we fit to the frame of the windshield and operate by hand. THE ARGENTINES ARE FOND OF ATTACHMENTS and their poor roads would make such a lamp *very attractive.*

Top Cover Materials

Several requests have been made for top covering materials which were all cut and ready to be used in recovering such standard models as Overland, Ford, Buick, and others. Tops are not given good attention in Argentina, in fact all of our cars going into "the camp" get rough usage. Sometimes they are never under cover for months.

Ford Dealers Sell Accessories

Nearly all Ford dealers carry a large stock of accessories. The Ford dealer in Cordoba has the whole side of his shop occupied with one large showcase, with a glass front. It is filled with Ford spare parts and all of the accessories he can get. He was short of Ford accessories in June. He can sell 200 Fords per year if he can get them and as all cars arrive without speedometers he was particularly anxious to get such lines.

HE DOES NOT WANT SPEEDOMETERS THAT READ IN MILES PER HOUR, BUT THEY MUST READ IN KILOMETERS PER HOUR.

He further wants some form of constant lighting electric system for Fords, his request being only one of many similar requests received. Ford has been selling over 300 cars per month in Argentina, Chile and Uruguay. One month it rose to 470 cars, that was last February. With this output there is certainly a large demand for lighting as well as starting outfits.

Demand for Storage Batteries

More U. S. A. starting and lighting batteries are needed. We must have them for nearly all of our cars. Batteries are sure to give more or less trouble in Argentina. They gave us trouble in U. S. A. the first year or so of electric starters simply because our owners did not give them the attention they should have, generally distilled water when needed. That trouble is facing Argentina. Everywhere our batteries are conspicuous by their absence.

Metal runningboard boxes are good sellers.

Good Market for Jacks

There is a good market for jacks. You see French and English types and a few U. S. A. varieties. One English jack with a long handle for easy operation is selling well.

Ad Infinitum

We might go on indefinitely through the accessory field endeavoring to show different lines of possibilities for our accessory makers. We could add gaskets of all kinds and sizes; wrenches and screw drivers and like tools which have largely been supplied by France and Belgium; clocks which are in de-

(*Continued on page* 17)

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Accounting and Business Systems



By T. W. Snead

Dividing Overhead

System Editor:

The only difficulty we have experienced in the installation of your system so far is the drawing up of the Table No. 2 and in the keeping of one or two of the assets and liability accounts. For instance, we are keeping all of our active bills payable accounts on separate sheets, placing those less active accounts together on one sheet.

Now, do we understand that in addition to these we should carry a sheet which will show the sum total of all these accounts as a liability, this total being derived from compiling a sheet at the end of each month which will show the total amount of our indebtedness to our creditors?

There is one question, however, which we should like to submit to you, and that is, the distribution of overhead expense to that department which has been a loss during any one month. Your method of distributing the overhead, according to the earning capacity, results in those departments which make a profit carrying all the overhead expense and any department which falls behind being relieved of its overhead burden.

Now, we believe that the department which loses should be charged with its portion of the overhead expense, thus making its total loss greater. To show you what we mean, we will say that during the month of January our vulcanizing department showed a greater cost of operation than the income which it earned, and we subtracted the percentage of overhead, which threw the difference onto our accessory department, which had shown a profit.—KEATING & SHAW, Portland, Me.

You should keep track of your Assets and Liabilities as determined at the end of the month merely as a matter of record.

Practically everything we do in life is a compromise, and this applies as much to the distribution of overhead as to anything else. There is no way that is absolutely satisfactory, but we believe the best method is by percentage according to profit, as we have described.

If you were to divide the overhead according to some plan that would give a constant amount each month, as you suggest, the vulcanizing department might show a loss in winter and a profit in summer. The objection to this method is that when summer came you would be making a very large profit on your vulcanizing department and you might forget about the losses of the winter months and therefore reduce your selling price.

This has happened in several cases. We know of a man who is selling accessories and told us recently that in the summer months he was able to sell his tires cheaper because on account of the large business he was doing and the proportionately small overhead his profits were very great.

This man was laboring under the delusion that his winter business should take care of the winter overhead and the summer business of the summer overhead. When he was making big profits in summer he forgot all about the losses in winter.

The System Goes to France

System Editor:

I am ordering, through our purchasing department, the booklet on your simplified system of accounting; also the complete equipment for said system and an extra July 5 issue of Motor World.

STOCK RECORD CARDS: I saw advertised in Motor World some time ago a model of stock record cards, which I understand to be part of your accounting system. As these are not mentioned in your letter under reply, kindly let me have a few samples.

Should our remittance be short a few cents, through lack of knowledge of exact price of these cards, we will remit at once upon receipt of advice from you, but by all means do not delay the shipment of articles ordered.—M. A. Chailliey, Automobiles Berliet, Lyon, France.

Bus Expenses

System Editor:

We are running the Ford bus line between St. Marys and Ridgway. There are two regular drivers employed in this department and the average income hovers around $15 to $20 a day. We are agents for four popular cars, have a well-equipped shop, and deal in gasoline and general car equipments.

We would like to keep definite account of expenses, as well as income of each individual car, as well as each driver. Kindly explain entries in connection with this department.

We use sales slips in our gas and repair departments and have as yet found no difficulties.—GLASS & WITTMAN, St. Marys, Pa.

You should number the drivers and the buses, calling one Driver No. 1 and the other No. 2, and whenever an entry is made for the one or the other you should put down the number. In this way you can separate the expenses of the two drivers and the two buses at any time you choose.

We believe that this will answer your question satisfactorily, but if you desire us to go into more detail we shall be glad to do so if you will let us know.

The expenses of the different demonstrating cars may be kept track of the same way; that is, by numbering the demonstrators 1, 2, 3 and so forth.

How to Begin

System Editor:

We have ordered your simplified system of accounting and after reading instructions fail to understand how to begin, as the inventory seems to be a separate form.

We have been keeping books the old way and we expect to use your system, but ask that you explain how to enter stock on hand when we begin. Will also ask that you explain Part Three.

We understand Parts One and Two, except that we fail to see where you

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enter the inventory, which we tnink necessary to tell whether we make money on accessories or not.—VINTON GARAGE, Vinton, Iowa.

We wish to ask, first, if you have the complete book of instruction? If not, will you please advise us and we will forward same.

It is not necessary to make any entries on Forms One and Two showing the amount of stock on hand at the beginning of your system. This, of course, you should know, as your future purchases of stock and the cost of your sales of stock will have to be added and subtracted from the present inventory in order to tell you at the end of the following month your inventory as of that date.

The process of finding your inventory, as well as your other assets and liabilities, at the beginning or installation of your system, is fully explained in the system pamphlet, and if you will advise us we will see that you receive this by return mail.

Getting Started

System Editor:

We have your letter, also your booklet, reprinted from Nov. 24, 1915, to Jan. 12. 1916, issues of the Motor World, for which accept our thanks.

We wrote you that we were about to install your system in our office here. We inclose you a list of items, without giving figures, of our Assets and Liabilities taken from our old system. These are the only items we have to work on in installing your system. We would like you to say whether these figures have to be carried forward, in the different columns to which they belong, on Forms 1 and 2, or whether they need only be carried forward and posted into Table No. 2, Statement of Assets and Liabilities, page 30, column "What We Started With Jan. 1." We are particularly anxious that you should give us this information as to this matter.

We would also like to know if you have printed statements of the following: Table 1, Profit and Loss, and Table 2, Assets and Liabilities. If so, send us some forms and let us know the price and we will remit immediately.—ROBSON MOTOR CAR CO., Guelph, Canada. Per F. H. Fitz Gerald.

In answer to your inquiry as to what to do with your Asset and Liability figures, wish to say that these do not have to be entered on either Forms 1 or 2 in order to start the operation of the system.

These figures are necessary only at the end of the month, when you begin to bring into play the figures that you find on the recapitulation of Forms 1 and 2. They are necessary to a complete statement of Assets and Liabilities, and for that reason they should be ascertained as near 100 per cent accuracy as possible.

We have no printed statement of Table No. 1 and Table No. 2 in view of the fact that only twelve of these will be used during the year and it is a simple matter to typewrite a form and make four or five copies, which will be enough to last you for that period.

The figures representing those Assets and Liabilities which you have listed would then go into Column No. 3 in your Table No. 2. After finding a total of your Assets and a total of your Liabilities, you would open an account for Profit or Loss. If your total Assets exceeded the total Liabilities, the account would be opened under Liabilities for Profit. If your Liabilities exceeded your Assets, the account would be opened under Liabilities, but for Loss, and should be deducted from your total Liabilities to balance your statement.

In going over your various Assets and Liabilities accounts, we notice that you do not carry a reserve for depreciation of your equipment or a reserve for those accounts on your books that will, in all likelihood, be doubtful. Then, again, you should show under your Liabilities an account for Accrued Interest Payable on your Notes Payable, an amount equal to the interest on these notes from the time the interest was last paid up to the present date.

Wants to Change Forms

System Editor:

We have received our system of books and it seems to me that we do not need the Accounts Receivable leaves and would like to exchange them for the other two forms, Income and Expense accounts.

We keep our customers as per the inclosed form and it works out very nicely. We have been groping, as all others have been, and have been trying to find the right system to adopt, and as soon as I saw yours it impressed me very forcibly as the thing to have.

I have, however, been astray for 3 years, and it seems as if I would never arrive at a set of books again. The firm was practically new when I came with them and it has been uphill work all this time.

We have recently taken account of stock and I was wondering where I would start with it. Simply as per your Form 2, item A and B, I have decided. —GREEN & SIBLEY, Lynn, Mass.

We shall be glad to exchange your forms as you desire.

Inasmuch as we are not the manufacturer of those sheets, we would suggest that you write directly to the manufacturer, thereby saving time and trouble. The manufacturer is Tallman, Robbins Co., 314 West Superior Street, Chicago, and providing the sheets are in good condition they will be glad to make the exchange.

We are referring you to the manufacturer for the reason that we have no quantity of loose sheets on hand, but only complete systems.

Some dealers are using the Form 3 sheets in connection with forms similar to those you inclose. A singly entry is made each month on the Form 3 sheets and the purchases are itemized on the forms, such as you inclose. With this plan, the system is kept complete and yet you have the convenience of your plan also.

Argentina Wants our Accessories

(*Continued from Page* 15)

mand; tire removing tools; tire repair kits, and a score of others. Space will not permit. Enough has been said to suggest the remainder.

Garage Equipment

A word on garage equipment. Up to the present all of South America has bought gasoline in the square 5-gallon can, two cans being crated together. This is the English system. Previous to the war England supplied practically all of the gasoline to South America, but now the U. S. A. supplies all and still supplies it in the 5-gallon cans. This is a costly and unhandy way and the movement is now gaining headway to sell in bulk as done in the U. S. A. The first curb-side gasoline pump in Buenos Aires was started in May. It is popular.

Not a Single Curb Pump

Not a garage in Buenos Aires has gasoline pumps and bulk systems, BUT THEY ARE ALL IN THE MARKET FOR SUCH.

There is a good chance to sell air compressors for garages. I have not found a garage in any South American city that has a compressed air system for tire inflation.

Get This, Garagemen!

Nearly all garages here are good centers for selling accessories. They are generally immaculate so far as cleanliness is concerned. The manager invariably has a clean business office.

U. S. A. oils and greases are generally good sellers. One or two brands have good blue and white or yellow and white enamel signs that you see in most of the garages and supply houses. Generally the oil and grease is handled by large concerns that have their own representatives in Argentina and Brazil.

And All the Others

Weed chains are strong sellers. Ford agents generally include them as a part of the car equipment. There is the usual market for carbureters, magnetos, ignition specialties, torches, welding outfits, and in short anything and everything needed in the car trade. The same accessories needed in the U. S. A. are needed in Argentina and the other South American countries. Tire repair kits are much in demand, as are vulcanizers for individual use and for tire depots and public garages.

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$795 Dixie Flyer Refined Only In Detail

Touring and Roadster Models on Same Chassis

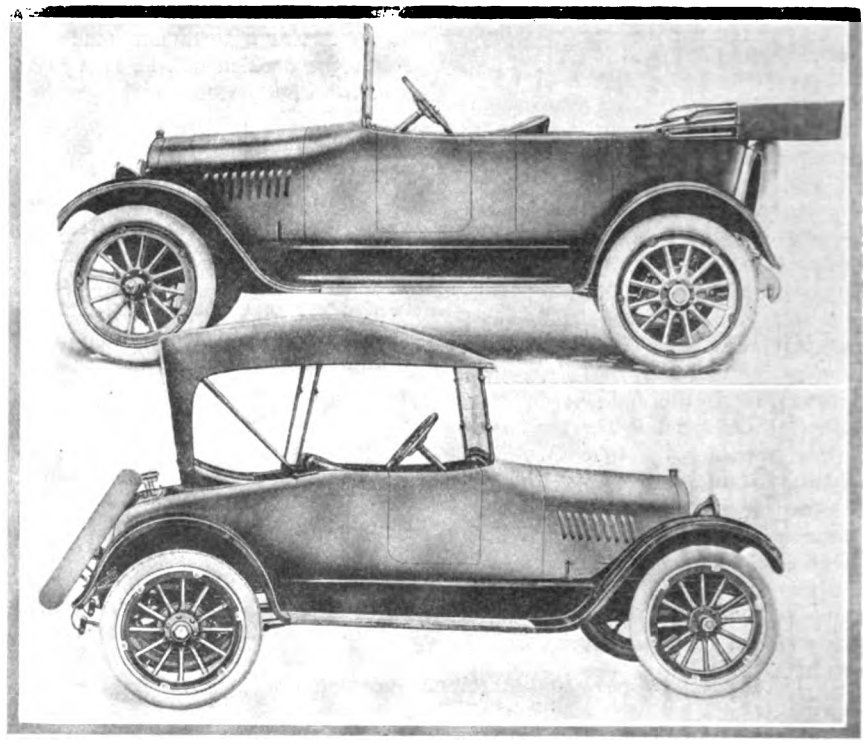
VERY little change has been made in the 1917 Dixie Flyer, which is now going through production. All the alterations are detail refinements with the exception of the battery location. In the 1916 chassis the battery occupied the conventional location under the floorboards close to the motor-supporting arm. For 1917 it is placed on the left side of the main frame, well forward. The reason for this change is that considerable disadvantage resulted from the vibration of the engine and the heat. In the present position the battery is free from heat and vibration, and is now so arranged that raising the hood exposes every connection to the eye and allows considerably shorter lead wires to the starting motor.

The Lycoming engine has not been changed, and is a four-cylinder, 3¼ x 5, L-head design, with an S. A. E. rating of 16.9, and, according to the manufacturers, develops 29 hp. at 1900 r.p.m. The cylinders are cast in a block of gray iron, with the water inlet at the bottom of the casting on the opposite side from the valves.

A feature of the motor block is the reinforcement of the attaching flanges where it is bolted to the crankcase. This gives maximum rigidity with a minimum of vibration. The head is cast separately, allowing space for large valves and also permitting machining of the cylinders and giving access to the cylinders and valves. The head is also reinforced with ribs, preventing warping during machining and permitting a perfect joint between the head and cylinders. Tightness is secured by a copper asbestos gasket.

The pistons are close-grained iron centered from the inside to secure even thickness of wall. The three piston rings used are eccentric and ground on three sides. The piston pin is hollow, of case-hardened steel, with a scleroscope test for hardness. The pin is held tight in the piston, with the upper end of the connecting-rod forming the bearing through a bronze bushing.

Drop-forged I-beam connecting-rods of 40 carbon steel are used with split-type lower ends having a diameter of 1¾ in. and a length of 2⅜ in. on the bearing. The cap is retained by two nickel-steel bolts.



Two models, five-passenger touring and four-passenger roadster are built on the same Dixie Flyer chassis

A drop forging is also used for the crankshaft. It is a 40-50 carbon steel supported on two bearings. The front is 1¾ in. in diameter by 3¼ in. long, and the rear 1¾ x 3 15/16 in. The flywheel is bolted to a flange on the rear end of the crankshaft, this flange being forged integral and the whole assembly placed in running balance. The bearings are split die-cast white metal, adjustable by removing brass shims.

The 1917 Dixie Flyer

Five-passenger	Touring
Four-passenger	Roadster
Color	Brewster Green
Make of motor	Lycoming
Number of cylinders	4
Shape	L-head
Bore	3¼
Stroke	5
S. A. E. horsepower	16.9
Carbureter	Carter
Starting and lighting system	Dyneto
Ignition	Connecticut
Clutch	Cone
Gearset	Grant-Lees 3-speed
Wheelbase	112
Tires	32 x 3½
Type rear axle	Floating
How cast	En-bloc

Low-carbon steel is used for the camshaft, which is 1 in. in diameter and supported on three bearings. Dimensions of these from front to rear are: 1¼ in. diameter by 2 15/16 in. length, 1 55/64 x ¾ in., and 1 x 2 9/16 in. Scleroscope tests for hardness are used on the cams, and each is tested on a special jig for eccentricity.

Helical timing gears are employed to drive the camshaft and other auxiliaries. The camshaft gear is of cast iron, meshing with the steel crankshaft gear. The gears are marked for mesh, so that after taking down the engine retiming is simple. The remainder of the valve action is through flat-head pushrods, also case-hardened, and the valves themselves have gray iron heads fused on steel stems. They are 1⅜ in. in diameter and located on the right side of the engine so that the steering column does not interfere with valve adjustments.

Lubrication is worked out according to the conventional combination pressure and splash system. The oil is contained in the bottom half of the crankcase, which has a capacity of 5 qt. A plunger pump circulates the oil, this being driven by an eccentric on a camshaft. The oil is carried to leads which supply the crankshaft and also the troughs beneath each connecting-rod throw. There is an oil scoop on the bottom of each of the rods which, due to the design of the oil can, dips an equal depth regardless of grade and road conditions.

Cooling is by thermo-syphon, which has several distinctive features. The radiator is on the frame instead of between the frame members, thus placing the lowest level of the cooled water in the radiator above the cylinder jackets, allowing circulation to commence as soon as the engine is started. The inlet and outlet pipes are both extra large, with the radiator connected to the engine by 2¼-in. hose. Additional efficiency in cooling is secured by having each cylinder barrel independent from its neighbor, permitting the free circulation of water all around and between the cylinder walls. Extra large waterways are provided around the valves.

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The gasoline system comprises a cylindrical gasoline tank hung at the rear of the chassis, a Stewart vacuum feed and a Carter carbureter, with special adjustment on the instrument board. There is an arrangement for holding a reserve of 1 to 3 gal. in the supply tank and for automatically notifying the driver when the reserve is reached. The 2-in. section of the gas supply pipe works perpendicularly through a specially packed sleeve in the connection at the top of the tank. A stop is provided on the lower section of the pipe inside the tank to limit its travel upward. When the supply pipe is drawn up to the top the vacuum feed draws gas from a point 2 in. above the bottom of the tank. Should the car at some out-of-the-way place run out of fuel it is only necessary to push down the feed pipe to secure additional feed.

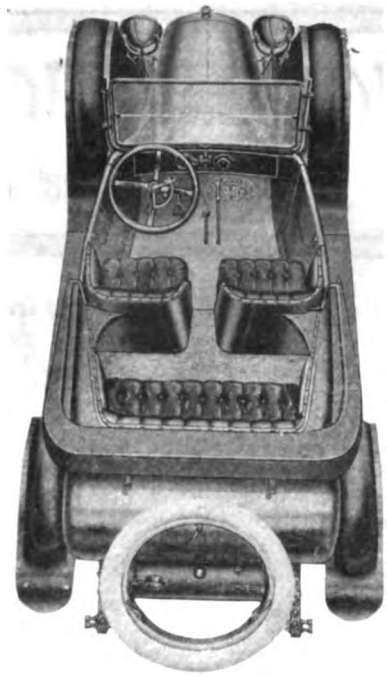
Motor Is Inclined

The clutch is a cone of pressed steel with leather facing and with six compensating spring plungers under the leather to secure easy engagement. A straight-line drive is secured by underslinging the rear springs and inclining the motor in the chassis, so that when the car is underloaded the drive does not deviate greatly from the straight line. From the clutch the drive is taken through a Grant-Lees standard gearbox with a semi-steel case having a strength of 28,000 lb. per square inch tensile. The main shaft has four splines and is of 90,000-lb. steel, with a 75 to 80 scleroscope test. It is carried on a double of S. K. F. self-aligning ball bearings. Between the stem gear and the main spline shaft a roller bearing is used. The material in all gears is 3 per cent nickel-steel testing up to 120,000 lb. per square inch and allowing of quite narrow gears and a short case.

The rear axle is floating, with chrome nickel-steel shafts and gears. The final drive is spiral-bevel mounted on high-duty roller bearings with end-thrust bearings on each side. A feature of the rear axle is that all gears and bearings are adjustable, thus permitting a continuity of good mesh and a reduction of noise due to wear.

Electrical Circuits Made Plain

The Dyneto two-unit system is used for starting and lighting and the Connecticut system for ignition. The battery is a Willard. Bendix drive connects the starting motor with the engine through the flywheel ring gear. A wiring diagram is placed on the dash of each car and the individual circuits are marked in different colors so that non-technical owners may have a clear picture of the electrical connections. Each individual circuit, such as headlights, tail and cowl lights, ignition and horn, is equipped with a separate fuse, and the block carrying the fuses is on the dash



The four-passenger roadster is compact, yet there is ample room

beneath the hood. The generator cuts in at 10 miles per hour.

Structurally the frame is a straight pressed-steel channel with four cross-members and a noticeable absence of castings. Where these are used they are of steel in place of the malleable metal. Drop forgings are used wherever possible to secure strength with minimum weight. The wheelbase is 112 in. Steering is irreversible, and the wheels are artillery, using 32 x 3½ tires on Stanweld rims.

Straight Line Design

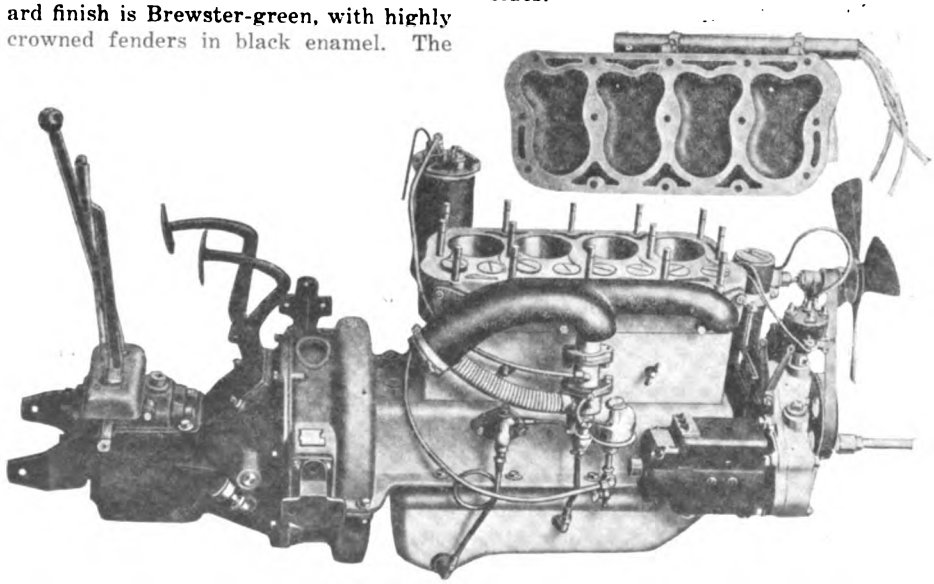
There is a five-passenger touring and a four-passenger roadster, the latter having the cloverleaf seating arrangement. The touring car is a straight-line design from the radiator to the cowl, with a slight curve in the side rail line. Standard finish is Brewster-green, with highly crowned fenders in black enamel. The roadster follows about the same lines as the touring car and has a sloping windshield. Individual seats are used in the forward compartment, with the rear seat wide enough to accommodate two persons.

Special Bodies Boost Business

KANSAS CITY, MO., Aug. 28—The Kirkland-Daley Motor Co., Studebaker dealer and distributer at Kansas City, has been very successful with the special custom bodies turned out by the custom body department of the Studebaker Corp. The odd, even bizarre colors, and the unusual equipment and appearance of the bodies, have sold them rapidly, and the Kansas City company plans to keep a considerable stock on hand, making a specialty of them.

The Kirkland-Daley company has a large building, with large display windows, on Grand Avenue, the widest and most popular motor street, and at one of its busiest points, Twenty-first Street, and maintains a large force of city salesmen. These two facts have fitted extraordinarily well with the innovation of custom bodies. There are always a large number of prospects, among whom are some particularly "finicky" about their cars, and one or more who is likely to be struck favorably with almost anything that Studebaker sends; the salesmen are pleased with the chance to offer customers something unusual at a higher price.

The receipt of the custom bodies has produced an innovation in the display room by demonstrating the greater attractiveness of the windows when various colors are visible. The result is that the Kirkland-Daley company is having many of the cars repainted in browns and lighter tints and effecting a marked improvement in the drawing power of its big display windows, getting away from the monotony of the blacks and deep blues.



The Dixie Flyer is powered with a unit power plant in which accessibility has been studied. The motor is a Lycoming and the gearset a Grant-Lees

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 832) WHEEL-ALIGNMENT TEST

Misalignment of the front wheels causes difficult steering and an excessive amount of wear on the tires. The alignment of the wheels should be tested from time to time and any error corrected. A simple method of checking up the alignment is to pass a cord all the way around the car just below the wheel hubs and then bring one front wheel into line with the rear wheel. The distance from the string to the rims of the wheel is carefully measured on the side in line with the rear wheel and compared with the similar distance as measured on the other wheel. To facilitate easy steering the front wheels should "toe-in" about ¼ in., and under no conditions should be allowed to "toe-out."—M. Marc (Maxwell), Boulevard, Jersey City.

(No. 833) OIL-STORAGE TANKS

The common type of oil-storage tanks requires a pump and does not provide a convenient place for keeping the measures. Gravity flow is somewhat handier and the installation requires less floor space. A simple method of storing several grades of oil and having them on tap is illustrated. The tanks may be made by any tinsmith, and are provided with gage glasses that show at a glance the amount of oil on hand. The conical-shaped bottoms permit the draining of the last drop of oil and prevent the collection of any sediment. A shelf provided with a drip-pan offers a convenient place for keeping the receptacles.

(No. 834) DRILLING CLUTCH YOKES

It is usually necessary to remove the clutch yoke when drilling and tapping it for an oil-cup attachment. By the aid of the drilling fixture shown this may be done with all parts in place. A 5/16-in. square steel rod is drilled and tapped ⅜ in. on one end and the drill fastened in the other end by brazing. The drill is rotated by the ratchet wrench and fed into the work by the set-screw braced against the flywheel. The length may be made as little or as much as is necessary, and a similar drill may be made for drilling almost any inaccessible hole.—M. Marc (Maxwell), Boulevard, Jersey City.

(No. 835) STRAIGHTENING FRAMES

Bent frames may be straightened cold in the manner shown without the necessity of tearing down the car. The car is run into the doorway until the parts to be straightened are opposite the frame of the door. Blocking should be placed at the point of bending between the frame and the door and the straightening force applied by means of a jack. The ordinary automobile jack is usually sufficiently strong for this purpose, and if not a screw jack should be used. The doorway may often be used in a similar manner to straighten axles or axle spindles.—M. Marc (Maxwell), Boulevard, Jersey City.

(No. 836) VALVE TOOL

This valve tool was made for the '15 and early '16 Paige-Detroit cars. A wooden pattern was whittled out and shaped until it was found by trial to fit. A bronze casting was then made and the steel hook fastened to it. In use the hook is caught into one of the ports and the valve spring and washer forced up. A pattern for a similar tool suitable for any car may readily be made and the casting obtained from it.—M. Marc (Maxwell), Boulevard, Jersey City.

(No. 837) REPAIRSHOP PIT

A concrete repair pit, the depth of which may be varied, is illustrated. Ledges are provided at different heights and boards may be placed across, giving the mechanic free access to the work. Much of the dampness of this type of pit is removed by the wooden floor and the space beneath. Several of the boards on one of the upper ledges may be left in place and used as shelves for the tools and for steps in getting into and out of the pit.—M. Marc (Maxwell), Boulevard, Jersey City.

(No. 838) CRANKSHAFT BEARING WRENCH

It is often difficult to get a socket wrench thin enough to fit between the nut and the bearing housing of the connecting-rod or crankshaft bearing. Or if thin enough to do this the wrench is too weak to properly tighten the nut. A solid S-wrench may be used, but is not as satisfactory as the socket for this purpose. A solid socket wrench, cut away in the manner illustrated, possesses the required strength and has all the advantages of the full-socket wrench. As the connecting-rod nuts are not the same size as the main bearing nuts, the wrench should be made double-ended and fitted with a removable handle.—William Burke (Billie Burke's Garage), 115 Harrison Avenue, Jersey City.

(No. 839) OIL-SETTLING TANK

The oil drained from the crankcase is usually a dead loss, as it is unfit for further motor use. It is, however, suitable for lubrication of farm machinery or such light implements as the lawnmower and the wheelbarrow, and may be reclaimed by the settling tank shown. The old oil is poured into the tank as fast as it collects and the sediment allowed to drop to the bottom, the clean oil rising to the top and being drawn off as required. The resale price should be made low to attract the trade, and is almost a clear profit.—C. R. Cook (The Island Garage), Canton, N. Y.

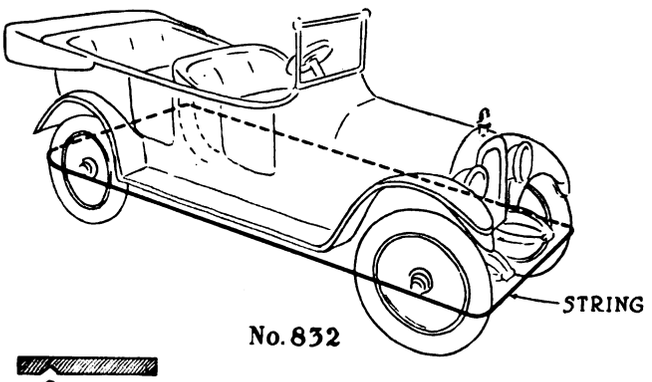
(No. 840) SORTING BALL BEARINGS

When dismantling old ball bearings it is advisable to save all good balls that they may be later used for replacements. With the cabinet illustrated the old balls are placed in the top drawer and are automatically sorted and placed with the proper group. The bottoms of the drawers are steel plate, having holes drilled as close together as possible, the holes in each drawer being just large enough to retain the balls for that drawer and to allow all other smaller sizes to pass. When one or more balls are desired the proper drawer is opened and a suitable ball found by micrometer measurements.

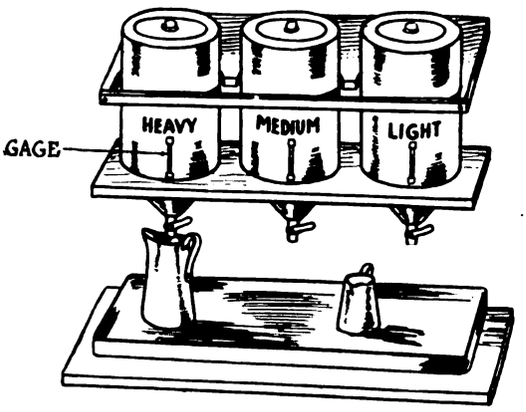
(No. 841) AUXILIARY WHEEL FOR DISABLED FORDS

Ford cars disabled by having the rear axle broken near the hub may be towed in by the aid of the device shown. A bar of steel about 3 ft. long and 1½ in. square is put in the lathe and a standard Ford hub turned on one end and fitted with the cones and locking nut. The other end of the bar is then forged out flat and bent to clear the rear brake band, after which the lower clamping straps are riveted on. The addition of the upper clamping straps and a standard Ford wheel makes the outfit complete. To use, the disabled car is jacked up and the auxiliary wheel clamped in place, permitting the car to be towed in. In the case of a front wheel the procedure is much the same, except that the cross-steering rod must be tied and the car towed very slowly. The device is not limited to use on the Ford, and has been used to bring in a 1-ton truck.—William Burke (Billie Burke's Garage), 115 Harrison Avenue, Jersey City.

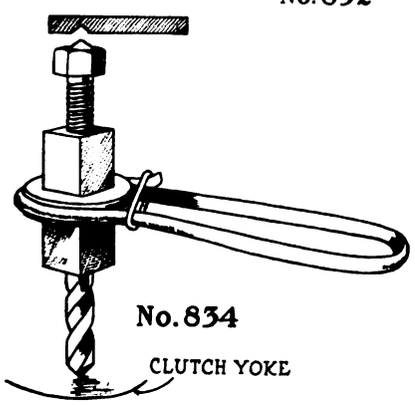
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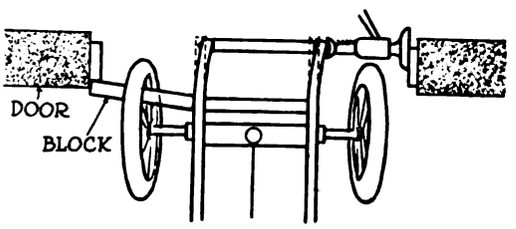
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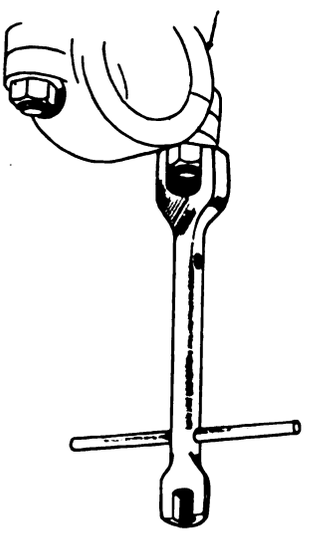
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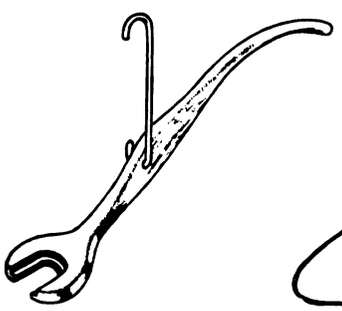
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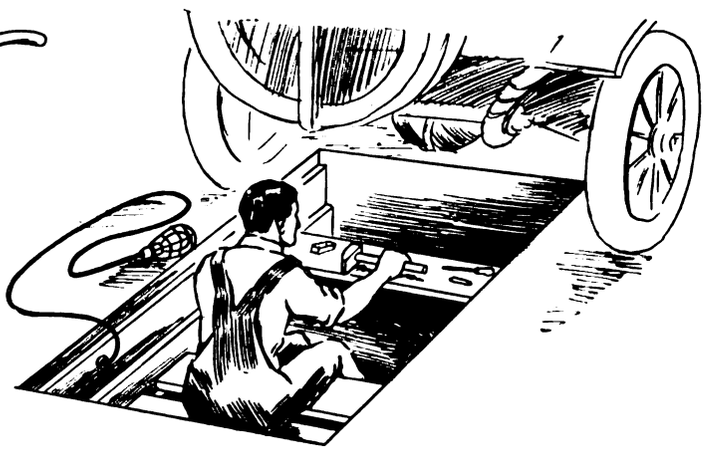
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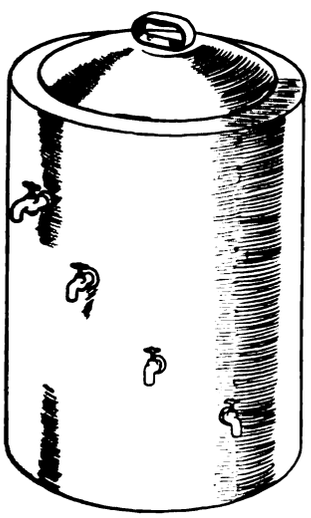
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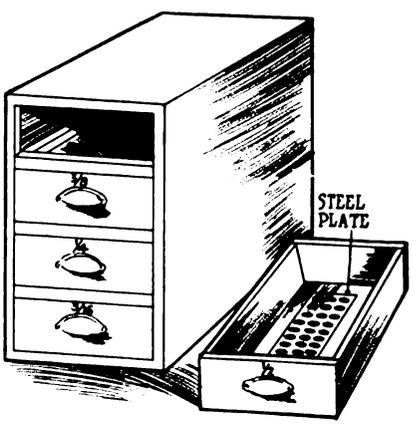
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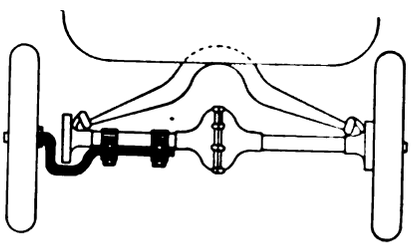


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Accessories & Supplies



SPEEDOMETER FOR FORD

The Standard Thermometer Co., Boston. PRICES: Outfit No. F-330, $14; No. F-355, with swivel drive for cars equipped with shock absorbers, $15.

An instrument-board, flush-mounted speedometer and flexible shaft mechanism complete and ready for installation in the Ford car. The instrument board is covered with imitation leather and is cut out for the installation of the speedometer. It is only necessary to remove one nut on each side of the dash cowl, slip the board in place and replace the nuts to install the instrument board. The entire installation may be made by the Ford owner without the necessity of drilling any holes.

FAN FIRE SPARK PLUG

Fan Fire Spark Plug Co., Yonkers, N. Y. PRICE, $1.

The central electrode of this plug carries a small fan-shaped member at its lower end. This fan is said to rotate under the action of the gases in the combustion chamber, and thereby prevents fouling of the spark gap. The spark jumps from the tips of the fan to the shell of the plug, and by the rotation new surfaces are continually brought opposite each other. With the exception of the tip, the plug is of standard construction throughout.

THE HEAT-OMETER

Heat-Ometer Co., Inc., 1 Broadway, New York. PRICES: Standard size, $3; junior size, $2.

Warns the driver of a dangerously overheated condition of the motor, so that steps may be taken to correct the same. It is an instrument inserted in a centrally drilled hole in the radiator cap and held in position by a lock-nut. A diamond-shaped frame holds the glass indicator tube that contains the sensitive liquid. This liquid is pink at normal temperatures, but turns a deep purple when a dangerous temperature is reached. The frame at each side of the tube is paneled, one side being enameled pink and the other purple, enabling the driver to check the motor temperature by comparison.

TWOMBLY TIRE FOOT PUMP

The Schlesinger-Redburn Corp., 1834 Broadway, New York. PRICE, $4.50, with hose and quick-locking adjustable connection.

This tire pump is operated through the pressure of the foot, and permits the weight of the body to be used in forcing the air into the tire. A steel barrel carries the leather-cupped piston that is actuated through a foot pedal, the piston and pedal being returned to the initial position by a spring. In use the pump is placed in a horizontal position either on the ground or on the running-board. It may be locked in a closed position so as to occupy little space when being carried.

WEGMAN DECARBONIZER

Manufacturers Distributing Co., St. Louis. PRICE, $5.

Injects water from the cylinder water-jacket into the intake manifold. The water-jacket and the manifold are connected by the decarbonizer, a ⅛-in. tapped hole in each being all the work required in making the installation. The instrument is made from polished brass, with a glass sight feed, needle valve, automatic ball check valve and leak-proof compression couplings. With the motor running the needle valve is adjusted to allow from 30 to 60 drops per minute to pass by the sight feed. The automatic ball check valve closes when the motor stops and shuts off the water supply.

COMPOUND AIR COMPRESSOR

The United Engine & Mfg. Co., Hanover, Pa. PRICE, Type No. 1-C, capacity 4.44 cu. ft. free air per minute at 200 r.p.m., $59.50; dealers, $47.50.

The air is compressed in the large cylinder to about 50 lb. per square inch. At this pressure and about one-quarter of its original volume it is delivered to the smaller cylinder and compressed to its final pressure. The construction is strong throughout, and the crank-shaft bearings are adjustable for wear. The pistons are long, with proper oil grooves, and the rings are individual casting, ground all over to accurate size. The wrist-pins are tool steel oil-hardened. The two-stage method of compression is claimed to give higher efficiency, reduce wear and tear, and to require less power to operate.

A. C. BRAKES FOR FORD

A. C. Mfg. Co., 2047 West Chicago Avenue, Chicago, Ill. PRICE, $15.

Supplies an external contracting braking system for the rear wheels of the Ford car. The brakes are fitted to the outside of the original rear-wheel drum and operated from the brake foot pedal. The original transmission band is disconnected or removed. The braking strain is thereby applied directly to the rear wheels and removed from the driving system. It is claimed that the chatter and grinding usually attendant with stopping are done away with and the life of the driving system prolonged.

EVERY-WAY ENGINE STAND

United Engine & Mfg. Co., Hanover. Pa. PRICE, $32; dealers, $25.50.

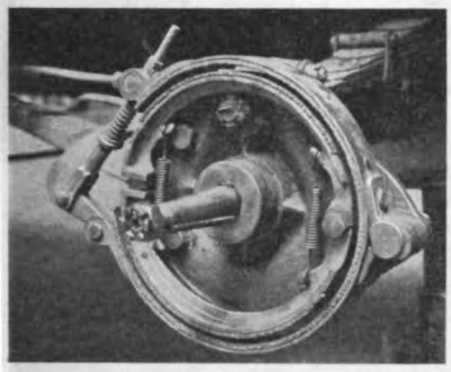
This engine stand may be adjusted to every position in a circle and locked rigidly in each position. The uprights are cast iron, cored hollow with the vertical slots in which the two steel brace clamping nuts travel. The base is composed of two steel Z bars, which are bolted down to the garage floor; if a concrete floor, by expansion bolts. The one upright is rigidly bolted to the two Z bars at one end; the other is adjustable to take in any width of engine from the smallest to the largest. It slides along the Z bars with clamps similar to the tailstock of a lathe. The supporting arms for the engine are steel angles, with numerous holes bored both in the horizontal and vertical sides. These angles are pivoted at their center in the two uprights. The engine is bolted to the angles by the same supporting brackets that hold it in the chassis frame. It is possible, on account of the large number of holes in the angles, to always be able to register them with the holes in the engine brackets. The height of the stand from the floor to the top of angles is 30 in., just right for working on engines to the best advantage.

MOSCO VALVE GRINDER

Motor Specialties Co., Waltham. Mass. PRICE, $1.50.

A hand tool that renders valve grinding an accurate mechanical operation. A round body or casing holds a chain coiled onto a pulley and adapted to rotate the grinder tool when the chain is pulled The pulley is fitted with a coiled spring that rewinds the chain. The operator pulls the handle for the forward stroke and the spring brings the tool back for the return stroke the same distance in the opposite direction. The grinding is said to be facilitated and to produce a very superior finish.

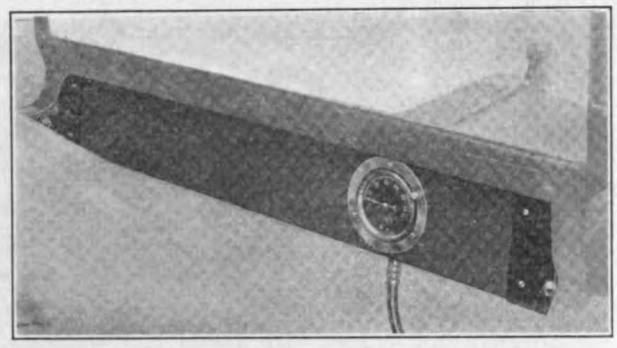
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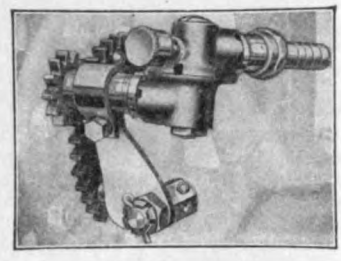
A. C. BRAKE FOR FORD



WEGMAN DECARBONIZER



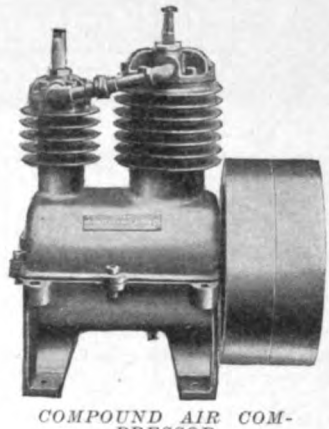




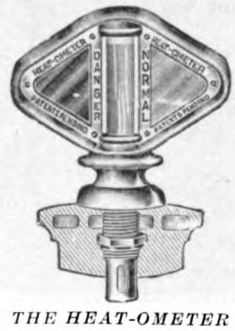
SPEEDOMETER FOR FORD
Upper—Showing instrument board and speedometer mounted
Lower—The two types of drive



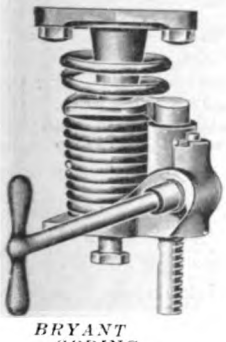
EVERY WAY ENGINE STAND



COMPOUND AIR COMPRESSOR



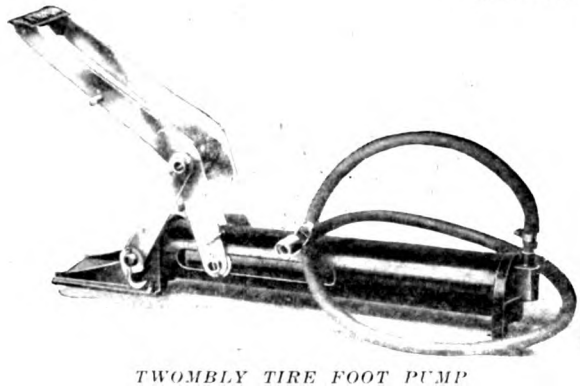
THE HEAT-OMETER



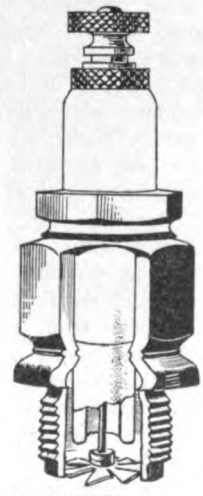
BRYANT SPRING REMOVER



MOSCO VALVE GRINDER



TWOMBLY TIRE FOOT PUMP



FAN-FIRE SPARK PLUG

BRYANT SPRING REMOVER

Stevens & Co., 375 Broadway, New York. PRICE, $2; dealers, 33 1 3 per cent. Postage 25 cents extra.

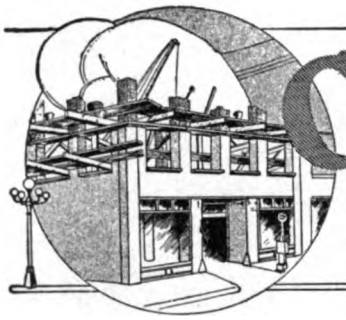
This device renders the handling of coiled springs a comparatively easy matter. It is claimed that a spring can be compressed in the motor, removed from the motor compressed, or can be compressed out of the motor, kept compressed indefinitely and replaced in the motor and released without difficulty. Two thin steel jaws, one fixed and one movable, notched to permit insertion around a valve stem, are forced between the two upper and the two lower coils of the spring. A gear and rack operated through a handle force the jaws together, compressing the spring the desired amount. A catch-pin permits the spring to be held in the compressed position.

DYKE'S AUTOMOBILE ENCYCLOPEDIA

A. L. Dyke, Publisher, Roe Building, St. Louis. PRICE, $3; by mail, $3.32.

The fifth edition of an encyclopedia treating on the principle, construction, repairing, troubles and remedies of automobiles and gasoline engines. Many books of this nature seem to have information on every point but the one in question, but this seems to be the exception in this case. Each part of the automobile is treated in a simple and thorough manner and provided with illustrations that in many instances are self-explanatory. The basic principles underlying each element of the car are first covered, after which the particular construction as used by the various manufacturers is explained. A complete index renders ready access to the desired information.

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

GARAGE, SHOWROOM AND REPAIR-SHOP 130 x 65

Fig. 1.

Editor Motor World:

We are contemplating building a garage, 65 x 132 ft. The frontage would be 65 ft. on the main street, running through to the alley in the rear, which would give us entrance from both ends.

We ngured on a one-story building, and provision for light would have to be made, probably a saw-tooth roof, as we would be shut in on both sides.

What would be your idea of a plan for such a building, from a sales as well as repair standpoint?—C. S. Sapp, Jr. (Chas. S. Sapp & Sons), Mount Vernon, Ohio.

You have not stated how many cars you will desire to display, but inasmuch as you handle the Buick and Dort, it seems likely that you will want to show at least one of each model.

Back of the showroom is the general office, and a private office, which may also be used for a closing room.

It is advisable for you to have an accessory store. Preferably it should be a separate room; even if it is combined with the showroom it should occupy a conspicuous part of it, such as one end, as shown.

The entrance to the garage has been placed at one side, so that the accessory store and showroom would present one continuous front and so that store and showroom might be adjacent. This will be a convenience that will be greatly appreciated. Obviously, placing the entrance at the side interferes somewhat with the layout of the garage, but this disadvantage is outweighed by the advantage of having these two departments together.

Provision has been made for five cars in the shop, and any of these may be removed without disturbing any other, since the entrance to the shop consists of a series of sliding doors.

The wash rack is placed at the rear on the aisle. It is presumed that most of the washing will be done at night and at that time there should be little traffic through the rear entrance; in fact, probably all the traffic will be through the front entrance at that time. If it is necessary to do washing in the daytime, probably it still would be advisable to retain this position for the wash rack. When there is a car on it, entering cars may use the front entrance exclusively.

We would hardly advise you to go to the expense of putting up a saw-toothed roof, but believe that you will be just as well satisfied by using plenty of skylight.

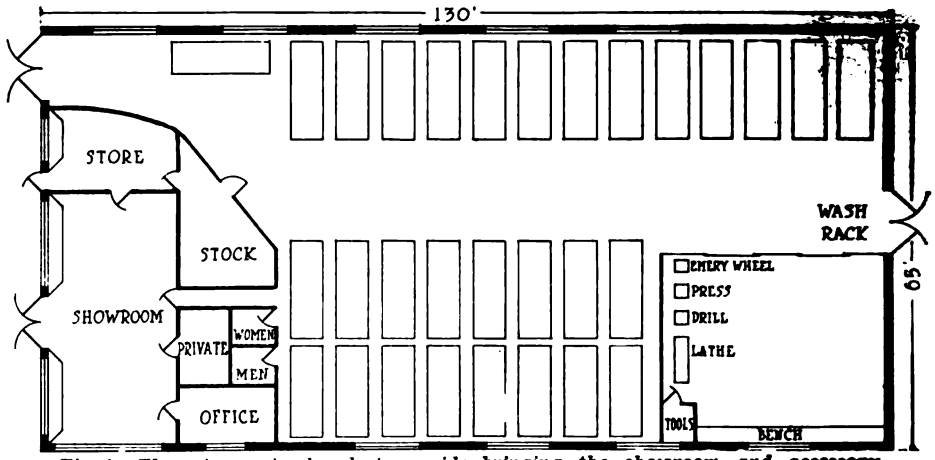


Fig. 1—*The entrance is placed at one side, bringing the showroom and accessory store together*

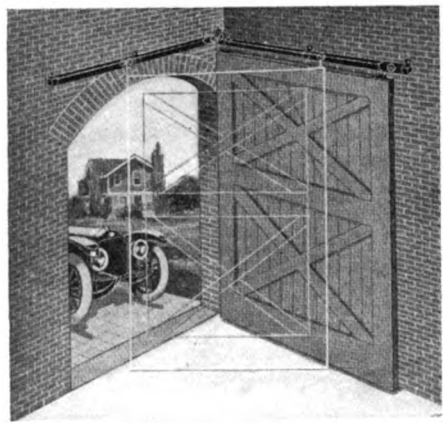


Fig. 2—*A hanging door that possesses all the advantages of the hinged type*

WAGNER GARAGE DOOR HANGERS

Wagner Mfg. Co., Cedar Falls, Iowa.

A door hanger permitting the door to be pushed back at right angles to the entrance. Although particularly adapted to garages where the room is limited, this type of door is well suited to the average garage, as it is easy acting and cut of the way when open. The illustrations herewith show the hangers in use, as well as several possible arrangements of the door. One double-trolley hanger is used in the track above the door and a single-trolley hanger on the wall track. The weight of the door is carried on ball-bearing swivels having a vertical adjustment. It is claimed that these doors work as quietly and as easily as those pushed straight back along the wall.

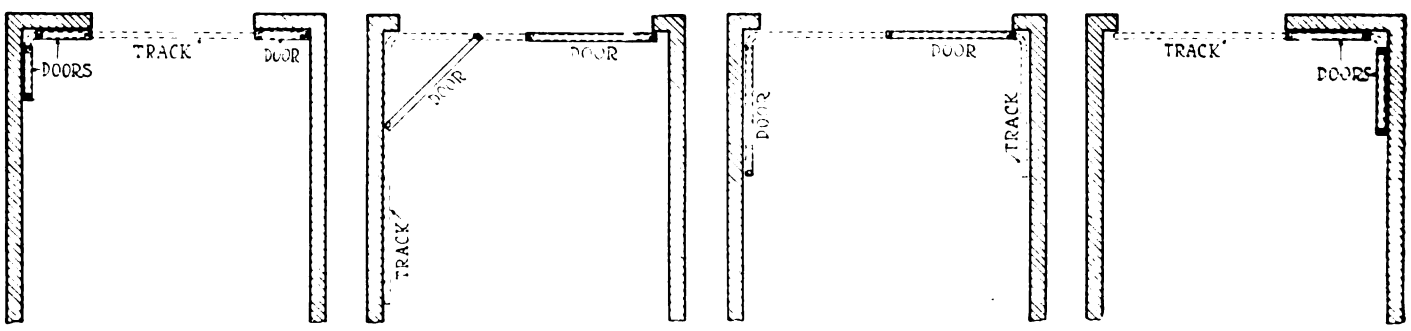
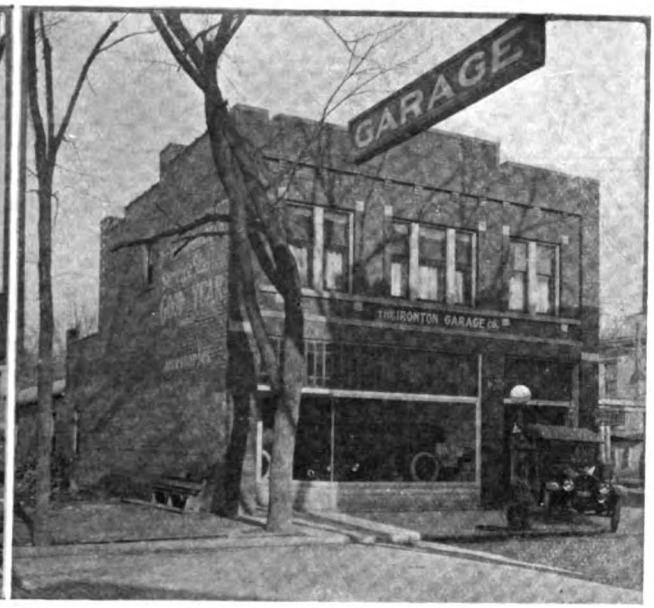


Fig. 3—*Showing the four possible arrangements of the Wagner hanging door*

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Random Views of Garage and Salesroom Fronts





Upper left—The 20th Century Garage (H. H. Cummings) Philadelphia. The construction is substantial and attractive and the large window space is utilized for the display of accessories
Upper right—The Ironton Garage, Ironton, Ohio, is a good example of a small, well-designed garage. A full line of accessories is handled and the garage has the agency for the King. The upper floor in front is divided into living rooms





Upper—The Babbitt Bros. Garage, Flagstaff, Ariz., is of a type of architecture common to many western garages. The construction is plain, but substantial and well lighted
Left—The Prince Wells Co. garage and salesroom, Louisville, Ky. At the left is the accessory store and offices, the window at the right being used for the display of cars. The front of the upper floor is used for a storeroom, and the repair shop is in the rear

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Do It This Way—

···QUERIES ANSWERED···

GARAGE LETTERHEAD

Editor Motor World:

We are about to get out some new stationery and would appreciate any suggestion you may offer. We are dealers in automobiles, have a garage and repair-shop, and make a specialty of vulcanizing. We are going to eliminate the picture on future envelopes, etc. If you will suggest some form it will be greatly appreciated.—LAKE MILLS AUTO CO., Lake Mills, Wis.

We believe you are wise in omitting the picture from your letterhead, because it is exceedingly difficult to get a picture effect that is good unless you spend time and money on the job.

In our suggestion we have endeavored to say about what was said in your original head. In place of "Dealers in Automobiles" you may say "Chandler and Hudson," or any other names, if you handle those cars. Perhaps, also, you will want to say "dealer" instead of "dealers"; we believe the singular is better.

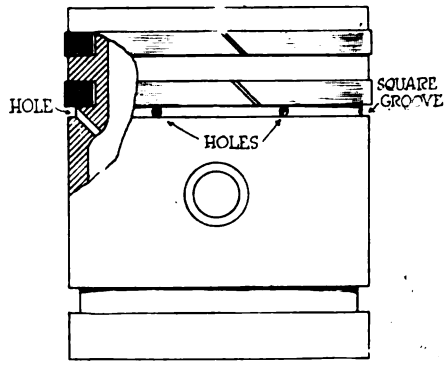
Our suggested head features first your name and next your business. These are the essentials. The rest is there if anyone wants to know it. The type is Pabst Old Style, but in case your printer has not that you can get a similar effect with Bookman.

MALLEABLE IRON OR STEEL

Editor Motor World:

We have gotten into an argument with our consulting engineers, and they claim that the truck manufacturers are using malleables for their spring hangers and other malleable parts used in assembling motor trucks. However, we know several concerns in Chicago which are using steel castings. They requested us to take up this matter with some of the trade journals, which would be able to enlighten us on the matter, as we are not acquainted with any of the motor truck manufacturers.—READER.

Malleable castings are used to some extent in motor trucks, as a rule by those whose productions are small, while in large productions drop forgings are used and also steel castings. For the same strength the malleable iron casting will cost less than the steel casting, although for this strength it must of necessity be heavier. It might be stated that at a greater production than 500 of each piece (250 of duplicates) a forging would be economical.



Method of drilling piston to prevent overoiling

PREVENTION OF OVER-OILING

Carbonization, sooty spark plugs and a smoky exhaust is due to the fact that the oil works up past the piston into the combustion chamber. The illustration shows a simple but effective method of supplying a return for this excess oil to the crank chamber. The piston is removed, chucked in a lathe, and a groove 1/16 in. square cut in the outside edge of the ring groove just above the wrist pin. Six 1/16-in. holes are then drilled through the piston at regular intervals and are inclined toward the wrist pin at an angle of about 45 deg. The oil is caught in the groove and thrown downward onto the wrist pin, not only removing the excess oil from the cylinder but also effectively lubricating the wrist pin.

JACKSHAFT ALIGNMENT

Editor Motor World:

I wish you would inform me of a remedy for a Mitchell 1912 model five-passenger car flying out of high gear while coasting downgrade. The high gear will not remain in mesh while descending hills with the clutch out. Many remedies have been tried on this car for this trouble, but all have failed. One local repairer even put in a new shifting rod in the transmission, but it did no good.—J. G. BUSH, SQUARE DEAL GARAGE, Lumpkin, Ga.

The trouble would appear to be in the alignment of the high-speed gear, since you have put a new shifting rod in the transmission, which would eliminate the trouble in that direction if properly installed.

When driving on high the strain on the teeth keeps the gears in mesh. As soon as this strain is reversed—as when the clutch is thrown out on a hill—the gear is forced out of mesh.

We would advise that you test the alignment of the high-speed gear pair by careful measurement and inspection. It is very hard to effect a repair if the axis of the high-speed gear is not parallel to the axis of its mate other than by fitting a new high-speed gear pair to the transmission.

CRANKSHAFT BEARINGS

The bearing composition used in the connecting-rods of many makes of cars is extremely soft. In tightening bearings of this nature care should be taken not to make them too tight, as the bearing surface will be ruined in the first few revolutions of the engine. A good method to follow is to spread a thin layer of Prussian blue on the shaft and scrape the bearing until an even contact is registered between the bearing and the shaft. Shims should then be removed or replaced until, with the bolts drawn up as tight as possible, the piston and connecting-rod will just move under its own weight from an almost vertical to a horizontal position.


LAKE MILLS AUTO CO.
DEALERS IN
AUTOMOBILES
Lake Mills, Wis.

The original

LAKE MILLS AUTO COMPANY
LAKE MILLS, WISCONSIN
DEALERS IN AUTOMOBILES
GARAGE AND REPAIRSHOP
VULCANIZING A SPECIALTY

Motor World's suggestion

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ANGLES OF THE LAW



By George F. Kaiser

He Broke Her Leg

Legal Editor:

I have been a reader of your motor magazine for some time and would be pleased to have you give me your opinion as to who is responsible legally for the accident, an account of which follows. I will try and give you all of the details, so that you will be able to give an unbiased answer.

I am connected with the largest garage in this part of the country as secretary to the president. While it is not my duty to drive a car during working hours, I have driven considerable and have been rated O. K. by men in this concern who are supposed to be able to decide. I was declared a good driver before the accident.

On July 28 I purchased a car from the company. The model was a new one, and as I was anxious to drive the car, I took it from the garage in the afternoon without having it checked out, i. e., I did not have the service department here go over it and see that everything was O. K. and that there were tools in the car.

I drove the car all that afternoon and took my mother out in the evening until about 9 o'clock. The car worked beautifully. At about 9 o'clock I called for a girl friend (19 years old) and took her for a ride. We visited the parks, and while leaving one park to go into another I decided, on account of it being 11 p. m., that we would return to town.

We were traveling north at this time, and to leave the park to go to town we would have to go straight east. As I had started around to turn to go into the last park, I had to back up a bit so as to go east. In backing I killed the engine. I tried to start it again, but the electric storage battery would not turn the engine over—it was run down.

I did not have any tools with me, as above mentioned, having left the garage without being checked out; so not having a crank, I decided to go and call over the 'phone for the service truck and have them bring me out a crank. I backed the car (it was standing on a hill) over to one side, so that other automobiles could pass. I backed it to the opposite side, over which it went later on. I left the car to go and call the garage on the opposite side of the road over which it later went over, leaving the girl in the car.

I tried for about 15 min. to find a house in which the occupants had not retired. A street car passed by at this time (11.15 p. m.), and knowing that undoubtedly our garage had closed, as it is our custom to quit at 11, I took the street car to town to get the service truck myself. This I did, and got back to where my automobile was about 12 o'clock. The girl was still there and the car had not been moved at all.

I backed the service truck up in such a position that I could pull my car out, being unable to find a crank for my car when at the garage, it being an entirely new model. I could not pull the car out on account of my having backed it on the side of the road and being on a hill. I decided to get around the back of the car and pull it down-hill to a level stretch, so that I could get it going, i. e., so that I could tow it up the hill. I stopped the motor of the service truck, set the brakes, got out of the service truck and went back to my own car and set the brakes.

That I set the brakes I am positive, and the girl admits remembering my doing so. I then unfastened the rope that was tied to my car from the service truck. I got into the service truck to take it around the back of my car, and had just started the motor, but not thrown it into gear yet (this car has the sliding gears), when I heard a girl scream. I looked around and saw the car going down the road backwards.

I stopped the motor of the service truck, set the brakes and ran for my car. The girl was at the wheel and I got on the runningboard. I tried to set the brakes, but on account of my awkward position on the runningboard on the side of the car that the steering wheel is on, I was unable to set them any tighter than they were, and I believe, though I am not sure, that they were already set.

Just then the car passed through a bunch of small trees and I was jerked off of the runningboard. I called to the girl to jump, but later she stated that she had jumped before I called. In jumping she got a compound fracture of her left leg, between the ankle and the knee. I ran down to where she was (I was not hurt in the least) and she asked me to call a doctor, which I immediately did. We took her to the hospital, where, of course, the leg was set.

The car traveled down the side of the hill it went over for about 300 ft., finally hitting the railroad track at the bottom, breaking the left front wheel to smithers and doing other damage.

Am I legally responsible for this accident to the girl? While I am responsible for the safety of my passengers, did I not take all the precaution necessary when I set the brake on the car when I saw that I could not pull it out?

About 15 min. time elapsed from the time that I set the brakes of my car until it started backward, and I was not in the car at the time it started back. You may think that I bumped it with the serving truck, but I did not, as this service truck has a big tool box on the back of it and I had no bumper on my car, so it was impossible for me to touch it without marring up the fenders or breaking a headlight or something. There was not a scratch on the car the next morning, no headlights were broken and we did not replace any fenders or refinish anything at all.

The girl also told me later on, after the accident, that she jumped before I called to her to do so.

The girl is a working-girl. She was forced to stay out at the hospital for 3 weeks and then at home for 7 more before she was able to be on her feet and return to her position.

She does not blame me for the accident, but her father does, and I would like to know in just what ways I am responsible, as he will expect me to stand all of the bills, which I am unwilling to do.

I would be pleased to have as early a reply in the inclosed stamped envelope as possible, as they are trying to effect a settlement now.

P. J. F.,
Quincy, Ill.

I do not think you are responsible for the injuries sustained by the young lady who was riding with you at the time of the accident, as you were not an insurer of her safety, but were simply called upon to use ordinary care in managing your motor car.

If the accident had occurred immediately after you took the car from the garage, there might be some question as to whether or not you were negligent in failing to examine it carefully before proceeding to use it. As, however, you had driven the car some considerable distance before the accident occurred, and had noticed no defects in it, I think you would have relief from liability on this score.

As you did not have the service department examine the car before you took it out, I think the company would also be absolved from liability. If the car had been examined they probably would have been liable.

Two Timkens Made One

DETROIT, Aug. 28—The Timken-David Brown Co., this city, the majority of the stock in which was originally owned by the Timken-Detroit Axle Co., has been bought out entirely by the Timken-Detroit company, and the manufacturing operations will be consolidated under the management of the axle company.

Coincident with the announcement of this merger comes information that Cornelius T. Myers, formerly chief engineer and later manager in charge of engineering, manufacturing and sales of the Timken-David Brown Co., has severed his connection with the concern, disposing of his interests to the Timken-Detroit Axle Co. Mr. Myers, it is announced, will again take up consulting engineering in this city, making a specialty of motor truck, tractor and worm gearing.

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Yes, Iowan!

OUT in Iowa is a young man who stands on the threshold of life. He believes he sees HIS opportunity. He has asked Motor World's advice—and we give it, freely, gladly, to the best of our ability.

His letter to us appears on the opposite page. In it he says he is working in a garage for $75 a month. In a nearby town of 200 population another man has operated a garage for three years and has just broken even. Now the other man wants to sell it to our young friend—and on reasonable terms.

The field is good although the town is small. Our friend believes there are possibilities there. He wants to know if we believe he could make it pay if he took it over and ran it as a garage should be run.

Our only answer—and we make it in all sincerity—is YES.

We are sure he can make it pay if there is any field whatsoever. And the small towns of States like Iowa with their buying farmers are better business centers than some of the larger towns of the eastern and more densely populated industrial areas.

This letter writer seems to have the right spirit—AND THAT IS EVERYTHING. He bases his whole question on the premise that he would RUN THE GARAGE RIGHT. And that will be the reason for his success or failure.

The locality is of comparatively little account, the business does not amount to so much, the external conditions are not so all-important when compared with the MAKE-UP OF THE MAN.

The great trouble with many of us is that we are what might be called HALF-HEARTED. We don't run to the best of our ability. We are like a lathe that is never speeded up. The stuff is there but we don't use it.

And now to get right down to cases with our young friend: If the field is any good at all, if the building is any good, if the equipment is any good, if the price is right, and if the living seems possibly better than what you can make where you are, by ALL MEANS TAKE IT.

FIRST—Clean up the garage. Make it as clean, orderly and neat as a Dutch housewife's kitchen. Fix up the front. Make it the best-looking garage in Iowa. You don't need to spend a lot of money but you do need to apply work and attention. You'll have to watch it to see that it keeps up to par.

SECOND—Get a place to display accessories. Build a show window into or onto the front, and fix up a showcase or cabinet. Neither of these need cost you much. And, what's more, if you'll send a picture and a rough floor plan of your building the Building Department of MOTOR WORLD will advise you specifically how to make these changes at a minimum of expense.

THIRD—Plan the display of your accessories. This is a long story, although the big principles are few and easily grasped. And, if you decide to start, Motor World's Merchandising Department will give you the benefit of its experience among hundreds of dealers and over thousands of miles of territory.

FOURTH—Plan to get business. There are hundreds of car owners out in the country, besides those in your own town. Many of these will come to you IF YOU RUN A GOOD GARAGE, but many, many more will come to you and spend their money with you if you go after their business instead of WAITING FOR IT TO COME TO YOU. And, again, Motor World can help you here. We shall be only too glad to suggest plans, advertising, literature to mail, and methods of pulling in business, in both summer and winter.

THEN—Run your business as a business should be run. Have an accounting system, an inventory system, an accurate method for knowing where you are going. You ask if we know of such. We do. There is a Motor World Simplified System of Accounting that was designed for just such garages, for the little ones whose proprietors may have to keep the books themselves, and there is a book describing this system and telling in simple language all about accounting. The book is free to you if you become a Motor World reader, and the system will cost you $12.

Furthermore, our System Department will help you install the system and after it is installed will always stand ready to give you any advice you need. We have done it with hundreds. We have helped scores of garagemen from the rut of loss to the path of profits.

LASTLY—This is the biggest point—YOU. *You* are the secret

(*Continued in center column of page 29*)

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Iowan's Question

Editor Motor World:

I am going to ask you a question, probably out of the ordinary, but am unable to decide on it myself.

I have a friend in the garage business in a small Iowan town of 200 inhabitants, who has been breaking about even for the last 3 years; that is, just about in the same shape financially now as he was at the beginning, and though he has a fine community to work from, he does not seem to get the business. Nearest competition is 6 miles away, a town of 1000 inhabitants.

Now for the question, after I have given you the beginning of my story. He desires to sell me this garage; that is, the equipment, and rent me the building, a new cement block structure, 40 x 80 ft., and make me very liberal terms, and I believe that a man with some hustle combined with good system in the business could make a good living at least, though I know it would be dead in the winter in the small town. But I have been in a large city all my life and worked as mechanic in garages for 6 years, getting good wages, but it takes all a fellow can make to keep expenses paid up, and I have only $1,000 extra cash to tie up.

I have a steady position, paying me $75 per month, but believe I could beat it if I had a good plant where I could work for myself, but am just a little afraid of a small town.

What would you advise?

Do you think the small town would pay better than that with a man of the right sort at the wheel?

Also, I desire to get a good system of bookkeeping, and, in fact, the most simple garage accounting system that is O. K. for a small or medium garage. Where can I get one and what is the best to your estimation?

Trusting that you can give me some information that will be of value to me, giving your exact opinion of the small town garage situation, and whether you would advise it or not for a man in my position, if he had ordinary ability to handle business.—IOWAN.

Up-to-Date Start

Montreal, Canada.

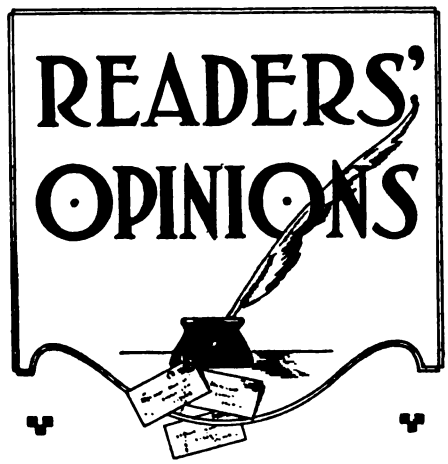
Editor Motor World:

When reading through your valuable magazine we noticed on page 30 of your issue of Aug. 2 a small paragraph referring to our new accessory store. A few words regarding this new store might be interesting to you.

The Cadillac car showrooms are situated at 7 Park Avenue, and to meet the demand of an up-to-date accessory store on "Automobile Row," we have extended our premises to 11 Park Avenue. At this address we have an up-to-date store, fitted with handsome show cases and counters. Also specially constructed metal tire racks, capable of holding over 200 tires.

A catalog is issued, of which we inclose you a copy, and a mail-order business in the Province of Quebec is conducted from the new store. The mail-order department is carried in a gallery addition.

Yours very truly,
Cadillac Motors, Ltd.,
H. Millar.



Yes, Iowan!

(*Continued from the opposite page*)

of the whole thing. If you want to succeed you CAN. But it's all up to you and you alone. This is why and how:

There are thousands of human beings—such as you and we—who go through life on second speed. We COULD do many things that we don't. And each of these things would shove us farther toward success.

Why don't we do them?

WE don't know. If we KNEW and could give a formula that would MAKE all men do the things they CAN and OUGHT we would never have to work again.

But this we DO know: When you see a good idea, USE it. When you find that a certain thing will benefit you or your business, DO it. When you find that a certain practice hurts your business, QUIT it.

DO! DO! DO! DO! That's the secret as nearly as we can define it. Do things! DON'T put them off. Be up on your toes! Plug hard!

We believe Motor World is the greatest paper of its kind in the world, and if you should begin, its organization is at your service; yet even that can't MAKE you succeed, for the whole problem is—

YOU.

But your letter sounds as if you were made of the right stuff.

Standard Prices a Hard Problem

Editor Motor World:

Answering your letter of the 19th instant with respect to standard prices for repair work, it has been my opinion that a great deal of misdirected energy has been spent in investigating this subject by various associations, magazines and individuals, and that the subject is so influenced by local conditions that very little could ever be accomplished of real value.

It is true that repairmen and garage operators are charging all kinds of prices for the same job, and in most instances these prices are fixed without any reference to costs. I have personal knowledge of a community in which high-grade mechanics' labor is sold at prices varying from 40 cents to $1 an hour. It is probable that the repairshop which charges $1 an hour for its best mechanical labor has awakened to the fact that at least 100 per cent must be added to actual labor cost to provide a reasonable profit on the labor account after the distribution of overhead cost and other items.

Personally I would say that a great deal of good might be done by investigating this subject as it relates to various localities in the United States, but that conclusions be drawn in the light of properly understood local conditions. Furthermore, much good would result if the important lesson was taught that *the difference between what the customer pays per hour for labor and what the employer pays the mechanic does NOT represent profit.*

All that I have said might be summed up in the statement that an investigation of this subject would prove beneficial but that it is not practicable to standardize the prices of labor, disregarding the influence of local conditions.

National Automobile Trade Assn.,
J. C. Thorpe, Gen. Dir.

Burd Issues Double-Utility Book

ROCKFORD, ILL., Aug. 28—The Burd High Compression Ring Co. has issued to dealers a book giving the piston ring sizes of all cars and at the right-hand side of each page columns for reporting the stock of rings carried by the dealer. The book is unusually complete.

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The RETAIL NEWS

MIDDLE WEST

The Cornelius-Browing Auto Co., Toledo, has taken the agency for the Liberty in northwestern Ohio.

The Fischer Auto & Service Co., Columbus, Ohio, agent for the Chalmers, has leased the ground floor of a large building at Third and Rich streets which will be used as a service station.

The N. T. Foster Garage, Columbus, Ohio, located at High and Norwich streets, has taken the agency for the Ford in the North End of Columbus.

Frank H. Lawwell and **Murray M. McLeisch,** Columbus, Ohio, have formed a partnership to handle the Fords, at 241 North Fourth Street.

Paul Mosier, Sandusky, Ohio, has purchased the U. S. Taxi Co. from Charles O'Brien.

The Campbell-Gilchrist Sales Co., Columbus, now occupies new quarters at 15-17 North Fourth Street, for the sale of the Empire. Richard Cott has been placed in charge of the service station.

The Ohio Storage Battery Co., Columbus, has been incorporated at $20,000 to take over the business of the Columbus Storage Battery Co., 79 East Long Street, central Ohio distributer for the National Carbon Co. The incorporators are George C. Lee, Jr., George C. Lee, Sr., James C. Langley, James W. Collins and J. A. Weston. George C. Lee, Jr., is president.

The Lake Geneva (Wis.) Auto Co. has dissolved. The partnership was between Arthur Jensen and Ira A. Flack. Jensen retires and Flack will continue the business under the old style.

Frank Ruelle, Lena, Wis., is establishing a tire store and repairshop.

B. A. Wintergerter, Mukwanago, Wis., has sold his garage to John and Henry Goetsch, who have been operating a Ford garage in the Mukwanago Hotel stables for some time. Wintergerter will engage in another line.

F. G. Martin, Mosinee, Wis., who has operated a garage for several months, will erect a fireproof garage and repairshop, 40 x 100.

S. A. McLean, Richland Center, Wis., has awarded contracts for a two-story fireproof garage and repairshop, to be ready Nov. 1.

The Modern Garage Co., Milwaukee, is rushing work on its new garage and service station at West Twenty-fourth and State streets, to cost $8,000.

Rochford & Co., Chicago, with T. J. Rochford as manager, has opened showrooms at 1514 Michigan Avenue and will handle the Madison. Rochford was connected with the White Co. for years.

Leo Garvey, Fenton, Mich., has purchased the garage business of Granger & Bacon.

Frank Leins, Kalamazoo, Mich., Maxwell distributer, has moved his garage and sales department from 119 East South Street to 217 West Kalamazoo Avenue.

The Weinbeck Auto Sales Co., Jackson, Mich., has taken over the agency for the Saxon car, with headquarters at the Orpheum Garage, 120 Pearl Street.

James C. Ritchie, Sault Ste. Marie, Mich., formerly manager of the Auto Livery, has taken over the Park Garage, on Douglas Street, heretofore operated by Price Eagle.

The Haynes Garage, Marion, Mich., has been opened by W. A. Cool, Haynes dealer, and W. H. Putnam.

The Falls Rubber Co., Cleveland, has leased space at 1844 Euclid Avenue and will open a branch.

The Overland-Green Bay Co., Green Bay, Wis., northeastern Wisconsin distributer for the Overland-Wisconsin Co., Milwaukee, has awarded contracts for the erection of its branch house at Pearl and Walnut streets, Green Bay. It will be 100 x 120, two-story and basement, of fireproof construction. The Overland-Wausau Co., another subsidiary recently formed, is building a three-story branch house, 60 x 120, at Wausau, Wis., to serve central Wisconsin.

R. J. Clark, Coloma, Wis., is completing a new garage and repairshop, 40 x 80.

B. H. Kleinert, manager of the Morrissonville (Wis.) Garage, has resigned to open a garage and machine shop at Keyeser, Wis.

S. Kozlowski, Friendship, Wis., is making an installation of oxy-acetylene welding and cutting apparatus in his repairshop.

R. J. Quinn, Darlington, Wis., a new Ford dealer, will establish a garage and service station in that city.

Sharp & Denicke, Mauston, Wis., are adding 40 x 100 feet to the rear of their present garage, and will use the new space for service work.

R. D. Rockstead, 148-152 Seventh Street, Milwaukee, has been appointed Wisconsin distributer of the Lexington. Rockstead has relinquished the Paige and Saxon agencies.

The Motor Car Sales Co., 525 Jefferson Street, Milwaukee, has taken the state agency for the Jordan.

The Wait Auto Co., 789 Thirty-second Street, Milwaukee, has been appointed state agent of the Stephens, and will continue the Moline-Knight.

The Blevins Auto Sales Co., Cincinnati, now occupies its new salesroom at Gilbert Avenue and Court Street. The formal opening will not be held for some time. The concern is Studebaker distributer.

The Garford Motor Truck Sales Co., Toledo, Ohio, has been incorporated at $10,000, to handle the Garford truck, by A. G. H. Jensen, W. L. Parmenter, H. E. Myers, E. F. Sayers and W. W. Smith.

The Columbus Yellow Taxicab Co., Columbus, has purchased the business and leased the garage of Fred W. Atcheson, one of the oldest and largest taxicab operators in the Buckeye capital. C. E. Bosworth, formerly of Toledo, will be manager of the new concern.

The Craig Motor Co., Cleveland, Ohio, has been incorporated at $15,000 by James W. Stewart, C. M. Colyer, A. V. Gannon, George E. Bradbury and J. E. Splittorf.

The Universal Automobile Co., Cincinnati, has been incorporated at $10,000 by F. D. Hirst, J. W. Montgomery, F. I. Coleman, B. E. Hahn and Roy M. McLaughlin.

The Mutual Auto Supply Co., Cleveland, has taken a 5-year lease on a double store in the Keystone Building on Chester Avenue, to which it will remove from its present location on Euclid Avenue.

The Fen Far Co., Cleveland, dealer in accessories, has taken a long lease on the Farr Building, 2165 East Ninth Street. The company has taken an agency for the Ford, and a portion of the building will be used for a sales and service department.

The Craig Auto Co., Cleveland, has leased space in the new Neighbors Building, Chester Avenue and East Thirtieth Street, where it will operate a Ford agency and service department. The head of the company, R. E. Craig, was formerly with the retail department of the Ford Motor Co.

Girard Barclay, Lincoln, Ill., has disposed of his interest in the Official Tourist Garage, that city, to his partner, B. E. Hayes, and the latter will handle the plant, located on Logan Street. The retiring partner will open a new garage at Chestnut, Ill.

Charles J. Schade and **Edward Game,** Chatsworth, Ill., will open a new garage at Third and Main Streets, 60 x 120, of brick.

The Holmes Garage Co., Danville, Ill., has let the contract for an addition, 75 x 75, to the present plant, thus giving room for a display room and also a new repair department.

Jesse and **Frank Simpson,** Bloomington, Ill., have purchased a lot, 60 x 140, at Washington Street and Roosevelt Avenue, and will erect a two-story garage and sales station.

The Edwards Motor & Repair Co., Peoria, Ill., has been incorporated at $5,000 by E. A. Pratt, G. A. Burton and E. B. Hamilton.

F. A. Sperry of Simonson & Sperry, Bushnell, Ill., has purchased the interest of D. S. Simonson in their garage business and the latter will retire. Mr. Sperry is the oldest automobile dealer in point of continuous business in Bushnell, opening a garage in 1908.

G. N. Kreider, Springfield, Ill., has let the contract for a $40,000 building at Fifth and Edwards Streets, 80 x 143.

M. D. Morris, Springfield, Ill., distributer of the Hudson, Velie and Scripps-Booth, has leased the entire building at 217-219 East Capitol Avenue.

W. S. Parks, Rock Island, Ill., was chosen president of the Totten Automobile Co. at a meeting of the directors. He succeeds W. C. Totten, who was drowned recently in the Mississippi River. T. B. Totten succeeds Parks as general manager.

The Byerly Auto Co., East St. Louis, Ill., has been incorporated to handle the Oldsmobile and Mitchell. It succeeds to the business of J. H. Byerly, who also is a shoe merchant. A. L. Perkins is manager of the motor company, and the showrooms at Tenth and State Streets have been remodeled.

COAST

The Willis Garage, Lamanda Park, Cal., has opened in a new brick building on Rose Avenue near Colorado Street.

The W. J. Burt Motor Car Co., Los Angeles, has opened a branch at Santa Ana, Cal., where a salesroom for the Auburn line is conducted.

The Pickwick Auto Stage Lines, San Diego, Cal., have opened the Pickwick Garage, where the stages running throughout San Diego County and into the Imperial Valley make their headquarters.

Stoffel & Kramer, Anahiem, Cal., have opened a tire store at 123 Los Angeles Street.

Dicas Bros., Calabasas, Cal., have opened a garage on the El Camino Real just north of the entrance to Topanga Canyon.

Casey's Garage, Oxnard, Cal., is now housed in a new garage building at Sixth and A Streets.

Robert Green, Oxnard, Cal., proprietor of the California Garage, Sixth and B Streets, has added the agency for the Maxwell to his garage business.

L. L. and **P. W. Bruns,** Santa Ana, Cal., have purchased the Modern Vulcanizing Works, formerly operated by Ballard & Leaning.

C. C. Stall, Downey, Cal., has purchased the Central Garage and has opened garages at Norwalk and Clearwater, Cal.

Robert H. Smith, Los Angeles, has moved his garage from 622 Lebanon Street to 548 South Figuroa Street.

E. J. Boeske, Jr., Santa Barbara, Cal., is erecting a new fireproof garage on State Street.

C. H. Kamm, San Luis Obispo, Cal., is building a brick building which is to be the new home of the San Luis Garage.

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The Central Garage, Los Almos, Cal., has been opened.

F. R. McKinley, King City, Cal., has purchased a half-interest in Brandt's Garage. The business will retain the name Brandt's Garage, but instead of Streglich & Brandt, proprietors, the firm name will be Streglich & McKinley.

Hamilton & Gause, King City, Cal., have opened the Ford Garage on El Camino Real.

Broadhurst & Keith, Stocton, Cal., proprietors of the Stocton Vulcanizing Works, are remodeling their plant and putting in a large stock of tire accessories.

J. J. Jacobs, Bakersfield, Cal., and **R. C. Bridge,** Los Angeles, have taken the Studebaker agency at Sacramento, Cal., and have opened a garage equipped for service and sales.

The Pike Street Garage, Seattle, has been opened at 806 Pike Street by William J. Batts.

George A. Sabourin, Tacoma, Wash., manager of the St. Helens Auto Sales Co., has been made distributer of the Moon in the State of Washington.

The Northwest Tire Shop, Seattle, has opened at 608 East Pike Street.

The Wright Truck Attachment Co., Inc., Seattle, has opened salesrooms at 1510 Eleventh Avenue.

The McDonald-Goodwin Co., Tacoma, Mitchell distributer, has leased the A Street Garage.

The Pacific Coast Automatic Carbureter Co., Seattle, has opened salesrooms at 617 Pine Street.

J. F. Aiken, Spokane, for 12 years superintendent of schools, has been appointed general sales manager of the Interstate Auto Co., Spokane, distributer of the Inter-State and Nelie.

Floyd J. Logan, Tacoma, Inland Empire representative of the Maxwell, has opened new quarters in a modern brick garage building at Jefferson Street and Sprague Avenue.

SOUTH

The Brunswick Motor Co., Inc., Lawrenceville, Va., has been incorporated at $10,000. The officers are: T. C. Coleman, president, and E. W. Ligon, secretary and treasurer, both of Lawrenceville.

The Universal Motor Co., Inc., Richmond, Va., has been incorporated at $50,000. The officers are: J. Jordan Leake, president, and L. S. Schomberg, secretary, both of Richmond.

The Marmon Motor Sales Corp., Inc., Norfolk, Va., has been incorporated at $5,000, S. F. Bayless, president, and J. W. Coykendale, secretary, both of Norfolk, are the officers.

The Columbia Motor Car Co., Louisville, Ky., has been incorporated at $10,000 by F. R. Hodapp, E. E. Miller and J. L. Saylor.

NORTHWEST

The Bartles Oil Co., St. Paul, has been authorized to increase capital from $25,000 to $100,000.

Conrad & Orsland, 139 West Seventh Street, St. Paul, have been appointed to distribute the Glide in Minnesota and part of Wisconsin.

Jay Leslie, Spring Valley, Minn., has opened a vulcanizing shop.

Dillner & Holbrook, Mankato, Minn., are erecting a one-story garage, 55 x 150.

The Winona Motor Co., Winona, Minn., has taken the Reo agency.

Donaldson & Smart, Whitefish, Mont., have taken over the Whitefish Auto Co.

The Missouri Valley Motor Co., Bismarck, N. D., will erect a garage at Seventh and Main Streets to cost $50,000.

The Simon Garage, Clarissa, Minn., has taken the Chevrolet agency.

Splinter & Cowan, Madelia, Minn., have bought out the Madelia Machine & Repair Co.

Melhause & Heins, Olivia, Minn., have taken the Hudson and Dodge Bros. agencies.

Clark Hurlburt, Townsend, Mont., has opened a garage.

H. L. Headly, Watertown, S. D., will continue the business of the Headly Auto Co.

SOUTHWEST

Charles W. Ebel, Amarillo, Tex., is having constructed an up-to-date brick garage at Second and Fillmore Streets, to be known as the Fillmore Street Storage Garage, with Ebel himself as manager. The building will be completed about Sept. 1.

The Imperial Auto Supply Co. is establishing a branch at 1530 Grand Avenue, Kansas City, Mo. L. Bassom, for 6 years at the New York headquarters, is in charge. Louis Levene, Western branch manager of Chicago, who has been in Kansas City, goes to Des Moines, where another branch may be opened. Besides Kansas City, the company now has branches at Chicago, Memphis and Springfield, Mass.

J. W. Gilbert, Emporia, Kan., has secured the agency for the Marion-Handley. Gilbert was formerly a livestock dealer in Delavan, Kan. He is erecting a sales and repairshop building.

F. A. Britton, Kansas City, formerly city sales manager for the Hupmobile, has been made city sales manager for the Marion-Handley Sales Co. in Kansas City.

The Packard Missouri Motor Co., St. Louis, has leased 1801-07 Pine Street, formerly the Donnelly Automobile Co. showrooms, as used-car salesrooms.

Dallas—Two Ford dealers have been appointed. They are the J. H. Shelton Co. and the Newton G. Flippen Co. There will be five in all.

The Southwest Kissel Kar Co., Dallas, has moved into larger quarters at 2025-27 Commerce Street.

The Burton Rountree Co., Dallas, is the new distributer of the Hupmobile, Inter-State and Jackson.

The J. H. Sides Motor Co., Dallas, has closed a dealer contract with the Maxwell Motor Co.

The Jackson Motor Co., Kansas City, has appointed John Henning, formerly of the Mound City Automobile & Buggy Co., St. Louis, as manager of its branch in Wichita, Kan. This branch will handle Kansas.

The Clay Center Vulcanizing Co., Clay Center, Kan., has rented the old Dispatch office and located the business there.

Labbe Bros., Vermillion, Kan., have just moved into their new garage. The building is 50 x 100, and of brick and cement. They have installed a repairshop.

A. R. Cogswell, Kirwin, Kan., has just completed a new garage, 65 x 100, of cement blocks and containing an office, shop and storage room.

M. C. Wemmer, Milan, Mo., has opened a garage and repairshop in the Butler Building, Third Street.

Ralph Bloom, Hutchinson, Kan., who runs a taxi business, will erect a new garage for his cars.

Herbert G. Shimp, Columbia, Mo., has moved his used-car store from 1715 McGee Street to 1512 Grand Avenue.

George H. Scott, Columbia, Mo., manager of the Hudson-Phillips Motor Car Co., has been appointed vice-president of the same company at St. Louis. F. W. Neidermeyer, Jr., has purchased the garage of the Columbia company.

The Hiatt-Buick Co., Kansas City, handling retail sales of the Buick in Kansas City, has opened up at 1715 McGee Street. Le Roy Simons will be sales manager and J. B. Durkee will be territorial salesman. O. W. Hiatt, head of the company, was formerly manager of the retail sales department of the Buick Motor Car Co., Admiral Boulevard and McGee Streets, which hereafter will handle only the wholesale business of the territory. The used-car department of the Buick is also under the management of the new retail company.

The Kaw Valley Buick Co., Kansas City, Kan., was opened recently on Minnesota Avenue between Seventh and Eighth Streets by the Buick Motor Car Co., Kansas City, Mo. Payton Howard, who has worked for the Buick Motor Car Co., will be the manager. This branch will handle Wyandotte County.

Peter Holman, Alta Vista, Kan., has recently opened a garage.

C. E. Gardner, Burlingame, Kan., has bought the garage of C. R. Dryden.

A. J. Missimer, Russell, Kan., has secured the agency for the Willys-Knight.

Roy Kerns, Speed, Kan., has sold out to Victor Myers.

The Central Motor Co., Emporia, Kan., is building an addition, 40 x 40, to be used as a machine room and storeroom.

S. J. Riggs and **E. E. Dixon,** Pattonsburg, Mo., have rented the livery barn in Winston, Mo., and are remodeling it for a garage.

Teater & Delap, Blairstown, Mo., have just completed their new garage.

J. F. Coulter and **Guy Calhoun,** Sweet Springs, Mo., will open an automobile supply store and repairshop.

Sebastian Hahn, Coffeyville, Kan., has leased the building at 311 West Eighth Street as a temporary garage.

Edward Erickson, Ridgeway, Mo., has bought out his father's interest in the garage and will continue for himself.

L. A. Armantrout, WaKeeney, Kan., has purchased the WaKeeney Garage from G. M. Jones.

Frank Dean and **Arthur Whightsil,** Altoona, Kan., have leased the repairshop of the Ingersoll Garage.

The King Motor Sales Corp., Kansas City, has been organized and will take over the agency for the King, formerly handled by the Donnelly-Campbell Motor Co. The new company will move from 1706-08 to 1901-03 McGee Street, where a building is being remodeled. This transfer will be about Sept. 1.

The Kansas City branch of the United States Tire Co. has installed a shop for pressing on and off tires. The press develops a pressure of 300 tons.

The H. A. Dougherty Motor Co., Kansas City, will establish a branch in Wichita, Kan., Sept. 1, under the supervision of Harry H. Benjamin, who formerly had charge of Kansas. The name of the new firm, which will be situated at 224-226 South Market Street, has not yet been decided.

Glen Morris, Gentry, Mo., will open a garage and repairshop.

B. F. Hardin and **Jess Branham,** Albany, Mo., have opened a garage in the Killam Building.

J. F. Pickford, Blue Mound, Kan., has purchased the interest of C. H. Smith in the garage formerly owned by the two.

Walter Hampel, Hiawatha, Kan., is remodeling his shop into a modern automobile paint shop.

Frank Emerson, Hiawatha, Kan., will remodel his garage.

Dr. W. V. Neighbors, Cottonwood Falls, Kan., has secured the agency for the Buick.

The Bogan & Sons Motor Co., Dodge City, Kan., is a new firm which has secured the agency for the Grant.

The Scudder Motor Truck Co., St. Louis, has incorporated at $10,000 to deal in cars and trucks. Directors are Cliffton R. Scudder, Leclare H. Anirine and Charles M. Polk.

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The Marion-Handley Sales Co., Kansas City, has taken a 10-year lease on the Grand Avenue Viaduct floor, south of the main entrance of the Coca-Cola Building.

Frank Zimmerman, Seneca, Kan., is having the Firstenberger Building remodeled preparatory to opening a music store and car salesroom. Zimmerman has secured the agency for the Grant.

J. F. Coulter and **Guy Calhoun**, Sweet Springs, Mo., will open a repairshop and accessory store.

EAST

The Becker-Stutz Co., Boston, has opened a Providence branch, with N. W. Rogers as manager.

The Worcester, Mass., Buick Co. has been incorporated by Chester M. Stanley, Rodney G. Clark and Harry K. Noyes, the latter being the New England Buick distributer in Boston.

The Philadelphia Storage Battery Co., Boston, has leased a new building on Brookline Avenue.

William Turner, East Boston, Mass., is remodeling the Boulevard Garage.

George S. Brewer, Athol, Mass., has moved his garage business from Exchange Street to the Highland Garage.

Cushing Bros., Brockton, Mass., have applied for a permit to erect a garage 65 x 108.

The Cliftondale Garage, Lynn, Mass., will be opened by Leslie Parsons and Frank Burleigh.

Fred W. Warner, Salem, Mass., is to erect a three-story garage on Sewall Street.

Albert E. Wills, Lawrence, Mass., Hudson dealer, is erecting a garage, 100 x 140.

The Penzance Garage, Woods Hole, Mass., has just been opened.

The Plymouth Rock Garage, Plymouth, Mass., owned by J. Henry Shaw, opened Aug. 20.

The Drown Motor Car Co., Barre, Vt., has been sold to the Barre Garage Co. and A. G. Bennett. The sale included the Buick agency.

Oscar Lawson, Bangor, Me., has leased the new garage being finished on South Park Street.

The Hawley-Cowan Co., Boston, Saxon dealer, has moved into the salesrooms on Commonwealth Avenue vacated by the Cottrell Motor Car Co., Pathfinder dealer.

The R. P. Motor Co., Manchester, N. H., has just been formed and has leased the McCrillis Garage. Dana L. Reed is manager.

The Cole Motor Car Co., Boston, has changed its name to Bryant G. Smith & Sons Co. since it moved to new quarters on Beacon Street.

The Green & Hale Co., Worcester, Mass., Marmon-Overland dealer, has moved into new quarters.

The Moline-Knight Co., Boston, has placed G. L. Parker in charge of its retail sales.

The Stoddard Motor Car Co., Springfield, Mass., has added the Autocar.

The Walter F. Kelley Co., New Haven, Conn., has just been formed to handle the Vim truck.

The Metz Co., Providence, R. I., has appointed D. E. Morgan manager.

Canney & Cassidy, Springfield, Mass., Grant dealers, have opened new salesrooms on Main Street.

The Jackson Motor Car Co. of New England, Boston, will operate its own service station from now on, the work being done formerly by contract outside. New machinery has been secured and space above the salesrooms on Commonwealth Avenue leased, so that the shop will be under the direct supervision of A. H. Sowers, the manager. The sales force has been enlarged also by the appointment of George L. Lighthall, who will handle western Massachusetts agents; Henry L. Simons, as manager of the Greater Boston territory, and Harry O. Foskett, manager of retail salesmen at the agency.

The Smith Form-a-Truck Sales Co., New York, has opened a Philadelphia branch and service station at 2121 Vine Street. W. H. Durphy is manager.

J. A. Cramer, Buffalo, has purchased the property at 1010 and 1012 Main Street and will erect a three-story building for his automobile business. It will be of steel, brick and concrete, with an Indiana limestone front, and will extend 51 ft. on Main Street and be 150 ft. deep, with entrance to the service station from North Pearl Street. He handles the Jeffery and Dodge Bros.

Frank G. Robins, Hartford, Conn., Autocar distributer, has removed from 522 Asylum Street to 45 Ann Street, to the quarters recently vacated by the Chalmers Auto Agency.

Wells Wetherell, Hartford, Conn., formerly of Kingsbury & Wetherell, has severed his connection and joined Frank G. Robins, Inc., taking with him the Saxon agency.

W. C. Nelson, Hartford, Conn., has joined the sales force of the Hartford Crow Elk Hart Motor Co., which has removed from the Central Garage, 25 Belden Street, to the Franklin Garage, 278 Franklin Avenue.

FORD CHANGES

Kansas City—G. T. O'Maley, for a year manager of the retail department of the Ford Motor Co., has secured as his own business the retailing of Fords at the retail station, 1710 Grand Avenue, and also the downtown service station, 1905 McGee Street. It had previously been announced that the company would build a new structure for sales and service near the McGee Street location, but it is said that the transfer of the downtown business to O'Maley changes these plans. Mr. O'Maley is widely known, especially in Ford circles, as for 6 years one of the leading producers, standing second, third or fourth in Ford sales in the United States in that period. Suburban retail sales and service in Kansas City will be handled by Sam S. Baker, formerly a Ford salesman here, who has leased the Elbelvedere Garage, 3332 Main Street, and buildings adjoining. He is adding to the service equipment of the garage.

Bloomington, Ill.—The L. M. S. Motor Co., organized to handle the Ford in central Illinois, has received assurance that no change will be made in the previous arrangement. The local contract has been renewed under the same terms as in the past. It is understood that the reason for this exception is the recent construction by the firm here of a $40,000 building devoted exclusively to the handling of Ford cars and service. It is asserted that in other cities where equal enterprise was shown in the conservation of the Ford interests a similar concession will be made.

Richmond, Va.—The Ford Motor Co. will have at least four individuals or firms acting as its retailers. It is also understood from reliable sources that at least four retail Ford firms will be engaged in Norfolk. The Kaehler Motor Co., which heretofore handled the Ford exclusively, will handle the Saxon, the G. M. Co. truck and accessories. The Kaehler company has just leased a three-story building on West Broad Street, where the accessory and supply business will be conducted, leaving the Kaehler building at Ryland and Broad Streets for the Saxons and trucks.

Pittsburgh—The Ford Motor Co. has so far established nine agencies covering all parts of the old city of Pittsburgh, Allegheny, now north side of Pittsburgh, and Wilkinsburg. Its officials expect within another week to have at least three or more agencies placed here. The company has taken unusual care in investigating the character and selling ability of the agents appointed, and could have easily put out fifty agents had it not been so particular. The agents appointed are already doing a fine business. Some of them are seen every day at the lunch hour on the downtown streets surrounded by a crowd of eager investigators.

Victor Fast, St. Louis, who has been in the motor business since 1904, and who is one of the best known accessory men in this city, has returned to selling cars and will be connected with the Westcott Motor Sales Co.

Minneapolis—Twelve agencies are lined up in Minneapolis for Ford cars to replace the branch selling agency. Nine of these are closed and three are in abeyance. In some instances as high as three salesmen have gone with an agency. These agencies are reported in each instance to be well backed. Contracts in the country remain as territory line-ups and are unchanged. In the city the minimum for cars is twelve. Some of the agencies will run 400 to 500 cars, but a maximum will be established to prevent any monopoly. City agencies may sell anywhere in the city. Both maximum and minimum limit will be aranged finally with respect to conditions and locality. Conditions will be somewhat similar in St. Paul. There will be eight to ten agencies, possibly more. The situation is only a few days old and the details are not completely arranged.

Washington, D. C.—There will be about eight dealers who will handle Ford cars, and their territory will be limited to the District of Columbia. That means that any Ford salesman—and they are giving preference to salesmen under the old regime—will have a chance to work only in the District of Columbia, a territory of about 65 square miles. To date Hill & Tibbett, on New York Avenue; Hyatt, at the Parkway Garage, and Rocker, at the Columbia Automobile Supply Co., had been appointed Ford agents. Applications from five other prospective agents are being considered.

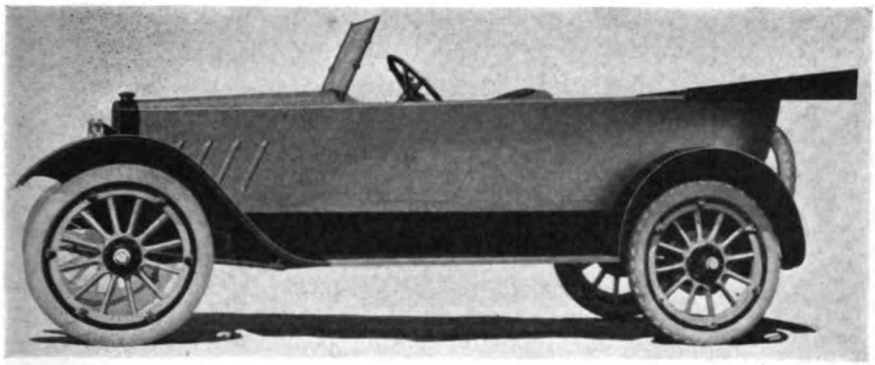
Wilmington, Del.—According to H. A. Partington, manager of the Wilmington branch of the Gomery-Schwartz Co., Philadelphia, which has the local agency for the Ford in this district, the Ford Motor Co.'s new selling plan will have no effect on this district for some time, as he understands the matter. Partington says his company has a contract with the Ford people for the local territory, which does not expire until the first of next August, and he does not believe any other selling agency will be established here until that contract expires.

The territory allotted to the Wilmington agency is New Castle County, Del. The remainder of the State and Delmarvia Peninsula are taken care of from other agencies. The local concern has established five subagencies in different parts of the county, but has none outside of that territory. It is likely that the Maryland portion of the peninsula will be under the direction of Baltimore houses, though that is not known here at this time.

Dallas—Ford cars may be purchased from one of five selling stations located in different parts of the city. They are: A. P. King, J. S. Lamberrh, J. H. Shelton, N. G. Flippen Co. and S. C. Fishburn.

Duluth, Minn—The new Ford retail sales plan will go into effect here within a short time, according to an announcement made today by H. A. Netter, manager of the Ford branch opened on Aug. 1. Three or four Ford dealers will be designated to handle this car when the plan is put into effect. The regular Ford agents in the small towns throughout Northern Minnesota will be continued as at present. The local Ford branch will be a wholesale distributing point

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The Hackett body design is original, the straight line effect being carried from the corners of the radiator clear to the back of the tonneau

Hackett has Straightest of Straight Lines

Roadster and Touring $888

A FOUR-CYLINDER, five-passenger car at $888, with distinctive straight-line body, and low, comfortable seats, is the initial offering of the new Hackett Motor Car Co., Jackson, Mich.

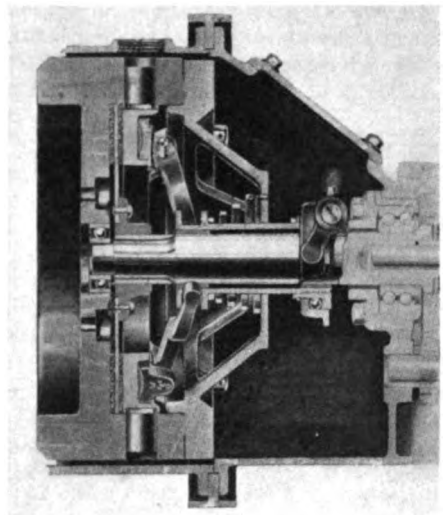
The body design is original, a straight line running from the top corners of the radiator all the way back. The effect is accentuated by the use of a narrow deck extending around the rim of the body, and also forming the double cowl on the back of the front seat. The straight-line idea is still further emphasized by the fact that the seats are low. The windshield is tilted and there are large louvres in the hood at the same angle.

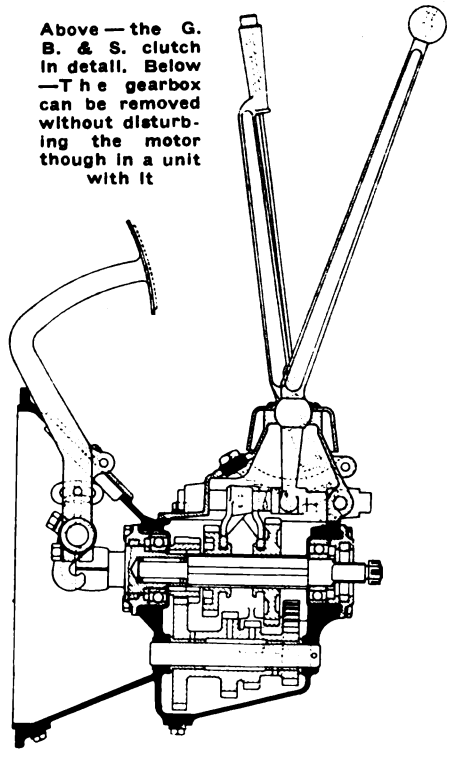
In addition, there will be a runabout at the same price, seating three, with the driver's seat slightly ahead of the other two; a cabriolet for about $1,000, and a winter top for the five-passenger at $110 additional.

The chassis is standard, with a unit power plant consisting of a 37-hp. motor, G. B. & S. clutch and Grant-Lees gearbox, and Walker-Weiss axles. The motor is a block detachable L-head design with the crankcase in two pieces, the lower part being pressed steel and acting as the oil pan. Bore and stroke are 3¾ x 4¼ in., giving an N. A. C. C. rating of 22.5 and piston displacement of 188.2 cu. in.

Lubrication is by combined force feed and splash. Oil is drawn from the reservoir by a plunger pump which is operated by No. 4 exhaust cam, passes through a sight feed on the cowl and to the three main bearings. The overflow makes its way to splash troughs. The oiling system is extremely accessible, the pump and all the piping being on the exterior.

The valves are unusual in that the adjusting nuts are on the stems instead of the pushrods, and consequently act as spring retainers. The end of the stem is threaded and on it is placed a thimble nut, which is held by a lock nut. The valves have cast-iron heads welded on ⅜-in. carbon steel stems. The lift is 7/32 and the clear opening 1⅝ in. The valve stem guides are bushed with 3 3/16 cast-iron sleeves.





Above — the G. B. & S. clutch in detail. Below —The gearbox can be removed without disturbing the motor though in a unit with it

Camshaft and Disco motor-generator drive are by silent chains, adjustment of the latter chain being accomplished by rocking the bracket on which the unit is carried. The timing marks on the flywheel may be seen by removing the clutch oil filler plug on the top of the flywheel housing.

Ignition is furnished by a Remy coil and distributer, mounted at the front and driven from the camshaft. The fuel system consists of a tank at the rear, from which gasoline is drawn by a Stewart vacuum system to a Justrite carbureter, a single jet design in which the correct proportion of air and gasoline is obtained by varying the size of the venturi passage. Cooling is by thermosyphon, a cellular radiator and a four-blade fan.

The clutch is housed in the flywheel and has a single driven disk of steel. A ring of wire-woven asbestos fabric bears against either face. Smooth action and reduced wear are obtained by running the clutch in oil. It is so designed that no adjustment is required.

Since the rear of the motor is supported by arms attached to the flywheel housing, and the gearbox is held in place by the bolts connecting it to the bell housing, the gearbox may readily be removed without disturbing the motor. After this is done, the clutch may be taken out by first placing two blocks of wood under the clutch collar. Then the plugs which hold the mechanism solidly in the flywheel are unscrewed through the oil filler opening in the top of the flywheel housing. Finally the six nuts on the clutch cover are removed.

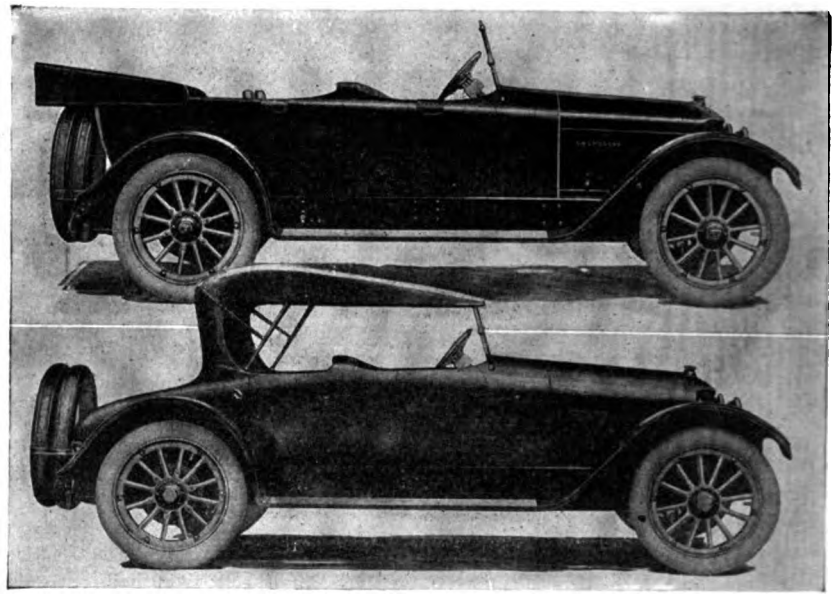
The axle is semi-floating, with chrome-nickel driving shafts, open-hearth ring gear and 3½ per cent nickel pinion. There are two sets of brakes operating on the one set of drums. The front axle is an I-beam design, and steering is by worm and gear. Half-elliptic springs are used in front, 36 x 1¾, and three-quarter-elliptic in the rear, 48 x 1¾ in. Wheelbase is 112 in. and tires are 32 x 3½, with demountable rims and Ajax tires. The car will be finished in Packard blue, with ivory white wheels, and the upholstery will be French pleated.

The Hackett Four

Price—	
Five-passenger touring	$888
Three-passenger roadster	888
Cabriolet	1,000
Color	Packard blue
Number of cylinders	Four
Shape	L-head
How cast	Block
Bore	3¾
Stroke	4¼
S. A. E. horsepower	22.5
Ignition	Remy
Starting and lighting system	Disco
Clutch	Disk
Gearset	Grant-Lees 3-speed
Wheelbase	112
Tires	32 x 3½
Make of axles	Walker-Weiss
Type rear axle	Semi-floating

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Aluminum Motor and Magnetic Gearshift in Newest Premier



The new Premiers are characterized by a high hood, blending well with the cowl and a pointed radiator. Both models list at $1,685

ALUMINUM overhead-valve motors and magnetic gearshifts are the big features of Series 6-B Premier cars for 1917. They are in no sense the Premiers of other days, and resemble the former cars of that name only in the nameplate itself. Produced under a new financial organization, a new production and sales organization, and a different factory from the original Premier plant, the name is almost the only physical Premier feature retained.

Two more obvious features are projectile body lines and an unusual amount of body room in proportion to wheelbase, obtained chiefly by placing the motor well forward and into the V of the extremely pointed radiator.

The Premier Motor Corp., Indianapolis, Ind., expects to turn out between 500 and 1000 of the new cars before Jan. 1 and ten times that many during the succeeding 12 months.

The major specifications include a six-cylinder motor, 2⅜ x 5½, a 125½-in. wheelbase, and 35 x 4½-in. tires. The bodies during the early part of the production will consist of a seven-passenger touring and a four-passenger roadster, each at $1,685.

Premier's new aluminum motor is the design of Earl G. Dunn, who as early as 1913, while general engineer of a Detroit motor making concern, produced twenty-five overhead-valve aluminum motors, similar in most respects to the one now in use in the new Premier. After painting these twenty-five experimental motors so that they could not be distinguished from the standard cast-iron motor, they were put in twenty-five cars of a prominent make and distributed to owners throughout the United States. According to Mr. Dunn, no complaints on the motor were received by the factory.

Specifications of the Premier Series 6-B

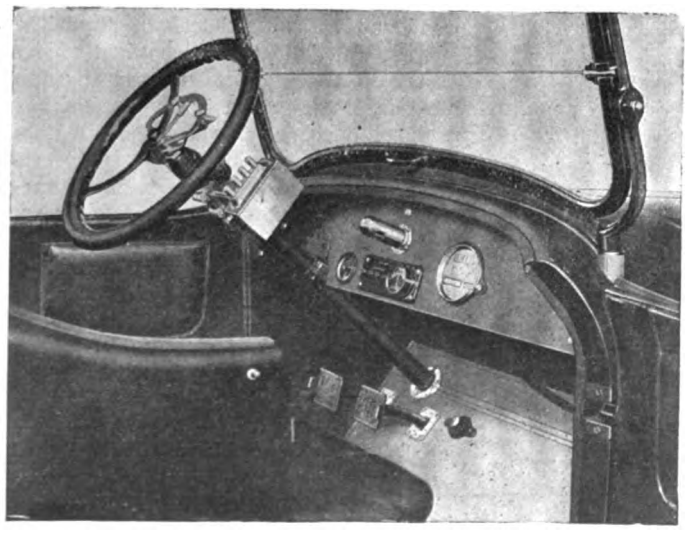
Price—	
Seven-passenger touring	$1,685
Four-passenger roadster	1,685
Number of cylinders	Six
How cast	Block
Bore	2⅜
Stroke	5½
S. A. E. horsepower	13.5
Starting and lighting system	Delco
Gearset	3-speed
Wheelbase	125½
Tires	35 x 4½

The present Premier motor is the outgrowth of this experiment. So far as the actual employment of aluminum in motor construction is concerned, this one is not greatly different from the Marmon engine, its predecessor in this field. Cylinder block and crankcase are one aluminum casting and within the cylinder bore there is slipped a gray-iron cylinder sleeve held from downward movement by a shoulder that fits a recess in the aluminum casting and held from upward movement by the cylinder-head casting which carries the valves. The sleeves can be slipped out for replacement when worn without a great deal of difficulty, but this is a factory or service station job. The whole motor weighs, roughly, 255 lb. less than a cast-iron motor of similar dimensions.

The cylinder-head carries two valves per cylinder, which operate vertically through offset rocker arms. A camshaft is carried along one side of the base of the cylinders in the ordinary way and the whole valve mechanism is inclosed by a sheet steel cover that almost completely eliminates the noise.

The crankshaft is a three-bearing shaft, with the crank arms having the metal distributed upon them in such a way that the shaft approximates a natural running balance and thus eliminates the necessity of counterbalancing weights.

Pistons are aluminum alloy and exceptionally long, the extra skirt length reducing the tendency to piston slap. Three rings are used, none of them below the piston pin, and in the skirt two rows of holes are drilled to carry back surplus oil gathered under the rings. The pistons probably also will carry another feature in that the piston skirt will be knurled with diagonal lines about 1/32 in. apart, the lines running at approximately right angles to each other. This provides space for a slight body of oil in each diagonal line and also gives room for the metal of the raised portion to spread out should there be any tendency to stick, in case the oil level be-



The control for the C-H magnetic gearshift is placed on the steering column directly below the wheel. After a control button has been depressed, releasing the clutch all the way electrically shifts the gears

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comes dangerously low. Timing gears are fabric on metal. The teeth are helical.

Lubrication is by a gear pump, which takes oil from a metal sump in the bottom of the crankcase and forces it under pressure to the main bearings and connecting-rod bearings on the crankshaft. The oil is forced through the crankshaft and connecting-rod bearings, being led from bearing to bearing along the arm through tubing. Piston lubrication is by splash. The oil filler and oil level gage are on the left side and the oil pressure is registered on the dash. The pressure is regulated automatically by a valve which allows excess pressure to be relieved through a blow-off valve.

In the cooling system there are two features of moment. One of these is the thermostat, by which the water is kept at an efficient temperature. Until the water in the cylinder jackets becomes heated up to the proper point, none of it is permitted to go through the radiator, but is recirculated through pump and motor until it gets hot enough to operate the thermostat valve, at which time it is sent through the radiator in the conventional way.

A combination of two units of the cooling system has made for extreme simplicity and has cut down the number of parts and the weight somewhat. This is the mounting of the fan and impeller of the water pump upon a single, very small, hardened and ground shaft. There is only one packing gland, this being at the fan end of the small shaft, and as the gland itself is several times the diameter of the shaft, it is very easy to prevent leakage. Any tendency to leakage is further lessened by the fact that the pump is well up toward the top of the cylinder instead of near the bottom, as usually is the case, and the head is thus reduced, consequently reducing the water pressure on the gland.

Naturally, with this arrangement fan and pump are driven by the same means, which in this case is a V-belt and pulley, the driving pulley having a simple means of belt adjustment, obtained by spreading the plates which form the V of the driving pulley, thus changing its diameter.

Starting, lighting and ignition are by the Delco two-unit system, in which the generator carrying the ignition coil and distributer is driven from the priming gears and the cranking motor operates through Bendix drive. The 108-amp.-hr. Willard battery has been disposed of by hanging it between the engine and the frame under the hood.

Gearshifting is accomplished by use of the C-H magnetic shifter. This has been used in its earlier forms previously, but Premier is making it stock equipment and in its later improved form. The design and operating principles of the magnetic gearshift have been explained so many times that it need only be said that instead of shifting gears with the conventional hand lever, this is accomplished through the magnetic shift by simply pressing a button mounted on a neat box on the steering column. Any of the three speeds may be selected and shifting is made when the clutch pedal is depressed completely. Plenty of movement is allowed in the clutch pedal for permitting the engine to run free while in gear.

An exceptionally sturdy frame is employed, having a channel section 8 in. in depth with a 2¼-in. flange.

Semi-elliptic Perfection rear springs, 58 in. long by 3¼ in. wide are used. There are twelve leaves and the spring is designed to be practically flat under a full load. The drive is Hotchkiss type.

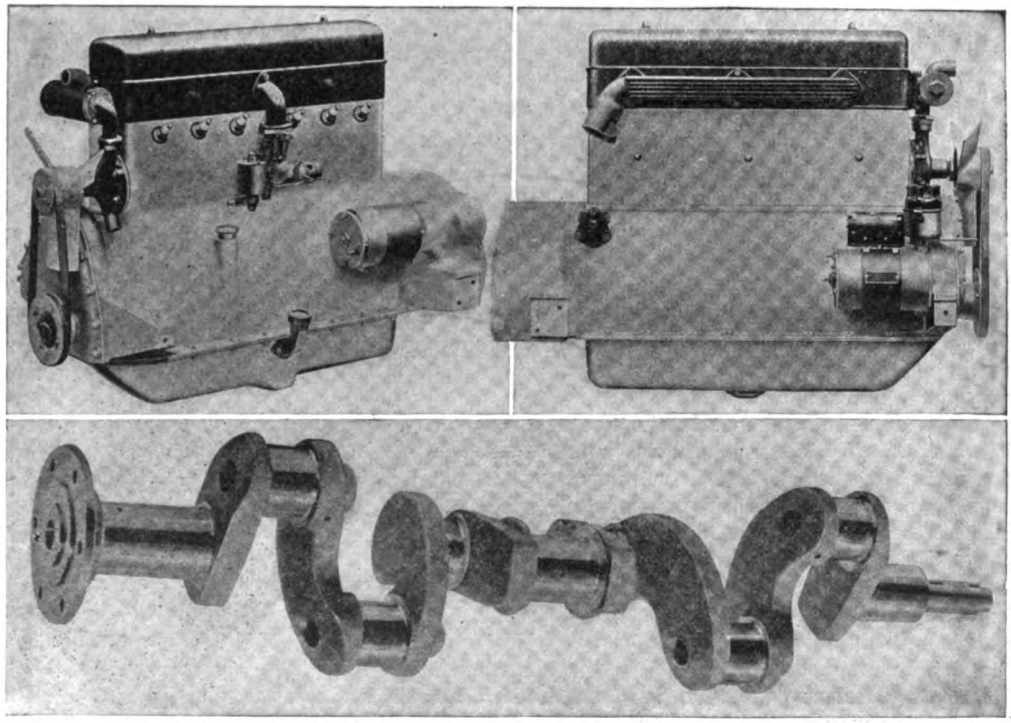
Body room, particularly in the seven-passenger car, is unexpectedly great. An additional 6 in. is obtained, so that there is more passenger capacity than ordinarily would be regarded as possible on a wheelbase of 125 in. One feature of which will be appreciated by tonneau passengers is the fact that those in spare seats have as much room as do those in the tonneau seat proper. This is obtained by cutting deeply into the back of the front seats foot and leg space which is covered up when the spare seats fold in. Front seat passengers are equally well cared for and exit and entrance from the driver's side is made easy by a tilting steering wheel and the abolition of the gearshift lever. The tonneau seats measure 44 in. from upholstering to upholstering. The latter is of the straight vertical pleat pattern.

The 24-gal. fuel tank is suspended to the frame in the rear and carries a long goose-neck filler cap, which makes filling possible from the side of the curb without the use of a funnel or the displacement of spare tires or wheels. The tank is so hung that the frame protects it from damage by rear end collision. Fuel is taken to the carbureter through a Stewart vacuum tank.

The color is gun metal, with hood, fenders, radiator casing and chassis in jet black. Wood wheels in the natural color are stock and wire wheels an extra. The hood has a panel top, carrying two invisible hinges, which are on an angle, so that the hood may be raised and lowered in a straight position and thus prevent marring the finish of the radiator shell and body.

Locomobile Lamps Do Not Infringe in Massachusetts

BOSTON, Aug. 28—Locomobile lamps do not infringe the regulations of the Massachusetts Highway Commission, according to a decision in a test case just handed down. Officers arrested a driver of a Locomobile car at a Boston street intersection. Judge Murray declared the defendant not guilty. The case is listed in the records as Commonwealth vs. Conaty.



The Premier aluminum motor makes the car about 255 lbs. lighter than would a similar motor with iron cylinders. The pistons reciprocate in cast iron sleeves which are replaceable and the crankshaft is so balanced that vibration is practically eliminated

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Association News

KANSAS CITY, MO., Aug. 28—The Motor Car Dealers' Association of Kansas City has close to a 100 per cent organization. The reason can be inferred from the program of fall activities, as outlined at a recent directors' meeting.

E. H. Coleman, who has assisted Secretary E. E. Peake in the motor car shows, has been employed as assistant to Peake and will take a desk in the secretary's office Sept. 1, to look after detail work being undertaken by the association.

A plan is being perfected for the buying of coal for the members through the association. Bids will be asked for the bulk amount, and it is believed that 50 cents or more a ton can be saved.

An investigation bureau for mechanics will be instituted Sept. 1. A card index system will be started, on which information on mechanics will be entered. The assistant secretary will glean information both in Kansas City and elsewhere, and data will be entered on the cards, especially as to the reasons for any mechanic leaving his place of employment. This information will be available for members. It is not the purpose to establish an employment bureau, nor in any way to maintain a blacklist. It is believed the proposed system will be much more satisfactory to the dealers and garagemen, and to the mechanics themselves, than the hit-or-miss plan of hiring mechanics.

The association has adopted means of handling special advertising opportunities. Two different methods are now employed. Under one of these the association itself makes contracts for space and pays the bill, collecting the advertisements and the money from the advertising members. The way this works is indicated in the case of a theater program, now under contract.

The association received a price of $7 a page, against the price of $10 a page offered the individual members. The association agrees to take at least fifteen pages at the $7 price, and can have more pro rata. The secretary's office will make separate contracts with the members who wish to use the program, handle their copy, and collect from them.

Another phase of the advertising problem has to do with special publications, and, indeed, all advertising offers except the daily newspapers; as to these, the Motor Car Dealers Association will act in the same way as the Merchants Association of Kansas City. A committee will be appointed to consider such advertising opportunities and report to the members. A favorable report leaves the members free to consider the opportunity favorably, while an adverse report is expected to indicate that the proposition should be avoided except for very special reasons.

The Merchant Association's reports to its members on such subjects are generally strictly followed, though sometimes a merchant will advertise in a medium that has been the subject of an adverse report. As a rule, solicitors are careful to secure the indorsement of the Merchants Association before putting their propositions before member-merchants; and if an adverse report is made, the solicitors usually avoid the member-merchants.

"Big League" in K. C. Bush

KANSAS CITY, Aug. 28—One of the interesting attractions in the automobile world of Kansas City is the baseball league consisting of seven teams. Games have been played all summer and much rivalry and competition has been aroused. Following is the standing of the teams: Buick, 1st; H. A. Dougherty Motor Co., 2nd; Overland, 3rd; Maxwell Motor Co., 4th; United States Tire Co., 5th, and the Webers, 6th. The games are played at Schmelzer's Park, Old Electric Park and Heathwood Park. The last game of the season will be on Oct. 1. The teams are playing for a cup offered by the Schmelzer Arms Co. The league goes under the title of the Kansas City Auto & Tire Baseball League.

New Associations in Ohio

COLUMBUS, Aug. 26—F. T. Price, president and acting secretary of the Ohio Automobile Trade Association, is assisting several new organizations, which will be completed soon and which will affiliate with the Ohio association. One of the new organizations is being formed at New Philadelphia. Steps are being taken to organize a local association of garagemen and dealers at Chillicothe. Others will be formed as soon as the heated period is over.

Jobbers to Play Golf

ST. LOUIS, Aug. 28—Members of the National Association of Automobile Accessory Jobbers will do something besides attend business sessions during their convention in this city, Oct. 2-7. Fred Campbell, chairman of the golf committee, has issued a very beautiful green and blue folder, inviting members to renew the tournament some of them were not able to finish at Hot Springs. W. K. Norris of the McQuay-Norris Mfg. Co. has donated a cup for an 18-hole handicap match play against par. President Sidney B. Dean, St. Paul, has also offered a cup to the player making the lowest actual medal score for the 18 holes. It is very kindly arranged that no start shall be made before 10 a. m. Inasmuch as the tournament is for amateurs only, there is some dispute over the entry of Mayor Sparks of Jackson, Mich.

Reorganize Canadian Association

VANCOUVER, B. C., Aug. 29—Complete reorganization was the verdict at the annual meeting of the B. C. Automobile and Motor Trades Association, held at the Hotel Vancouver recently. This association has been practically dormant for the past 2 years. The executives started immediately to compile a new set of by-laws and a revival of interest. A new slate of officers was elected: President, W. G. Palmer; vice-president, F. W. Walsh; treasurer. Chas. A. Ross; secretary, D. A. Hamilton; directors, L. M. White, G. W. Seymour and A. W. Cruise.

Postpone Ohio Merger Meeting

COLUMBUS, OHIO, Aug. 29—The proposed meeting of members of the Columbus Automobile Trade Association and the Columbus Garage Owners Association for the purpose of merging the two organizations has been postponed until after the Ohio State Fair, which closes Sept. 2. All of the dealers in the city are busy arranging for the show at the fair and thus could give no attention to the merger of the two associations. All preliminary steps have been taken and it is believed the amalgamation will be completed without a hitch.

Largest Sales Promotion Map

NEW YORK, Aug. 26—The Cold-Stratton Co., Dodge Bros. dealer, has installed in the salesroom a large framed map of New York City, mounted on Compo board, which, according to the statement of the Rand-McNally Co., is the largest city map being used for sales-promotion work. A numbered pin indicates on the map the home address of every owner of a Dodge Bros. car in the city, and the name corresponding to this number appears on the roll of honor at one side of the map.

The system operates as follows:

A prospective purchaser lives at 104 West 104th Street. By using the map, the salesman can immediately refer him to a near neighbor of his who owns a Dodge Bros. car and whose personal testimony will verify from experience the salesman's statements regarding the successful operation of the car.

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Knights of the Motor World Come into Being

But They Have No Connection with the Motor World Although Most of Them Read It

PHILADELPHIA, Aug. 26 — The Knights of the Motor World has been organized in Philadelphia.

Twenty representative men, well known in the industry, fathered the society.

The membership is confined to the automobile industry. A charter has been applied for, and after this has been granted the work of organizing in other cities will be started.

The Knights of the Motor World will be a beneficial, fraternal, as well as a social organization. To bring closer together the men of the automobile industry, members will have their choice of becoming a beneficial and social member or social alone. The beneficial member will receive sick, accident and death benefits in one of the largest insurance companies in the United States, according to the plan. The officers are:

Supreme Sir Knight Commander, Robert I. Erlichman, Berrodin Rubber Co.; Supreme Sir Knight Lieutenant, C. C. T. Smith, of N. A. Petry Co.; Supreme Sir Knight Sergeant, C. H. Walz, of Electric Starter Sales Co.; Supreme Sir Knight Sentinel, Thomas G. McGahan, of Vacuum Oil Co.; Supreme Sir Knight First Master of Guards, Ivan F. Goodrich, of Goodrich Accessories Association; Supreme Sir Knight Second Master of Guard, Albert W. Stellwag, of Metropolitan Auto Supply Co.; Supreme Sir Knight Keeper of Funds, A. L. Seltzer, of Berrodin Rubber Co.; Supreme Sir Knight Keeper of Funds, George G. Weidner, of Stewart-Warner Corp.; Supreme Sir Knight Deputy Commander, J. F. Hundt, of Atlas Auto Supply Co., Chicago.

Membership Committee—Geo. B. Shearer, Jr., Gaul, Derr & Shearer; E. B. Richardson, Empire Tire Co.; John Taeffner, B. A. T. Co.; Geo. L. Fischer, J. H. McCullough & Son; Ivan F. Goodrich, Goodrich Accessories Association.

Ritual Committee—Michael Shapiro, Gaul, Derr & Shearer; N. W. Howell, The Tire Shop, Wilmington; C. P. Brewster, Edw. Cassidy Co. of New York.

The insignia of the organization will be a gold automobile wheel with a Knight in the center, the tire of the wheel being blue, with the words "Knights of the Motor World."

Buick Texas Men Discuss Service

DALLAS, TEX., Aug. 26—The second annual meeting of Texas Buick dealers was held in Dallas recently, the dealers being the guests of Manager J. W. Atwood of Dallas, in charge of Buick distribution in Texas. The managers met to discuss the new 1917 model, ideas of salesmanship, the length of time free service should be given, and other questions of interest in the salesmanship of these cars.

The sharpest discussion of the two days' convention was with reference to the time of free service, whether it should be 3 or 6 months. Most of the dealers were of the opinion that this free service should be for only 3 months, as they argued that that is ample time for a man to become acquainted with all the parts of the car. The fact, however, that parts are guaranteed for 1 year was stressed. The meeting was one of the most successful dealer meetings ever held in Texas. Two Buick 1917 models were examined and discussed in detail.

Among the Texas dealers who attended the meeting were:

B. Daniel, Vernon; A. J. Harris, Cooper; J. W. Bandy, Sweetwater; M. T. Goodman, Clarksville; P. G. Stokes, Big Springs; J. W. McDonald, Hillsboro; Bert Beall, Greenville; Wm. R. Eds, San Angelo; R. D. McClelland, Brownwood; H. G. Taliaferro, Calvert; M. T. Mast, Nacogdoches; R. I. Floyd, Ferris; A. E. Coffman, Goree; M. M. Browning, Wichita Falls; John Hutchings, New Mexico; H. L. Simpson, Gainesville; R. M. Kinard, Stamford; D. F. Moberly, McCauley; J. E. Butler, Corsicana; Bob Sears, Whitewright; J. W. Cauch, Snyder; Dick Roland, Abilene; H. E. Pearce, Denison; H. A. Hallum, Brady; B. L. Boydston, Brady; Seth Hadley, Brady; E. H. Pritchett, Bonham; Will H. Evans, Bonham; H. W. Warren, Merkel; H. C. Doss, Colorado; Sam B. Rayzor, Denton; E. W. Norris, Goree; C. B. Oliver, Caldwell; G. E. Adams, Santa Anna; C. J. Smith, McKinney; Ben Anthony, Texarkana; W. E. Hipp, Waxahachie; N. B. Feagins, Ennis; Oscar J. Rea, Clifton; C. L. Edmundston, Crockett; C. E. Welch, Waco; T. J. Goad, Mineral Wells; J. W. Simpson, Waco; J. R. Coleman, Cleburne, and others.

You Can't See Weight; Here's How To Show It

ST. LOUIS, MO., Aug. 26—The McQuay-Norris Mfg. Co., St. Louis, has developed an unusually effective method of displaying its Lynite pistons for Ford cars at the National Tractor Demonstrations. It is extremely difficult to make plain to those who stop at the exhibit the light weight of the pistons as compared with iron pistons, and to obviate this difficulty an iron piston and a Lynite piston are displayed together.

Those who stop are urged to take one in one hand and the other in the other hand. There is little those in charge of the display can add to this demonstration. The comparison of weight tells the whole story in a way that it could never be told in words. Such a comparison is particularly necessary, because so few persons have ever had an opportunity of judging the comparative weights of pistons.

Ohio Has 232,017 Cars

COLUMBUS, OHIO, Aug. 29—W. H. Walker, Ohio Registrar of Automobiles, in a report covering the present year up to and including Aug. 24, shows that there are 232,017 automobiles in Ohio. Since the first of the year the department has registered 224,700 individual gasoline car owners and 4443 electric owners. During the same period, dealers to the number of 2874 have been registered.

Everybody Sells Cars In The Inland Empire

Drug Stores, Grocers, Plumbers and General Merchandise Men, Included, but Not Hardware Stores

SPOKANE, WASH., Aug. 28—Spokane, Walla Walla, Dayton, Pendleton, and in fact every city of the Inland Empire, is advertising automobile events as the main attractions for Labor Day celebrations.

The transformation of the automobile from a specialty to a general article of merchandise seems to be complete, if the diversity of merchants, tradesmen and professional men actively engaged as motor car merchants is used as a basis of judgment.

In Deer Park, gasoline and medicine divide the attention of a prominent physician handling the Chevrolet; in St. John and Endicott the Dodge car is sold through local drug firms, and in the latter city the drug company has also entered the garage field; in Tekoa a real estate dealer sells farms and Fords, an implement dealer has added the Chalmers and Studebaker to his line, and a grocer mixes potatoes and the Abbott-Detroit in his statement of assets.

A bank cashier of St. Maries adds profits from the sale of Fords to his income; a grain merchant of Pomeroy diverts part of the farmers' profits from the sale of wheat back to his pocket by convincing them that the Buick is the best buy; in Starbuck the plumber fixes automobiles as well as gas pipes and has substituted a garage sign for the plumber's, and in Thornton and Prescott the general merchandise stores have set apart space to display cars and accessories.

In strange contrast, hardware dealers are gradually withdrawing from the automobile field. Interviews by the Motor World representative with hardware dealers in nine cities of the Inland Empire outside of Spokane disclosed a unanimous intention of discontinuing competition with local garagemen.

Sees No Broken Tractor Promises

Editor Motor World:

I have read your editorial on broken tractor promises in the issue of your paper of Aug. 9. I agree with your statements to a certain extent. As manager of the Wisconsin Tractor Demonstration I have tried to arrange such exhibits as will overcome certain objections which there have been to many of the demonstrations already held.

I do not agree with you as to the statement that the farmers are seeking information with reference to the work the tractor will do on the belt. If we

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allowed ensilage cutters, feed cutters, wood saws, threshers, etc., at these shows, it would be such an extensive exhibit that neither the exhibitors nor the visitors would be satisfied. Most farmers are already familiar with what is necessary for a tractor to do in the way of belt power. Very few, if any, questions ever come to me regarding this point.

At the Wisconsin show we are going to attempt to have tractors pulling various farm machines to which they can be attached as claimed by the manufacturers. We also expect to plow certain fields which have never been plowed, thus giving an opportunity for the tractor company to make good its claims on marsh land. We also have tracts on which there are a number of rather steep hills, which will tax many of the tractors to their limit.

I think this demonstration will be of more value to the average farmer than going out on a tract several hundred acres in extent and as level as a floor.

Very truly yours,
F. M. White,
Manager of Wisconsin Tractor Demonstration.

Wholesale Trade Only For Chanslor and Lyon

LOS ANGELES, Aug. 29—The Chanslor & Lyon Co., which for the past 12 years has been conducting a retail and wholesale accessory business on the Pacific Coast through eight branches, will relinquish its entire retail trade Sept. 1 and devote its entire energies to the wholesale end of the business. The step has been anticipated for some time because of the tremendous increase in the company's wholesale trade.

The firm of Chanslor & Lyon was started 12 years ago in Los Angeles, and from an unpretentious beginning has grown to proportions which place it among the first rank of motor car accessory jobbers. To-day there are branches in Fresno, Oakland, San Francisco, Portland, Seattle, Tacoma and Washington. The firm is composed of Walter G. Chanslor, Phil H. Lyon and W. A. Avery.

Master Carbureter Holds National Test

DETROIT, Aug. 28—The Master Carbureter Corp. has just finished a nation-wide economy test with its carbureter, in which over 200 of its dealers participated. The results of the tests appear in the following tabulation and cover a number of the most important cities:

Car	City	Miles Per Gallon
Pope-Hartford	Phoenix, Ariz.	31 7/10
Overland 83	Nashville, Tenn.	15⅝
Overland 59	San Francisco, Cal.	20
Cole	Portland, Ore.	12 4/10
Haynes	Salt Lake City, Utah	22 4/10
Buick	Los Angeles, Cal.	22 3/10
Dort	Boston, Mass.	28
Ford	Tulsa, Okla.	24
Paige	Spokane, Wash.	25

Diversity in Tractors Confusing to Farmers

The Many Different Types Breed Antagonistic Sales Arguments—Bloomington Well Attended

BLOOMINGTON, ILL., Aug. 25—The Illinois farmer who visited the 5-day tractor demonstration held here this week is not concerned over whether he shall buy a tractor or not. He has already settled that question. He has made up his mind that he must have a tractor and he is going to buy one. The problem that is worrying him to-day is what tractor he will buy. His vexing problems are what size of machine and what type of machine. Size and type confuse him immeasurably.

The attendance was much larger than exhibitors had anticipated. The opinion was expressed very freely that although the numbers were not quite so great as at Fremont, the demonstration was quite as successful, from a business point of view. Perhaps the reduced attendance may partly be explained by the fact that Henry Ford and his new tractor were not present.

The attitude of the farmer towards tractors was well answered by the fact that at Wednesday's demonstration more than 5000 motor cars were on hand, a large percentage of these representing farmer machines.

One of the most serious handicaps to the more rapid development of the tractor business is the very apparent uncertainty of tractor manufacturers as to the most suitable type of tractor. Frequently a farmer asking for information finds that he cannot get any convincing advice regarding the size of machine best suited to his requirements. The position is not improved by the attitude of more than one of the old implement manufacturers, as several of these concerns are making a needlessly wide range of machines. When one firm has six machines, all quite different, the tendency is to put it up to the farmer to decide what he wants rather than to advise him to have one or another. When it is obvious that the manufacturer has not made up his mind as to which is the best type, the farmer's confidence is naturally not very swift in coming.

The variation in type is certainly holding back the sale of tractors, because the technical arguments placed before the farmer by different manufacturers are so antagonistic. For example, the champions of the very low speed and the moderately high speed engines are very bitter regarding each other, and the farmer cannot possibly reconcile the statements made by the two camps. It is the same with different systems of transmission. The tractor is nowhere near the stage of development reached by the motor car and the least discerning can readily perceive this. Consequently, the more the tractor men get together and the more closely they agree from the broader features of design, the easier will it be for the farmer to make up his mind and the greater the number will be sold.

Territorial Gatherings Beat Big Conventions

DETROIT, Aug. 19—L. J. Ollier, vice-president and director of sales of the Studebaker Corp., who has just returned from a long trip to thirty-five of the leading cities in all sections of the country, says that the idea of holding one big convention at the factory each year is all wrong. This method of getting the dealers together is quite generally practiced, but Ollier's scheme is to hold territorial conventions, where each man gets more individual attention and feels himself a bigger unit in the general assembly.

Ollier points out that if all the 6500 Studebaker dealers were to attend a big factory convention, the expense of bringing them in and entertaining them would be prohibitive. Of course, only a comparatively small proportion of them would attend, probably about 2000. A factory convention would therefore not be representative. A further difficulty is that those dealers who would attend would get lost in the shuffle, so to speak.

With the series of territorial conventions among dealers, it is entirely different. The dealers can afford to leave their business and travel 100 or 200 miles to attend a 1-day convention at a branch, whereas they would not feel like traveling 1000 miles or more to go to the factory for a 3- or 4-day convention. At the district conventions, each dealer feels more important, and he gets a chance to talk with the factory officials and realizes his place in the general factory fabric. In a word, the territorial conventions are simply a means of attaining efficiency and reducing waste. They save time for the dealer at a period such as we are now experiencing, when he is busy selling cars.

New Jordan Dealers

CLEVELAND, Aug. 28—The new Jordan Motor Car Co. has appointed the following distributers: John G. Dale, 240 West Fifty-ninth Street, New York City; Motor Car Sales Co., Milwaukee; Chicago Motor Car Co., Inc., Chicago; Decrow Motor Sales Corp., Buffalo, N. Y.; R. W. Immasche & J. A. Johansen, St. Louis.

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Milwaukee Dealers Start Conquest of State

Army of 200 in 36 Makes of Cars Forges Forward on Annual Boosting Tour

MILWAUKEE, Aug. 28—The conquest of Wisconsin by the dealers of the State, an army of nearly 200, traveling in the latest styles of thirty-six different makes of cars, began this morning, and by Saturday noon, Sept. 2, a majority of the 3,000,000 inhabitants of this commonwealth is expected to be won over to a full understanding of the profit to be gained by attending the 1916 State Fair at Milwaukee, where one of the main attractions will be the second annual motor show of the Milwaukee Automobile Dealers, Inc.

It is doubtful is any "booster" expedition to advertise a State fair or a motor show has ever equalled this tour, purely a sociability run, in which forty Milwaukee dealers, nearly all of them State agents, are participating at their own expense and putting brand new cars through their best paces over a route and under conditions rivalling the famous Wisconsin reliability tours of former years.

To Cover 1000 Miles

Approximately 1000 miles, covering the most populated sections of Wisconsin, will have been traversed when the tour returns to Milwaukee next Saturday. The district includes all of southern and central Wisconsin; the great Fox River valley; the Door County peninsula fruit belt, and the west shore of Lake Michigan from the top to the bottom of the State. Included in this territory are more than 1,000,000 people, who furnish the major part of the annual attendance at the State Fair and the larger portion of the people who directly or indirectly are patrons of Milwaukee motor car dealers.

This year's tour is a cumulative effort to stimulate interest in the motor car; in the State Fair; in the good roads movement, and in the proper and courteous use of the self-propelled vehicle. With this in view, the M. A. D. has as its especial guests the Governor of the State, the Mayor of Milwaukee, and the leaders in highway improvement. Each will be expected to do his part at an appointed time.

Plenty of Fun, Too

Each city in which the tour will stop, either for a short visit, a noonday luncheon, and the night control, has made elaborate preparations for the entertainment of the party. There has been much rivalry among these cities for the honor of being placed on the route. In those cities which are large enough to support a dealers' organization, dinners, band concerts and similar fetes have been arranged for. The most notable one will be that at Green Bay on Wednesday night.

By some unusual coincidence each night control selected will furnish the means for bathing parties, water carnivals and the like. These cities are Madison, with its four large lakes; Green Lake, on Green Lake; Sturgeon Bay, on Green Bay; Green Bay, on the same water, and Elkhart Lake, on the big sheet of water by the same name.

The State Fair will open Sunday, Sept. 10, and close Saturday, Sept. 16. There will be 2 days of motor racing on the mile track, the feature events to be offered by a string of cars which is making Middle Western State Fairs this season.

Enthusiasm Marks First Day's Run

By Ray W. Sherman

Motor World Staff Representative with the Tour

MADISON, WIS., Aug. 28—If the enthusiasm which has marked the first day of the state fair boosting tour of the Milwaukee motor car dealers indicates anything the 1916 fair should be the best in years.

The members of the Milwaukee Automobile Dealers, Inc., left that city at 8.20 this morning and have traveled a circuit of enthusiasm ever since.

There are thirty-six cars, carrying 156 men, and they covered 105 miles to-day and made seven stops. At each stop the white-hatted and dust-covered army parked the cars in the center of the town, paraded the downtown section with canes and a little German band, and wound up with an appeal to the State's population by Mayor D. W. Hoan of Milwaukee. His theme was that there is benefit for all in the state fair, but that its success is due to everyone in the State. The response was gratifying.

But there is more than the mere fair at stake. There is the state fair automobile show. For this nearly 100 exhibitors have taken space and Machinery Hall will be filled. The Milwaukee dealers firmly believe in a state fair show; that is why they instituted this boosting tour last year and pulled the state fair to a successful basis.

Stops to-day were at Waukesha, Oconomo, Johnson Creek and Jefferson for dinner, Lake Mills, Deer Field and Madison. To-night the mayors of Madison and Milwaukee are speaking in the state capitol's senate chamber, while a band draws the crowd. To-morrow night's stop will be at Greenlake.

Exhibitors at the Show

MILWAUKEE, Aug. 26—The complete list of exhibitors at the second annual motor show under auspices of the Milwaukee Automobile Dealers, Inc., at State Fair Park, Sept. 11 to 16, has been announced by the show committee. It follows.

Frint Motor Car Co., Harry Newman, Inc., Curtis Auto Co., Hoppe-Hatter Motor Co., Olson & Pauly Auto Co., Kisselkar Co., Jesse A. Smith Auto Co., The Winton Co., Packard Motor Car Co., Sanger Automobile Co., Anderson Electric Car Co., Velie Motor Car Co., Osmond-Vogel Co., Ray D. Rockstead, Schreiber-Boorse Motor Car Co., Diener-Nelson Motor Co., Rademacher & Jaeger, Regal Motor Co., Marion Sales Co., Cole Motor Co., Mitchell Automobile Co., Hughes Motor Car Co., Lauson-Valentine Auto Co., Emil Estberg, Wisconsin-Oakland Co., Ford Motor Co., Buick Motor Co., Fowler Motor Sales Co., George W. Browne, Overland-Wisconsin Co., Pullman Auto Co., Jonas Automobile Co., Stephens-Adams Motor Co., John G. Wolleager Co., Saxon-Reynolds Auto Co., Bachman-Diener Auto Co., Stegeman Motor Truck Co., Diamond T. Sales Co., Holmes & Co., and Wells Garage Co.

The big Machinery Hall, near the main gate of the fair grounds, is again in the exclusive possession of the M. A. D. It has been laid out in seventy-two spaces, in which eighty-five makes of cars will be shown, together with twenty-five to thirty accessory and supply exhibits.

A 10-cent admission fee is charged by the M. A. D., the object being to confine the attendance to those who believe it worth a dime to gain entrance to an exhibition of this kind, and to keep out a horde of children. The receipts, after expenses are paid, are pro-rated among the exhibitors.

Electric Vehicles at Electrical Exposition

NEW YORK, Aug. 29—Electric pleasure and commercial vehicles, as well as accessories, will hold a prominent place in the New York Electrical Exposition at Grand Central Palace, Oct. 11 to 21. A test run is now being planned to be held during the exposition. The Electric Garage, New York, will have an exhibit representative of the work it is carrying on. Among the pleasure vehicles will be the Baker, R. & L. and Detroit cars. Among the exhibitors of commercial cars will be the General Vehicle Co., Walker Vehicle Co. and Ward Motor Vehicle Co. The Edison Storage Battery Co. and the Electric Storage Battery Co. will have exhibits.

Speedway for Colorado

DENVER, Aug. 28 — A $100,000 speedway is being planned by the Colorado Springs Athletic Club, which expects to push the project through by next summer.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

J. B. McMahon, Jr., manager of the New York branch of the Redden Motor Truck Co., has formed the Boston Sales Co., with N. J. Wallis of Boston, to control the Massachusetts territory.

Francis X. Coveney, for 6 years with the Studebaker and Chalmers agencies at Boston, has joined the sales force of the Alvan T. Fuller Co., Packard dealer.

W. W. Stillson, Portland, Ore., who for the past year has acted as Northwest manager for the Oldsmobile Co. of California, has been appointed general manager of Oldsmobile interests on the Pacific Coast north of Bakersfield, Cal., and including the Hawaiian Islands.

R. K. Haines has succeeded George Lewis as sales manager of the C. T. Silver Motor Co., Chalmers distributer in New York.

L. Meyrick, formerly of the Lavine Gear Co., Racine, Wis., has been made general superintendent of the Ferro Machine & Foundry Co., Cleveland.

Estau Llull, Santiago, Cuba., is in the United States arranging for the introduction of vulcanizing outfits in Cuba. He says the conditions are ripe for big American business in the West Indes. He has placed an order with the Tire Repair Equipment Co., Appleton, Wis.

Jack M. Brussel, formerly connected with the Ferro Machine & Foundry Co., Cleveland, as general superintendent, has resigned to accept a similar position with the Dayton Engineering Laboratories Co., Dayton, Ohio.

Daniel McLaren, formerly receiver for the Columbus Buggy Co., Columbus, Ohio, has been elected first vice-president of the Enger Motor Car Co. of Cincinnati, a $4,000,000 reincorporation.

C. A. Dunkelberg has resigned as treasurer of the C. F. Bowser Co., Fort Wayne, Ind., to take effect Sept. 1. He has been succeeded by W. G. Zahrt.

Otis C. Friend, general sales manager of the Mitchell Motors Co., Racine, has resigned. His successor has not yet been appointed.

A. K. Hebner, service supervisor of the Hyatt Roller Bearing Co., will relinquish his duties with that company on Sept. 1 to become general manager of the Bearings Service Co., the organization of which was made public last week. The concern will hereafter handle the joint service for the Timken, Hyatt and New Departure companies.

Gail Murphy, advertising manager of the Chalmers Motor Co., has resigned, to take effect Sept. 1. No successor has been appointed nor have Murphy's future plans been divulged.

L. P. Jones has been made sales manager of the Federal Brass Wks., Detroit. Jones was formerly connected with the American Bronze Co., being with this concern for 5 years, the latter 3 being in Detroit as western manager.

Oldsmobile Sells Detroit Branch

DETROIT, Aug. 28—An important change in local automobile circles is the purchase of the Oldsmobile factory branch by Wilbur H. Collins, son of R. H. Collins, former Buick sales manager and now a director of the General Motors Co., and F. J. Muellerschoen, who for several years was connected with the Philadelphia Buick branch. The Oldsmobile business will hereafter be conducted as a distributing organization, with a territory including all of Michigan and nine counties in Ohio immediately adjacent to Toledo. R. C. Lowrie continues in the Detroit organization in charge of retail sales and will retain the same selling staff.

GASOLINE PRICES STABLE

NEW YORK, Aug. 29—Gasoline prices throughout the country remained for the most part unchanged last week. Wholesale prices in this section were stable, and consumers are paying from 23 to 26 cents a gallon. Gasoline in New York, Long Island, Westchester and Connecticut is being sold by the Standard Oil Co. at 23 cents wholesale. In New Jersey the price is 21 cents. Retail prices there range from 23 to 25 cents a gallon. Texas and Gulf Refining prices remain the same as last week. Texas prices in this territory are 23 cents wholesale and 21 cents in New Jersey. Gulf Refining gasoline is selling wholesale in this territory at 23 cents and in New Jersey at 22 cents a gallon.

Chevrolet $490, Electrically Equipped—Baby Grand $50 Higher

NEW YORK, Aug. 26—The Chevrolet Motor Co. has raised the price of its Baby Grand model from $750 to $800, and hereafter the price of $490 for its small model, known as the Four-Ninety, will include electric lighting and starting equipment. Heretofore the Four-Ninety model equipped with electric lights and starter sold at $550. The model D roadster price remains unchanged.

Thirty-six to Race at Cincinnati

CINCINNATI, Aug. 29—Following is a complete list of entries for the first International Sweepstakes race at the new Cincinnati Speedway on Labor Day:

Driver	Car
Dario Resta	Peugeot
Ralph de Palma	Mercedes
E. V. Rickenbacher	Maxwell
Pete Henderson	Maxwell
Ralph Mulford	Peugeot
Josef Christiaens	Sunbeam
Charles Merz	Peugeot
John D. Aitken	Peugeot
Gilbert Anderson	Stutz
Howard Wilcox	Premier
Billy Chandler	Crawford
Dave Lewis	Crawford
Art Johnson	Crawford
Milton F. MacBride	Olsen
Ira Vail	Hudson
Aldo Franchi	Delage
Jules de Vigne	Delage
Wilbur D'Alene	Duesenberg
Jack Gable	L. C. Erbes
Frank Galvin	Sunbeam
E. O. Victor	Chadwick
Tom Milton	Duesenberg
George Adams	Adams
(No driver named)	Olsen
(No driver named)	Hudson Super Six
(No driver named)	Duesenberg
Omar Toft	Omar
E. E. Rawlings	West Duluth
E. D. McNay	Cino
Swan Osteweg	Osteweg
J. C. Hoskins	Hoskins
J. W. Oberting	Oberting
(No driver named)	Premier
W. J. Muller	Dans L'Argent
L. Chevrolet	Frontenac
Edwin A. Klein	Kleinart

Hupmobile Starts Tour Visiting All Capitals

Will Cover 25,000 Miles Going Through Capitals of Every State Urging Good Roads

DETROIT, Aug. 28—A 25,000-mile capital-to-capital tour in the interest of good roads, to be covered in a Hupmobile, was officially started to-day at Washington, D. C. The plan is to visit the capital of each state and to invoke interest nationally in good roads.

From Washington the car proceeds north to Annapolis, Md., and thence to Harrisburg, the capital of Pennsylvania. Following a visit to all of the Eastern and New England capitals, the route then proceeds down to Albany and across New York State to Buffalo, where the car swings southward to Columbus and Charleston, W. Va., then back to Indianapolis, Detroit and Lansing, Michigan's capital. Thence the route goes westward northerly to Seattle and down the Pacific Coast to Los Angeles and back to San Francisco. Then the car is driven eastward via Carson City, Ogden, Salt Lake City and Cheyenne to Denver.

The trip is in charge of J. S. Patterson and the car is driven by C. E. Salisbury and George Lipe, both of Detroit, and the fourth member of the party is W. A. Krohn.

As the reports to be made by the party are to be both written and photographic, a most comprehensive idea of American roads will be obtained. The Hupmobile making the run is painted a khaki color, and on the front doors appears the Detroit shield bearing the inscription, "United America Capital to Capital Tour."

Peacock Killed at Kalamazoo

KALAMAZOO, MICH., Aug. 27—Jack Peacock and Marion Arnold were killed and eight others injured to-day when eleven of fourteen cars piled up at the first turn during the 100-mile race on the 1-mile dirt track at Recreation Park, this city. The twelve-cylinder Sunbeam which Peacock drove skidded at the start of the race on the first turn and struck the fence. The car was overturned and thrown squarely across the track, and ten of the other machines plowed into it. The Stutz driven by Andy Burt, whose mechanician, Arnold, was killed, was the first to strike Peacock's car. Peacock was in partnership with Charles Hanson under the style Hanson-Peacock Corp., Brooklyn, N. Y., National car dealer.

Philadelphia Row Sees Changes

PHILADELPHIA, Aug. 28—A number of changes have occurred on Motor Row E. C. Johnson, distributer of the Reo, has sold his interests to J. R. Pierpont,

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who was associated with Johnson. S. R. Blocksome, distributer of the Stutz, has entered into partnership with Pierpont, and the two firms will trade as the B. L. P. Motors Co., Inc. A new showroom and service station will be either leased or erected. J. H. Johnson has taken charge of the Mitchell agency, succeeding Richard Willard, who recently resigned.

The Owen Magnetic, handled here by the Carl H. Page Co. in connection with the Mitchell, has been transferred to the Baker R. & L. branch, at Twenty-second and Spring Garden Streets. Robert Wilkie of the Buick agency has gone with the Bigelow-Wiley Co., Paige distributer, and will have charge of the service department. His brother Thomas left the Buick also and has opened a service station on Wood Street, east of Broad.

Overland Capital Increased $15,000,000

TOLEDO, Aug. 29—The outstanding capital of the Willys-Overland company has been increased from $22,500,000 to $37,500,000 by the issuance of $15,000,000 new stock. A meeting of the board of directors to act formally on the plan was held and unanimous consent was given to the proposition. The issue of $15,000,000 additional common stock is made to stockholders of record Aug. 28 at $44 per share. New stock will carry 5 per cent stock dividend recently declared payable April 2, 1917, to stock of record of March 15, but will not carry the 5 per cent stock dividend payable Oct. 2 of stock record Sept. 15. The ratio of subscription for common stock is for two new shares for every three now held. Each share of the preferred stock is permitted to subscribe for one new share of common, par value of $25 at $44.

Bodies Coming From Walpole

WALPOLE, Aug. 29—The Standard Woven Fabric Co., which recently moved to Walpole, has sold its plant at Framingham and it is to be occupied by the Bela Body Co. of Amesbury, which will operate the whole property for the production of bodies.

Abbott to Build $150,000 Factory

CLEVELAND, Aug. 28—The Abbott Corp. has purchased six acres of land on 152nd Street, near the Nickel Plate tracks, and let the contract for a factory building to cost about $150,000, where the Abbott car will be made in the future.

Now Alliance Tire & Rubber Co.

ALLIANCE, OHIO, Aug. 29—The Alliance Rubber Co. has been reorganized as the Alliance Tire & Rubber Co. and its capitalization increased by $500,000. The output of the company will be increased about 200 per cent, the additional capital being used for the enlargement of the plant. A new three-story building will be built adjoining the present factory.

Factory News of the Week

Mack and White Star Form Metropolitan

NEW YORK, Aug. 26—The Metropolitan Motors, Inc., has been established with a capital of $1,000,000 to manufacture a light delivery vehicle and to take over the business of the White Star Motor & Engineering Co. W. C. Mack, one of the Mack Bros. who started the Mack truck, is the moving spirit. A ½-ton truck at about $695 will be added and the White Star trucks of 2, 3 and 5 tons capacity will be continued. Production is expected to start between Oct. 1 and 15.

ACME DOUBLES CAPITAL

CADILLAC, MICH., Aug. 24—The Cadillac Auto Truck Co., this city, maker of the Acme truck, has voted to increase its stock from $100,000 to $200,000. One-half of the new stock will be sold in the near future and the shares, having a par value of $10, will sell for $11.50. No date has been set for the sale of the remaining $50,000 of new stock.

The company will soon start the construction of a new building, which will be 200 x 65 ft.

Production is to be increased during the coming year and another model, a larger truck, is to be added to the company's line.

TO MAKE A FORD GO FARTHER

CHICAGO, Aug. 29—The Myle-Mayker Co. has been organized with a capital of $100,000 to market an attachment for Ford carbureters designed to reduce fuel consumption. Eugene F. Kline, formerly connected with the Mahin Advertising Agency, is head of the company. The device is a gravity operated flutter valve, controlling the richness of the mixture in inverse ratio to the speed of the motor.

Self-Oiling Bolt for Brown

SYRACUSE, Aug. 29—David Landau and H. G. Farr, spring engineer and chief engineer of the Knox company, respectively, have combined their experience in the production of an automatic lubricating bolt. This is to be marketed by the Brown Co., Syracuse, N. Y., which has taken an exclusive license. The bolt is intended for spring shackles, but can be used in principle in other mechanisms requiring a continuous feed of fluid oil for internal lubrication.

Perkins-Campbell Adding

CINCINNATI, Aug. 28—The Perkins-Campbell Co. has added 10,000 sq. ft. to its factory. A second additional building with over 8500 sq. ft. is being rushed by the contractors and will be added about Sept. 15.

Saxon to Share Profits

DETROIT, Aug. 28—The Saxon Motor Car Corp. will share a special bonus with its employees both in the office and factory departments, in accordance with a new plan just made public.

Office employees who have been with the concern for a period longer than 90 days will receive a bonus at the rate of 5 per cent of their yearly salary. Factory workers will share on a like basis, with the exception of those who have been paid a premium on the piece-work basis. These will get a bonus of 3 per cent. The payment of this bonus will be made Sept. 1.

Centering Bearings Service

DETROIT, Aug. 28—The Bearings Service Co. has been organized here to handle the service for anti-friction bearings for all types of motor vehicles and already has contracted with Timken, Hyatt and New Departure to conduct the service operations for these three large bearing manufacturers. The Bearings Service Co. in reality takes over the service operations of these three, and the idea is similar to that of the union railway station where competing lines enter a city. Instead of a station for each railway, one station takes care of all. It is the plan to eventually establish union stations in fifty or more automobile cities, thereby placing this service within reach of most motorists.

Parrett Moves to Peoria

WENONA, Ill., Aug. 28—The Parrett Machine Co., which has been engaged in the manufacture of the Parrett farm tractor for several years, has removed to Peoria, Ill., due to the necessity for enlarging the field and also securing better shipping facilities. Offices have been opened in the Port Huron Building, on Water Street, Peoria, and a factory will be opened later. The company has been handling automobiles as a side line for several years, but will hereafter handle tractors exclusively.

To Market Doble Steam Car

DETROIT, Aug. 28—Abner Doble's steam automobile is to be marketed by the General Engineering Co., which is incorporated at $200,000. Doble is vice-president. The president is C. L. Lewis, former head of the Consolidated Car Co., and the secretary-treasurer is M. J. Hammer, also of the Consolidated company.

New Office for Buick

FLINT, Aug. 28—The Buick Motor Co. plans the immediate construction of a four-story office building on the site of the present office structure. The new structure will be 242 x 50, fireproof, and will cost $240,000.

Fuller Output Increases

KALAMAZOO, MICH., Aug. 28—The output of Fuller & Sons Mfg. Co., parts builders, has been quadrupled within the last year. The July output was nearly as great as the entire 1914 output. In July, two and a half times as many men were employed as a year ago.

Dodge Bros. Are Building

DETROIT, Aug. 21—The Dodge Bros. plant is to be enlarged by the addition of a five-story carpenter shop to cost $40,000 and measuring 240 x 40 x 80 ft., a six-story core shop 425 x 60 x 102, to cost $300,000, and another smaller building, one story and 24 x 148.

Saxon to Make 60,000

DETROIT, Aug. 28—The Saxon Motor Co. plans an output for the 1917 selling year of more than 60,000 cars. Contracts for 50,755 cars have been closed within the past 3 weeks with Saxon dealers.

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1916 MOTOR WORLD GUIDE

SPECIFICATIONS OF LEADING AMERICAN CARS BROUGHT UP TO DATE

Model	Motor	S.A.E. Rating	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
ABBOTT-DETROIT													
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	P	3	122	32x4	SS	1195	†1250	1195
8-80	8-3½x5	33.8	Remy	Stwrt	A-Lite	D	3	121	35x4½	SS	1950	....	1950
ALLEN													
....	4-3¾x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	795	795	....
ANDERSON													
100A	6-3¼x4½	25.4	Wsths	Zenith	Wsths	P	3	120	33x4	SS	1250	1250 †1275	1295 *1250
APPERSON													
6-17	6-3½x5	29.4	Remy	Rafld	Bijur	P	3	130	34x4	SS	†1750	.. .	1750
8-17	8-3½x5	31.2	Remy	Rafld	Bijur	P	3	130	35x5½r	SS	†2000	....	2000
ARBENZ													
25	4-3¼x5	16.9	Conn	Carter	Disco	C	3	109	30x3½	C	....	675	....
ARGO													
....	4-3¼x4	15.6	Conn	Mayer	Disco	C	3	96	30x3	C	455	....	....
AUBURN													
4-36U	4-3¾x5	24.0	Conn	Rafld	A-Lite	D	3	114	33x4	SS	895	895	....
6-39	6-3 x5	21.6	Remy	Rafld	Remy	D	3	120	34x4	SS	1085	1065	....
6-44	6-3½x5½	22	Delco	Rafld	Delco	D	3	131	35x4½	SS	1535	....	1535
BELL													
A-16	4-3¼x5	19.6	A.Kent	Carter	Disco	C	3	112	31x4	C	775	775	....
BIDDLE													
D	4-3⅝x5½	22.5	Dixie	Zenith	G&D	P	4	121	32x4	QD	1800	1865	†1850
BREWSTER													
....	4-4 x5½	25.6	Bosch	Zenith	USL	C	3	125	34x4½	SS	Chassis		5000
BOUR-DAVIS													
17	6-3¼x4½	25.3	Remy	Stmbg	W.Lnrd	P	3	118	32x4	SS	....	1250	....
BRISCOE													
8-38	8-3 x3½	28.8	Remy	Zenith	Apleo	C	3	114	32x3½	QD	‡985	985	....
4-38	4-3 7-16x5½	18.9	Remy	Mayer	Apleo	C	3	114	32x3½	QD	†785	785	....
4-24	4-3½x5½	15.6	Remy	Mayer	Apleo	C	3	104	30x3½	QD	625	625	....
BUICK													
D-44 and 45	6-3¼x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	SS	985	....	1020
D-34 and 35	4-3½x4¾	18.2	Delco	Marvel	Delco	C	3	106	31x4	C	650	665	....
CADILLAC													
55	8-3½x5½	31.2	Delco	Delco	Delco	D	3	125 132	36x4½	SS	2080	2080	2080
CAMERON													
....	6-3 x5	21.6	G&D	Stmbg	G&D	C	3	122	32x4	SS	1085	1065	....
CASE													
T	4-3⅝x6	21.0	Wsths	Rafld	Wsths	C	3	120	34x4	QD	‡1090	....	1090
CHALMERS													
6-30	6-3¼x4½	25.4	Remy	Stmbg	Wsths	D	3	115	32x4	SS	1070	1090	....
6-30	6-3¼x4½	25.4	Remy	Stmbg	Wsths	D	3	122	34x4	SS	....	....	1280
CHANDLER													
16	6-3⅛x5	27.3	Bosch	Rafld	G&D	P	3	123	34x4	SS	†1295	....	1295
CHEVROLET													
F	4-3 11-16x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	S	800	800	....
490	4-3 11-16x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½r	C	....	550	....
COLE													
8-60	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	35x4½	SS	†1595	....	1595
CROW													
C.E.35	4-3½x5	19.6	Conn	Zenith	Dyneto	P	3	114	32x3½	SS	....	795	....
DANIELS													
8	8-3¼x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	DQR	‡2800	2800	2800
DAVIS													
6-E	6-3½x5¾	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	..	....	....	1495
F&G	6-3¼x4½	25.3	Delco	Stmbg	Delco	C	3	120	34x4	..	....	1250	....
DETROITER													
F	4-3⅝x4¼	22.5	Dixie	Shblr	Dyneto	D	3	112	33x4	SS	....	985	....
6-45	6-3¼x4½	25.3	Conn	Ball	A-Lite	D	3	118	33x4	SS	....	....	....
DISPATCH													
G	4-3⅜x5	22.5	Bosch	Rafld	USL	G	G	120	36x3½	.	1135	1210	....
DIXIE FLYER													
....	4-3¼x5	16.9	Conn	Carter	Dyneto	C	.	112	32x3½	SS	795	795	....
DODGE BROS.													
....	4-3½x4½	24.0	Delco	Stwrt	NE	D	3	110	32x3½	SS	785	785	....
DORRIS													
I-B-6	6-4 x5	38.4	Bosch	Stmbg	Wsths	D	3	128	36x4½	SS	2475	....	2475

*6-passenger; †4-passenger; ‡3-passenger.

Model	Motor	S.A.E. Rating	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
DORT													
9	4-3½x5	16.9	Conn	Carter	Wsths	C	3	103	30x3½	QDC	‡695	695	....
DREXEL													
....	4-3½x5	19.6	Bosch	Stmbg	Bijur	C	3	112	33x4		855	855	....
ELCAR													
....	4-3½x5	19.6	Delco	Carter	Dyneto	C	3	114	32x3½	SS	....	795	....
ELGIN													
....	6	...	Delco	Rafld	Dyneto			114	32x3½	..	‡845	845	....
EMPIRE													
45	4-3⅞x5	24.0	Conn	Stmbg	A-Lite	C	3	116	33x4	SS	....	960	....
60	6-3¼x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	....	1125	....
60-R	6-3¼x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	....	†1145	....
ENGER													
12	12-2⅝x3½	33.0	Remy	Zenith	Wsths	D	3	115	32x4	SS	....	1095	....
FIAT													
55	4-5½x6¾	42.0	Bosch	Own	B-Rshm	D	4	128	37x5r	DQC	‡4140	4200	4340
56	6-4 2-5x6	46.6	Bosch	Own	Own	D	4	135	37x5r	QDC	‡5350	5350	5350
FORD													
T	4-3¾x4	22.5	Ford	Holley Kingston	....	D	2	100	30x3½r	C	345	360	...
FOSTORIA													
....	4-3 x4½	14.4	Remy	Zenith	....	D	3	108	30x3½	C	....	735	....
FRANKLIN													
9	6-3¼x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	....
F R. P.													
45	4-4 3-5x6¾	33.8	Bosch	....	Bosch	C	4	110 140	36x4	C	Chassis		5000
GLIDE													
6	6-3½x5	23.4	Wsths	Rafld	Wsths	D	3	119	34x4	SS	....	1125	....
GRANT													
V	6-3 x4¼	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	..	‡825	825	....
H. A. L.													
....	12-2⅞x5	39.6	Remy	Stmbg	Wsths	D	3	135	34x4½	SS	2100	....	2100
HALLADAY													
S	6-3 x5	21.6	A-Lite	Own	A-Lite	D	3	118	33x4	SS	‡1085	....	1120
R	6-3 x5	21.6	Wsths	Stmbg	Wsths	P	3	122	34x4	SS	‡1385	1385	...
R'mer S.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	122	34x4	..	1800	....	....
HARVARD													
4-20	4-3 x4¼	14.4	A.Kent	Zenith	Wagner	D	3	100	28x3	DQ	750	....	....
HAYNES													
36	6-3½x5	29.4	Remy	Rafld	L-N	P	3	121	34x4	SS	†1585	1485	..
37	6-3½x5	29.4	Remy	Rafld	L-N	P	3	127	35x4½	SS	....	....	1565
40	12-2¾x5	36.3	Delco	Rafld	L-N	P	3	121	35x4½	SS	†2085	1965	
41	12-2¾x5	36.3	Delco	Rafld	L-N	P	3	127	35x4½	SS	....	....	2085
HERFF-BROOKS													
4-35	4-4 x4½	25.6	Dixie	Stmbg	Apleo	C	3	110	33x4	SS	885	885	....
H6-50	6-4 4x½	33.4	Dixie	Stmbg	Apleo	C	3	120	34x4	SS	1095	1095	....
HOLLIER													
....	8-3 x4¼	28.8	A.Kent	Stwrt	Apple	C	3	116	34x4	SS	....	1185	†1185
....	6-3 x4¼	21.6	AC.	Stmb	A.C.	C	3	116	34x4	SS	†1085	1085	...
HUDSON													
Super-6	6-3½x5	29.4	Deleo	Own	Delco	D	3	125½	35x4½	SS	†1475	....	1475
HUPMOBILE													
....	4-3¾x5½	22.5	A.Kent	Zenith	Wsths	D	3	119 134	34x4 35x4½r	SS	1185	1185	*1360
INTER-STATE													
T	4-3½x5	19.6	Remy	Shblr	Remy	C	3	110	33x4	SS	850	850	....
JACKSON													
34-A	4-3½x5	19.6	Conn	Shblr	A-Lite	C	3	112	32x4	SS	....	985	..
348-A	8-2⅞x4¾	26.4	Conn	Shblr	A-Lite	C	3	112	32x4	SS	....	1195	
68-A	8-3½x4½	39.2	Conn	Shblr	A-Lite	C	3	124	34x4½	QD	....		1695
349	8-3x3½	28.8	Remy	Zenith	A-Lite	D	3	118	34x4	SS	1295	1295	1370
JEFFERY													
Four	4-3¾x5½	22.5	Dixie	Stmbg	Bijur	P	3	116	34x4	SS	1095	1095	1120
Six	6-3½x5½	29.4	Dixie	Rafld	Bijur	P	3	125	34x4	SS	1335	....	1365
JORDAN													
....	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	..	1650	....	1650
KING													
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	D	3	120	34x4	SS	‡1350	....	1350
KISSEL													
100-pt.	6-3¼x5	25.3	Remy	Stmbg	Kissel	C	3	117	32x4	SS	1095	1095	.
6-42	6-3¾x5½	31.5	Eismn	Stmbg	Kissel	C	3	126	35x4½	SS	1650	1650	1750
KLINE													
6-36	6-3¼x4½	25.3	Wsths	Rafld	Wsths	P	3	120	34x4	SS	1095	1095	

*6-passenger; †4-passenger; ‡3-passenger.

ABBREVIATIONS—"G & D" Gray & Davis, "Spldf" Splitdorf, "A-Lite" Auto-lite, "Wsths" Westinghouse, "Shblr" Schebler, "Eismn" Eisemann, "Rafld," Rayfield, "A.Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brling" Berling, "Kngstn" Kingston, "Natnl" National, "W. Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Stwrt" Stewart, "Nwemb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O M" Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Tlsn" Tillottson, "Atsr" Atomiser. Clutches: "C" Cone, "P" Plate, "D D" Dry Disk, "D P" Dry Plate, "D" Disk, "G" Gearless, "F" Friction. Rims: "Q D" Quick Detachable, "SS" Straight Side, "C" Clincher, "Q D R" Quick Detachable Reversible, "Q D C" Quick Detachable Clincher.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 37x5½ and the front are of smaller dimensions.

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Model	Motor	S.A.E. Rating	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
LAUREL													
35	4-3¾x4½	33.8	Dixie	Shblr	Disco	P	3	112	32x3½	QD	850	850	875
LENOX													
O	6-3½x5½	29.4	Eismn	Zenith	Bijur	D	3	128	34x4½	QD	....	1985	....
D	4-4½x5½	28.9	Eismn	Own	Wsths	C	3	118	34x4½	QD	1900	....	....
M	6-6½x5	33.8	Eismn	Own	Wsths	C	3	130	34x4½	QD	....	2465	....
LEXINGTON													
6-17	6-3½x4½	25.9	Conn	Rafid	Wsthe	DD	3	116	32x4	SS	†1185	1185	....
LIBERTY													
....	6-3½x4½	23.4	Delco	Shblr	Delco	DD	3	115	32x4	..	....	1095	....
LOCOMOBILE													
M-7	6-4½x5½	48.6	Eismn	Own	Wsths	D	4	142	37x5	QDC	....	*5400	5400
R-7	6-4½x5	43.3	Eismn	Own	Wsths	D	4	139	37x5r	QDC	....	†4750	4600
LOZIER													
84	4-4½x6½	28.9	Bosch	Stwrt	G&D	D	4	120	36x4½	SS	....	....	1595
82	6-3½x6	36.0	Eismn	Rafid	G&D	D	3	132	36x4½	SS	....	....	2775
6-50	6-3½x5½	29.4	G&D	Rafid	G&D	D	3	120	36x4½	SS	....	1875	....
LUVERNE													
760	6-4 x5	38.4	Bosch	Shblr	Apleo	D	3	130	36x4½	SS	....	....	2500
MADISON													
T	6-3½x5	23.4	Remy	Rafid	Remy	D	3	115	34x4	SS	....	1050	....
T-7								124			....	....	1150
MARION-HANDLEY													
6-40	3x5	21.6		Wsths	Zenith	Wsths	D	3	120	32x4	SS	‡1185	....	1185
6-60	6-3½x5½	29.4	Wsths	Zenith	Wsths	D	3	125	33x4½	SS	....	....	1385
MARMON													
34	6-6¾x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	†‡2950	2900	2950
MAXWELL													
....	4-3½x4½	21.0	Simms	K-D	Simms	C	3	103	30x3½	C	580	595	....
McFARLAN													
127	6-4½x6	48.0	Wsths	Stmbg	Wsths	P	3	136	35x5	QDR	....	....	3200
McINTYRE													
25	4-3½x5½	19.6	Bosch	Stmbg	G&D	C	3	106	32x3½	..	....	850	....
6-40	6-3½x4½	29.4	Briggs	Stmbg	Briggs	D	3	120	35x4	..	....	1275	....
MECCA													
30	4-3¾x4¼	22.5	Dixie	Shblr	Disco	D	3	104	30x3½	C	695	695	....
MERCER													
Spdstr	4-3¾x6¾	22.5	Bosch	Zenith	....	D	4	115	32x4	QDC	2750	....	....
22-72	4-3¾x6¾	22.5	Bosch	Zenith	USL	D	4	132	34x4½	QDC	....*†3000		....
METZ													
25	4-3½x4	24.0	....	AWT	G&D	F		108	32x3½	C	600	600	....
MITCHELL													
M. S.	6-3½x5	29.4	Conn	Rafid	Wsths	C	3	127	34x4	SS	‡1325	1325	1360
D-40	6-3½x5	25.4	Conn	Rafid	Spldf	C	3	120	32x4	SS	1050	1050	....
MOLINE-KNIGHT													
50	4-4 x6	25.6	Bosch	Shblr	Wagner	C	4	128	36x4½	SS	2500	2500	2540
40	4-3¾x5	22.5	Conn	Shblr	A-Lite	C	3	118	34x4	SS	1450	....	1450
MONARCH													
....	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	..	....	1500	....
MONITOR													
C&R	4-3¾x4¼	22.5	Heins	Shblr	Heins	D	3	108	32x3½	SS	795	795	....
N	6-3½x5	23.4	Heins	Shblr	Heins	D	3	115	33x4	SS	....	995	....
MONROE													
M-34	3x4¼	14.4	Conn	Zenith	A-Lite	D	3	96	30x3	DC	565	....	....
MOON													
6-66	6-3½x5½	29.4	Delco	Rafid	Delco	P	3	125	35x4½	SS	‡1575	....	1650
6-43	6-3¼x4½	25.3	Delco	Rafid	Delco	P	3	118	33x4	SS	‡1293	1295	....
MORSE													
D	4-4½x5	34.2	Eismn	Stmbg	G&D	D	4	127	36x4½	..	3600	3600	3700
NATIONAL													
Hgy	12-2¾x4¾	36.3	Dixie	Rafid	Wsths	C	3	128	34x4½	QDR	†2150	....	2150
Hgy	6-3½x5¼	29.4	Dixie	Rafid	Wsths	C	3	128	34x4½	QDR	‡1750	‡1750	1750
OAKLAND													
50	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	34x4½	SS	....	....	1585
22 6-2	13-16x4¾	18.9	Delco	Marvel	Delco	C	3	110	32x3½	SS	795	795	....
38	4-3½x5	19.6	Delco	Marvel	Delco	C	3	112	33x4	SS	1050	1050	....
OLDSMOBILE													
44	8-2⅞x4¾	26.4	Delco	Johnsn	Delco	C	3	120	33x4	SS	1195	1195	....
OVERLAND													
85-4	4-4½x4½	27.2		Tltsn	A-Lite	C	3	112	32x4	SS	....	795	....
85-6	6-3½x4½	25.3		Tltsn	A-Lite	C	3	116	32x4	SS	....	925	....
75-B	4-3½x5	18.2		Tltsn	A-Lite	C	3	104	31x4	C	620	635	....
OWEN													
I	6-3⅞x5½	33.7	Bosch	Master	OM	OM		136	35x5	QDC	*3750	....	3750
PACKARD													
2-25	12-3 x5	43.2	Delco	Own	Bijur	D	3	126½	35x5	QDC	2865	2865	2865
2-35	12-3 x5	43.2	Delco	Own	Bijur	D	3	135	35x5	QDC	....	3265	3265
PAIGE													
6-46	6-3½x5½	29.4	Remy	Rafid	G&D	D	3	124	35x4½	SS	1375	....	1375
6-38	6-3½x5	23.4	Remy	Rafid	G&D	D	3	117	32x4	SS	1070	1090	....

*6-passenger; †4-passenger; ‡3-passenger.

Model	Motor	S.A.E. Rating	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger
PARTIN-PALMER													
32	4-3½x5	91.6	Conn	Shblr	Disco	D	3	110	32x3½	C	....	695	....
8-45	8-3½x4	31.2	Conn	Rafid	Remy	D	3	115	33x4	C	....	....	*1195
20	4-3½x4½	15.6	Conn	Shblr	A-C	D	3	96	29x3½	C	495	....	...
PATERSON													
6-42	6-3½x4½	25.2	Delco	Stmbg	Delco	C	3	117	32x4	SS	....	1065	1065
PATHFINDER													
LaS	12-2½x5	39.6	Delco	Stmbg	Delco	D	3	130	35x5	SS	2900	....	2750
PEERLESS													
5-6	8-3½x5	33.8	A.Kent	Special	G&D	D	3	125	35x4½	SS	‡1890	....	1390
PIERCE-ARROW													
38C4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	QDC	4300	4300	....
48B4	6-4½x5½	48.6	Bosch	Own	Wsths	C	4	142	37x5	QDC	4900	4900	5000
66A4	6-5 x7	60.0	Bosch	Own	Wsths	C	4	147½	38x5½r	QDC	5900	5900	6000
PILOT													
6-55	6-3½x5¼	36.3	Delco	Stmbg	Delco	C	3	126	34x4	SS	1685	....	1685
6-75	6-4½x6	48.6	G&D	Stmbg	G&D	C	3	132	37x4½	SS	2400	....	2485
6-45	6-3 x5	21.6	Delco	Zenith Rafid	Delco	P	3	119	32x4	SS	†1100	1100	...
PREMIER													
6-B	6-3½x5½	27.3	Delco		Delco	D	3	125½	35x4½	SS	....	....	1635
PULLMAN													
424-32	4¼x4¼	22.5	Dixie	Stmbg	Apleo	D	3	114	31x4	SS	....	....	740
628-40	6-3½x5	28	Dixie	Stmbg	Apleo	D	4	122	32x4	SS	....	....	....
REGAL													
F	8-3 x4½	28.8	Conn	Stwrt	Dyneto	C	3	115	33x4	SS	1200	1200	....
J	4-3½x4¼	19.6	Heins	Carter	Heins	C	3	108	30x3½	DC	....	695	....
REPUBLIC													
E	6-4½x5	43.3	Delco	Rafid	Delco	C	4	133	36x4½	SS	....	†2950	2950
REO													
M	6-3 9-16x5½	30.4	Remy	Johnsn	Remy	D	3	126	34x4½	SS	....	....	1250
R	4-4½x4½	27.2	Remy	Johnsn	Remy	D	3	115	34x4	SS	....	875	....
RICHMOND													
4-35	4-4 x4½	25.6	Dixie	Stmbg	Apleo	C	3	110	33x4	..	750	750	775
H6-50	6-4 x4½	38.4	Dixie	Stmbg	Apleo	C	3	120	33x4	..	900	900	925
ROSS													
C	8-3½x5	33.8	A.Kent	Zenith	....	P	3	130	34x4	SS	....	....	1550
SAXON													
14	4-2¾x4	12.1	A.Kent	Mayer	....	D	3	96	28x3	C	395	....	....
S-2	6-2½x4½	19.8	A.Kent	Rafid	Wagner	D	3	112	32x3½	SS	....	815	....
SCRIPPS-BOOTH													
C	4-3 x4¼	14.4	Remy	Zenith	Wagner	D	3	110	30x3½	C	‡825	....	....
D	8-2¾x3¾	22.0	Remy	Zenith	Wagner	P	3	120	32x3½	SS	....	†1175	....
SPAULDING													
H	4-4½x5½	28.9	Simms	Rafid	Ents	C	3	120	36x4	..	1250	1250	....
A	4					C	3	110	30x3	..	750	750	....
SIMPLEX													
Crane	6-4½x6¼	45.9	Bosch Rohmr	Nwcmb	Rshmr	D	4	143½	37x5r	QDC	....	....	....
SINGER													
Six	6-4 x5½	38.4	Bosch	Rafid	Wsths	D	4	138	35x5	QD	‡3500	3500	3500
STANDARD													
8	8-3½x6	33.8	Spldf	Zenith	Spldf	D	3	127	35x4½	..	1850	....	1900
6	6-4 x5½	38.4	Spldf	Rafid	Wsths	D	3	126	36x4½	..	‡2100	2100	....
STEARNS-KNIGHT													
L-4	4-3¾x5⅝	22.5	Remy	Shblr	Wsths	C	3	119	34x4	QDC	....	1450	....
S-K-8	8-3½x5	33.8	Remy	Rafid	Wsths	D	3	123	35x4½	QDC	....	....	2150
STEWART													
T	6-3½x5	29.4	Bosch	Rafid	Wsths	D	3	127	34x4½	SS	‡1950	....	1950
STUDEBAKER													
4	4-3½x5	24.0	Remy	Shblr	Wagner	C	3	112	34x4	SS	‡850	....	875
6	6-3½x5	36.0	Remy	Shblr	Wagner	C	3	122	34x4	SS	‡1060	....	1085
STUTZ													
R	4-4¾x5½	36.1	Bosch	Stmbg	Remy	C	3	130	35x4½	SS	2275	†2550	‡2550
SUN													
17	6-3½x5	23.4	Remy	Rafid	Remy	P	3	116	34x4	SS	†1095	1095	1145
VELIE													
28-40	6-3¼x4¼	25.3	Remy	Stmbg	Remy	D	3	115	32x4	SS	1065	1085	†1085
15-45	6-3½x5½	29.4	Remy	Stmbg	Remy	D	4	124	34x4	SS	1065	....	1550
WESTCOTT													
51	6-3½x5½	29.4	Delco	Rafid	Delco	D	3	126	35x4½	SS	‡1595	....	1595
41	6-3¾x4½	33.7	Delco	Rafid	Delco	D	3	121	34x4	SS	‡1295	‡1295	....
42	6-3½x5¼	29.4	Delco	Rafid	Delco	D		3121	34x4	SS	....	1445	....
WHITE													
LAH	4-3¾x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	....
GED	4-4¼x6¾	28.9	Bosch	Own	Own	P	4	133½	36x4½	QDC	‡3750	....	3800
WILLYS-KNIGHT													
84-B	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	120	34x4½	SS	....	....	1285
WILLYS													
88-6	6-3½x5¼	29.4	Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1325
WINTON													
22	6-4½x5½	48.6	Bosch	Rafid	Bijur	D	4	138	37x5	QD	3500	3500	3500
22A	6-3¾x5½	33.7	Bosch	Rafid	Bijur	D	4	128	36x4½	QD	2485	2485	2535

*6-passenger; †4-passenger; ‡3-passenger

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Indianapolis Prepares Big Show

INDIANAPOLIS, Aug. 29—The fall show, which will be given in a mammoth tent close to the Coliseum in the Indiana state fair grounds Sept. 4 to 8, is to be the biggest show ever staged by the Indianapolis Automobile Trade Association. More than fifty exhibitors will show nearly 200 products of seventy different factories. The accessories exhibit, which heretofore has taken up much space, will be quite limited to make room for the new models of motor cars.

National Expansion Is Started

INDIANAPOLIS, Aug. 29—Work was started last week on the new $150,000 addition to the plant of the National Motor Vehicle Co. Two new buildings are to be erected at once and, in order to expand its plant, one-half of a city block immediately east of the present site has been purchased. The old buildings occupy one city block. The ground just acquired is 410 x 140 ft. The first new building is to be completed by Nov. 9. It will be 380 x 60 ft. and three stories high. The second new unit of the plant will be 328 x 140 ft. and one story high. This addition is to be in operation before the first of the year.

From Everywhere

New York—The first shipment of Jordan cars to be made by the Jordan Motor Car Co., Cleveland, Ohio, reached this city by express and consists of one carload of three touring models, consigned to J. Dale, the New York agent.

Detroit—After an extended trip through Japan, China and Australia, Joseph R. Drake, vice-president of the Hupp Motor Car Co., is again in Detroit, accompanied by R. F. Cole, representative of the Hupp company in the Orient. Drake reports conditions very favorable for the extension of American car selling in the countries visited.

Philadelphia—The Rush Motor Truck Co. has been incorporated at $500,000 to manufacture trucks and cars by Charles L. Guerin and Joseph D. Morelli.

Philadelphia—George G. Meeley, of the American Auto Tire Co., Inc., 154 North Broad Street; Hugh B. Turner, secretary-treasurer of the company, and several others have purchased the old Patterson textile mills in Chester, Pa., which will be improved and enlarged for the manufacture of tires.

St. Paul—L. C. Erbes plans to move the Cutting and Clarke-Carter car factories from Waterloo, Iowa, to the former Duesenberg plant and to call the car the L-C-E. He plans $50,000 improvements to the factory in the way of additions.

Newark, N. J.—The H. J. Koehler Motors Corp. has been formed here with a paid-in capital of $425,000 to succeed the H. J. Koehler S. G. Co. and the L. E. Schlotterback Mfg. Co. H. J. Koehler remains the president of the new concern and the product and its price, $895, are unchanged.

Cleveland—The Big Four Tire & Rubber Co. has had plans made for a tire factory, but the site has not yet been announced. It is said the company will make a tire designed upon a plan different from anything on the market. The building will be 400 x 80.

Cincinnati—The Murray Auto Parts Mfg. Co. has been incorporated at $25,000 to manufacture car parts and accessories. The incorporators are Edwin J. Kennedy, William J. Murray, Victor E. Murray, S. E. Daugheter and J. H. Muman.

Swifts, Ohio—The Vincent Automatic Transmission Co. has been incorporated at $10,000 to make transmissions. B. E. Vincent, H. M. Middleswart, B. O. Middleswart, C. C. Middleswart and O. D. McPheron are the incorporators.

New York—The Redden Motor Truck Co. has secured an exclusive license on the Cook patent No. 1,180,475 for converting pleasure cars into commercial vehicles. It is said the company will proceed against infringing devices.

Coming Events

General Events

Sept. 25.....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association, Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12.....Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Oct. 16-17.....Rockford, Ill., Semi-annual Convention Garage Owners' Assn. of Ill.

Feb. .....Convention Minnesota Retail Automobile Dealers Association.

Races, Contests and Tours

Aug. 28-Sept. 1...Milwaukee, Wis. Booster Tour of Milwaukee Automobile Dealers.

Sept. 4.....Cincinnati, Ohio; speedway race, Cincinnati Speedway Co.

Sept. 4.....Elmira, N. Y.; track race, Elmira Auto. & Motorcycle Racing Assn.

Sept. 4.....Newark, N. J.; track race, Olympic Park Racing Assn.

Sept. 4.....Des Moines, Ia.; speedway. Price Speedway Co.

Sept. 4.....Indianapolis Speedway race.

Sept. 4-5.....Spokane, Wash., track racemeet, Inland Auto Assn.

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. I., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Tractor Demonstrations

Aug. 28-Sept. 1...Indianapolis.
Sept. 4-8.....Madison, Wis.

*Indicates sanction by A. A. A.

Shows

Aug. 23-Sept. 1...Des Moines, Iowa, show. State Fair.

Sept. 2-9.....Cleveland, Ohio, Show. Industrial Exposition and Fair, Edgewater Park.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 4-8.....Hartford, Conn., annual automobile and truck show, under the auspices of the Connecticut Fair Assn.

Sept. 4-11.....Indianapolis, Ind., show. Indiana State Fair. Indianapolis Automobile Trade Assn.

Sept. 11-16.....Milwaukee, Wis., Second Annual Fall Show, State Fair, Machinery Hall, Milwaukee Automobile Dealers, Inc.

Sept. 25-30.....Salem, Ore., Show, State Fair.

Oct. 11-21.....New York, Electrical Exposition, Grand Central Palace.

Oct. 14-21.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 9-10.....Fort Dodge, Iowa, Iowa Automobile Dealers Association.

Jan. 13-20.....Montreal, Can. Montreal Automobile Trade Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb .....St. Louis, Mo. Show, Automobile Manufacturers & Dealers Assn.

Feb. 3-10.....Minneapolis, Minn., Annual Show, Minneapolis Automobile Trade Assn.

Feb 19-24.....Des Moines, Iowa, Eighth Annual Show, Des Moines Auto. Dealers' Assn. C. G. Van Vliet, manager.

Feb. 26-Mar. 3....Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn., Clarke G. Powell, manager.

Motor Car Securities Quotations

	Aug. 28, 1915 Bid	Aug. 28, 1915 Asked	Aug. 28, 1916 Bid	Aug. 28, 1916 Asked
Ajax Rubber Co. (new)	..	..	61	62
J. I. Case, pfd.	70	80	82	85
Chalmers Motor Co., com.	96½	97	150	170
Chalmers Motor Co., pfd.	95	97	99	102
*Chandler Motor Car Co.	..	..	102	105
Chevrolet Motor Co.	..	..	104	105
Fisk Rubber Co., com.	..	..	..	140
Fisk Rubber Co., 1st pfd.	..	..	..	..
Fisk Rubber Co., 2d pfd.	..	..	..	..
Firestone Tire & Rubber Co., com.	525	530	930	960
Firestone Tire & Rubber Co., pfd.	111	..	112	114
*General Motors Co., com.	219	220½	560	570
*General Motors Co., pfd.	109½	110½	125½	125½
*B. F. Goodrich Co., com.	63	65	72	75
*B. F. Goodrich Co., pfd.	106	106	113½	113½
Goodyear Tire & Rubber Co., com.	270	274	284	290
Goodyear Tire & Rubber Co., pfd.	108½	110	108½	107½
Grant Motor Car Co.	..	..	7	8
Hupp Motor Car Co., com.	..	..	6½	7
Hupp Motor Car Co., pfd.	..	..	90	100
International Motor Co., com.	25	30	6	10
International Motor Co., pfd.	50	60	15	20
*Kelly-Spgfld. T. & R. Co., com.	135	150	74½	76½
*Kelly-Spgfld. T. & R. Co., 1st pfd.	85	87	95	97
*Lee Rubber & Tire Corp.	..	..	65	65½
*Maxwell Motor Co., com.	42	43½	83½	84
*Maxwell Motor Co., 1st pfd.	90	92	89½	89½
*Maxwell Motor Co., 2d pfd.	25	27	54½	56
Miller Rubber Co., com.	190	194	220	225
Miller Rubber Co., pfd.	107½	..	105	105
Packard Motor Car Co., com.	117	..	105	112
Packard Motor Car Co., pfd.	100	..	100	104
Paige-Detroit Motor Car Co.	..	..	46	52
Peerless Truck & Motor Corp.	..	..	24½	25
Perlman Rim Corp.	..	..	..	..
Portgage Rubber Co., com.	46	48	130	135
Portgage Rubber Co., pfd.	83	94	130	135
Regal Motor Car Co., pfd.	..	..	17	22
†Reo Motor Truck Co.	17	18¾	36	37
†Reo Motor Car Co.	33	34½	43¾	44¾
Saxon Motor Car Co.	..	..	71½	74
Standard Motor Co.	..	..	6	6¼
Stewart-Warner Speed. Corp., com.	65	66	116¾	118¾
Stewart-Warner Speed Corp., pfd.	105	107	..	..
*Studebaker Corp., com.	111½	113½	132½	137
*Studebaker Corp., pfd.	103	105	107½	110½
Swinehart Tire & Rubber Co.	88	90	95	100
United Motor Corp.	..	..	82	85½
*U. S. Rubber Co., com.	49	51	56½	57
*U. S. Rubber Co., pfd.	103	105	111	112
White Motor Co. (new)	..	..	52½	53½
*Willys-Overland Co., com.	122	124	67¼	67½
*Willys-Overland Co., pfd.	100	102½	104½	107

*At close Aug. 28, 1916—Listed N. Y. Stock Exchange
†Par value $100.

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MICHELIN



Full Page Michelin advertisement
Saturday Evening Post, Sept. 2

The Michelin Dealer has the Best Proposition ever offered to the Trade:

Highest Quality Tires—Sold at Low Prices—Backed by Big Advertising

Forceful advertisements like the above have been a regular feature of the Saturday Evening Post this year—carrying into two million homes the facts about the unequalled tire-values which Michelin dealers offer. Write or wire today for full particulars about the Michelin Proposition.

MICHELIN TIRE COMPANY, Milltown, New Jersey

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Tire Rate Book

September Edition

If you sell tires there isn't the slightest question but that you need a copy of the Tire Rate Book. The September edition is being made ready for the press now. It will be ready to mail within a few days. It will list the complete price schedules of about 100 of the leading pneumatic and solid tire manufacturers.

The September edition will also incorporate the following valuable features:

A complete list of tire and rim sizes for all American made cars from and including 1913 to date.

A standard telegraph and cable code—the value of which will be appreciated by every dealer who has occasion to telegraph tire factory, branches or jobbers.

The Tire Rate Book is the standard price guide for thousands of dealers and salesmen in all parts of the country. It is a neatly bound volume, 4¼x7½ inches. It fits the pocket.

It is published three times each year—January, May and September. Prices are brought up to date in each issue. Because of recent changes in tire prices the September edition will prove invaluable to tire dealers and salesmen.

Beginning with the January issue the yearly subscription price of the Tire Rate Book will be one dollar—single copies fifty cents.

Present subscription price fifty cents per year (including this September and next January and May issues).

Send your subscription NOW and take advantage of the present fifty cent rate.

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More Than A Million Dollars Worth of Velie Cars Were Contracted for at the Factory In One Day

SUCH is the response which the announcement of the New 1917 Velie has brought. To date it has added more than 600 new dealers to the Velie Sales Organization—experienced and representative automobile men in every case.

This demand at once explains why A Mile of Velie Factory must triple its output. All due to *"Bigger, Better, More Power"*—at the Velie's low price. Velie combination of highest values in motor-car building is not matched by any other Light Six.

If Your Territory

is not closed—you are invited to get in touch with the factory, for the unprecedented opportunity which this car offers.

With the Velie's long, graceful, new body; deep-tufted leather upholstery; powerful Velie-Continental Motor; Timken axles front and rear; push button starting and corresponding *extra* values throughout, the Velie dealer meets the widest range of demand both in quality and price. Write or wire for our liberal proposition today.

Eight Body Styles A Complete Line

Model 28, five-passenger Touring, $1085; four-passenger Companionable Roadster (original and exceptionally smart type), $1085; two-passenger Roadster, $1065. Enclosed bodies exclusively designed: Cabriolet, $1485; Touring Sedan, $1685; four-passenger Sociable Coupe, $1750; Town Car, $2200. Wire wheels on any model $70 extra.

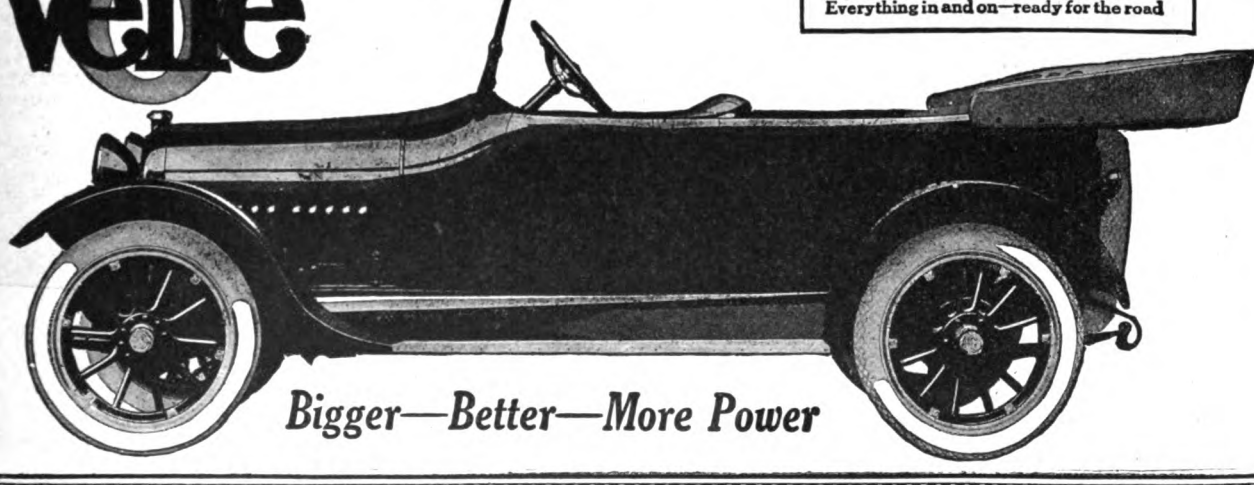
Model 27, seven-passenger Six, completes the line; 124-inch wheelbase, 45 h.p., 35x4½ tires, 4-speed transmission. The utmost in luxury and refinement. Price, $1550.

Velie Features

Six-cylinder Velie-Continental Motor
Timken Axles front and rear
Removable Cylinder Head for Inspection
Helical Gears in Motor—no chains
Enclosed Multiple Dry Disc Clutch
Hotchkiss Drive—no noisy torque arm
Spiral Gears in Floating Rear Axle
Remy Automatic Ignition—Push Button Starter
Double Bulb Headlights—Dashlight
All Wires Enclosed in Metal Conduits
Rear Gasoline Tank—Vacuum Feed
Simple Rocking Gear Shift Lever
Luxurious Body, 4 inches longer
Unusually Wide Doors—easy to enter
High-Grade Leather Upholstery
Cushions Deep Tufted—Real Curled Hair
Long, Flexible Underslung Springs
Expanding Tire Holder—no Straps
Mirror Body Finish—20 Operations Deep
Light of Weight—Economical of Fuel
Everything in and on—ready for the road

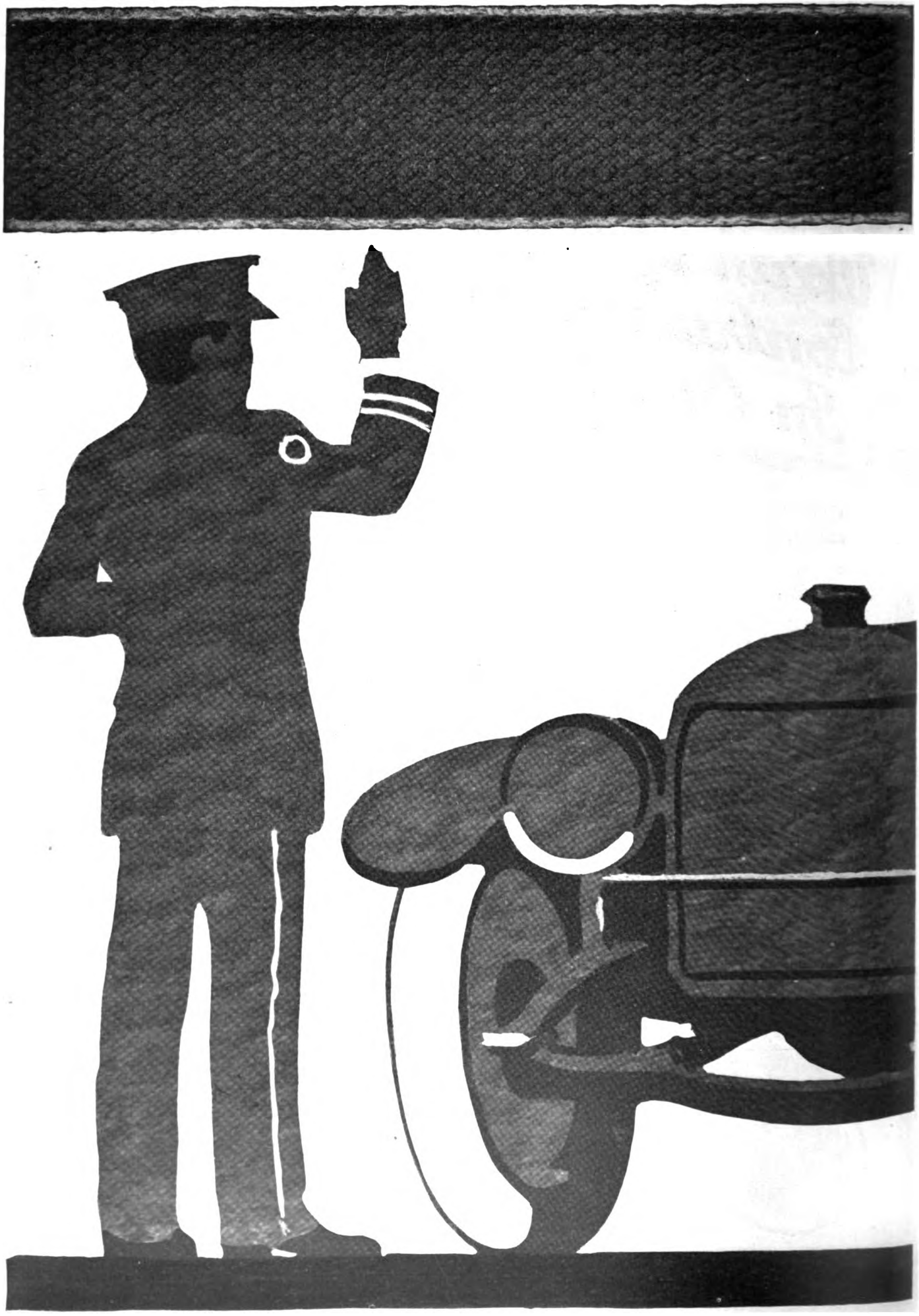
VELIE MOTOR VEHICLE CO.
115 Velie Place Moline, Illinois

Velie

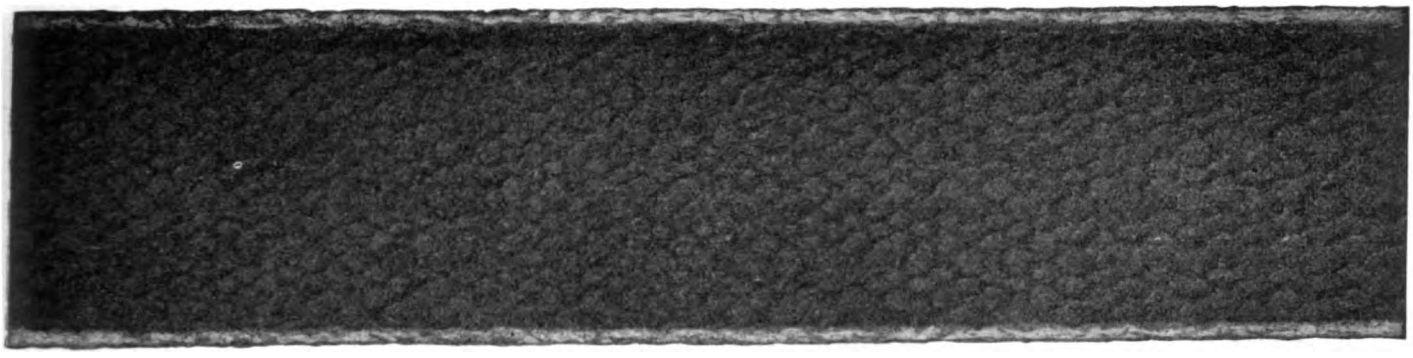


Bigger—Better—More Power

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Taxicab Companies choose Raybestos for **WEAR.** Fire Departments equip their trucks with Raybestos — for **WEAR.** They've tested. They know. They prefer Raybestos. There's just one outstanding reason

—that's WEAR

Hills quickly prove brake lining **WEAR** — or the lack of it. Where hills are steepest Raybestos sales are strongest. The reason is — Raybestos **WEAR.** Frequently, Raybestos serves for 50,000 miles before requiring replacement.

—that's WEAR

Continued brake safety demands brake lining **WEAR.** Continued high service demands **WEAR.** Every brake lining quality leads back to the one big one

—that's WEAR

Motorists are learning not to tolerate short-**WEAR**ing substitutes.

Careful garages and supply houses recommend Raybestos for **WEAR.** They rank it with the highest-grade gasoline, most efficient lubricants and best-mileage tires.

THE ROYAL EQUIPMENT COMPANY, Bridgeport, Conn

Raybestos

Brake Lining

Sold by over 12,000 Garages

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Announcement to Ford Owners!



Real driving economy at last, dealers making big clean-up!

My company guarantees ***to add 15% to 50% to the gasoline mileage of any Ford.*** **Guarantees that any Ford with the Myle-Mayker will throttle down to less than 4 miles per hour on "high"—practically be free from carbon deposits—will run smoother, have cooler engine and be more silent, more flexible and *easier to start*—will pull better on high gear.**

MyleMayker Co. Eugene F. Kline
PRESIDENT

GREENEBAUM SONS BANK & TRUST CO.
(Capital and Surplus $2,000,000)
Chicago, Aug. 17, 1916
Eugene F. Kline has been known favorably to the officers of this bank for many years, and is considered amply able to make good on every promise to customers.
GREENEBAUM SONS BANK & TRUST CO.

The MyleMayker

Copyright 1916, Myle-Mayker Company

Add the Myle-Mayker to any stock Ford carburetor and you add 15% to 50% to gasoline mileage. **The universal impression that the Ford car is the most economical of cars is a mistaken impression.** As you well know, other cars weighing 500 to 1000 pounds more, are delivering higher gasoline mileage. It's because the carburetor of the Ford is adjusted, normally, for a very rich mixture.

This is **necsesary** for starting and running at the low speeds, but results in **too much gasoline burned at the higher speeds.**

Cut down gasoline one-half turn —save practically 50%

The Myle-Mayker gives to the Ford carburetor tne efficiency of a $25 instrument. Makes the Ford car the economical car it is supposed to be. **Automatically the Myle-Mayker regulates the quantity of air admitted.**

In starting and at slow speeds, just a little air is admitted, and the mixture is rich—as the engine picks up speed, more air is admitted, and less gasoline used.

Easier cranking—less noise—4 miles or less on "high"

You always get a rich mixture for starting, when the Myle-Mayker is on the job. You crank easily at all times. The usual noise is to a large extent quieted. Your motor becomes smooth, quiet and wonderfully flexible. **In one test with an eight-cylinder car** the Ford did everything the other car did except in throttling down. The eight got down to 2 miles—the Ford to 2½.

No hole to drill in manifold— no change of any part

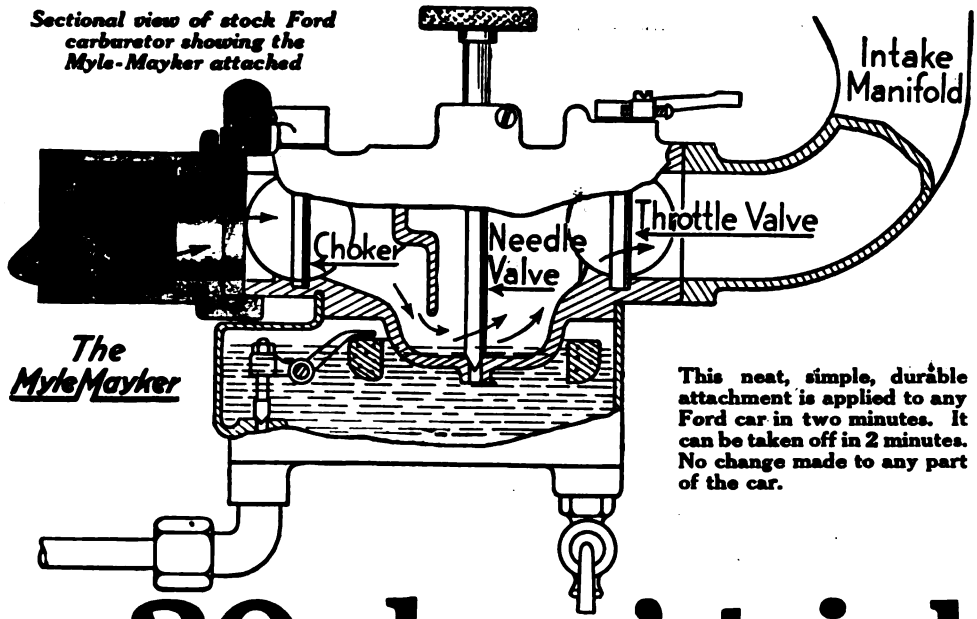
To install the Myle-Mayker doesn't require laying up the car. It's put on with a screw driver in two minutes and taken off just as quickly, and without damage of any kind. No mark left to show it was ever attached. Can be put on one day, to test out the device, and taken off the next for comparison of results.

There is nothing about the Myle-Mayker to wear out, or fail. The position of the car does not effect it, neither does cold, dampness, dryness nor any other condition. It cannot get out of adjustment nor fail to work. It is the only device claiming to effect a gasoline saving, of which this can truthfully be said.

Read big announcement in double page advertisement in September "Motor"

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This neat, simple, durable attachment is applied to any Ford car in two minutes. It can be taken off in 2 minutes. No change made to any part of the car.

Sold on 30 days' trial

Dealers having big repeat business—thousands sold—not one returned

The MyleMayker

Copyright 1916, Myle-Mayker Company

The Myle-Mayker is its **own best salesman.** That's why we make our guarantee so strong, and why we make it so easy for everybody to try it. To prove to your own satisfaction that the Myle-Mayker will do even more than we claim for it, and that your opportunity to make money on this instrument is even more attractive than it appears as you read this advertisement, do this:

Order a sample Myle-Mayker on your business stationery, so that we will know you are a garageman or accessory dealer, (the retail price is $5). As a dealer you get a liberal discount. We will send you a Myle-Mayker, prepaid, together with our price list.

Test it thoroughly in accordance with our instructions or any other way you like.

Make the Myle-Mayker prove to you that it will add 3 to 10 miles per gallon to a Ford car's gasoline mileage—that it will make the car easier to start, smoother running, able to be throttled down to less than 4 miles per hour. If you're not convinced it's a big winner, return it at our expense within 10 days.

If you agree with us that it is a big money-maker for you, send us your order for a dozen and we will send you the other eleven on our regular terms, as shown by price-list.

Don't wait, but test out and prove the Myle-Mayker, and start making money with it

Your chance to make a lot of money

Fill out this coupon, pin to a sheet of your business stationery. Mail today.

State agents—district agents—live dealers wanted everywhere!

Here's the biggest thing ever invented in the way of a gasoline saver. To test it doesn't require mutilating the car. Doesn't require the laying up of the car. Doesn't call for an expensive installation. It is put on by anybody in two minutes and taken off as quickly. Talk about easy sales! This device is the limit! Dealers order second and third lots inside of three weeks or a month.

Just think of it—the Myle-Maker not only wonderfully increases the efficiency of the Ford, but **saves its own cost in a month or two!** It's backed by our **guarantee to do everything we claim for it.** Here's the biggest chance to make a lot of money that has come your way in many a day. You'll be assisted in your sales by powerful national advertising and live dealer co-operation. If you want territory, jump on the first train and come to see us.

Write, phone or wire for representative to call.

MyleMayker Company

Department 9-B 323 E. 33d Street
CHICAGO, ILLINOIS

Do this now!

The Myle-Mayker Co.,
323 E. 33d St.,
Chicago, Ill.

Send one of your Myle-Maykers, prepaid, with the understanding that you guarantee it, when attached to stock Ford carburetor as per instructions, to save gasoline, make the engine easier to start, smoother running, freer from carbon. If not satisfied, I can return at the end of ten days at your expense, otherwise I agree to pay for it at regular price, less your usual trade discount. I am a dealer, and am ordering this Myle-Mayker to test it out with the idea of ordering a trial dozen or more, if it proves satisfactory. Send prices and full information.

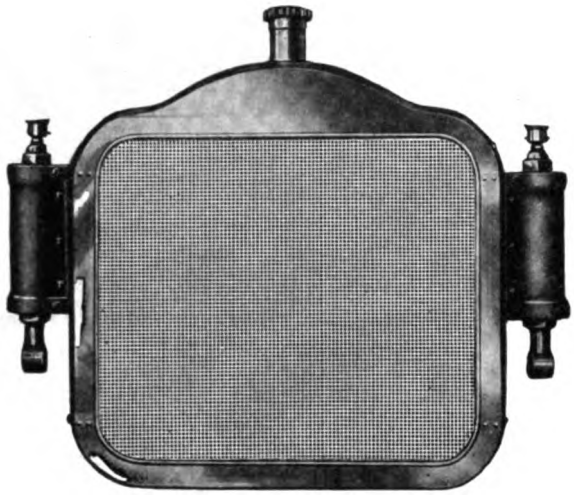
Name of dealer .....

.....

Address in full .....

.....

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FEDDERS QUALITY

—is best exemplified in Trucks.

The Truck Owner wants but one thing—lowest ton mileage cost. But that one thing he **needs**—and invariably demands.

The Truck Manufacturer knows this need and he builds to fill it. He equips his product with parts selected solely for their ability to render long, unremitting Service—Service that is unvarying and absolutely dependable.

Fedders Radiators

—are standard equipment on most of the leading makes of American Trucks—those that lead in quality as well as quantity of production. They have been standard equipment on some of these makes since Fedders Radiators were first brought out—19 years ago.

There is—there can be—only one reason for this—and that reason lies in the ability of Fedders Radiators to deliver

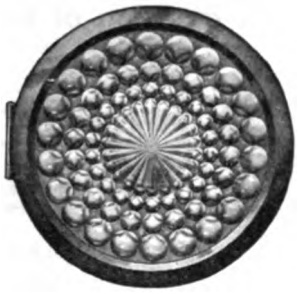
Unequalled Service

FEDDERS MFG. CO.
BUFFALO N. Y.

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just a few dollars will give you a good stock of law-conforming, comfort-giving, safety-assuring, quick-selling

WARNER-LENZ



176 LENSES IN 1

This illustration of the *Warner-Lenz* shows the reason for its efficiency. Other sizes have more or less units than this, but in all of them the ray from the reflector is *distributed* through a great number of small but scientifically constructed lenses.

We are spending thousands of dollars every month to let motorists know about Warner-Lenz. We want you dealers to know about our campaign, too—

And to know that we are behind you and anxious to help you get the most out of this business.

So far 200,000 pairs of Warner-Lenz have been sold in 2 months. This is a sensation in dealer circles.

We want even more progressive partners—men who can help us make Warner-Lenz universal.

We will give you generous discounts, fair treatment, immediate deliveries, constant and courteous service.

As motorists come to a *full* realization of what Warner-Lenz means to them, there are 3,000,000 prospects for us to work on.

Let us get together and work together on this.

It means more money—and pleased customers—to you. It means satisfactory business relations to us.

Mail us this coupon *today* and learn just *what* we have to offer.

The Warner-Lenz Co.
Dept. K., 913 S. Michigan Avenue
Chicago

THE WARNER-LENZ CO. (MW)
918 S. Michigan Ave., Chicago
Dear Sirs: What is your proposition?

Name .....

Address .....

.....(28)

When writing advertisers please mention Motor World

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Announcing the
PITTSFIELD

The keynote of the new Pittsfield Battery Ignition System is in the breaker mechanism of the distributor.

By virtue of its design, an open circuit is permitted, which means that you are using current only when it is required to produce a spark. In addition to that, both the making of the circuit and the breaking of the circuit are positive mechanical operations, neither depending upon the rapidity of the action of the spring.

In this connection, it should be emphasized strongly that trips, hammers and light springs are done away with and a positive unfailing fool-proof action is provided.

Briefly,

The Action of the Breaker Mechanism

is this: As your breaking cam is revolved it first pushes two contacts together, as illustrated in the diagrams, and makes your current, and then in the same cycle the action of the cam breaks the current, the point being that the actions of making and breaking are not dependent at all upon the spring, but rather on the positive mechanical cam action.

Referring to the diagrams again, it will be seen that in Fig. 2 the platinum point attached to lever "B," which is in contact with the platinum point attached to lever "A," is in firm contact, and that even if the spring "B" failed to drop back and break the connection as the cam continued to rotate to the position of Fig. 3, the shoulder of the cam would still raise the spring and platinum contact "A" away from spring and contact "B" so that, as stated above, the action of the mechanism is in no way dependent upon the spring action.

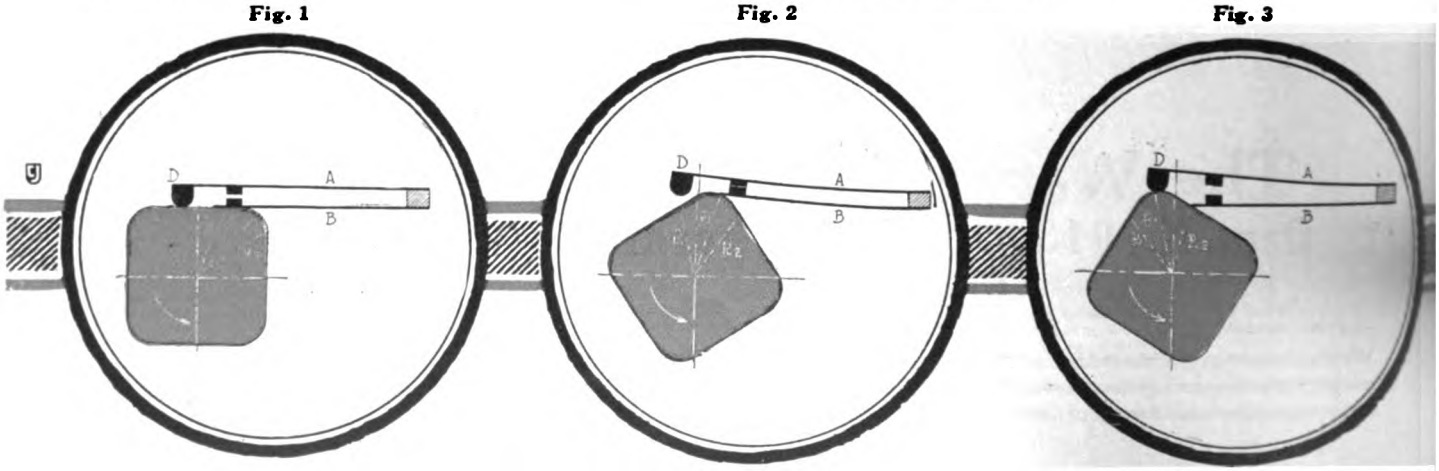
Owing to the short duration of the contact

The Current Consumption Is Exceedingly Small

and the duration of contact is ample to insure a complete building up of the current with consequent hot sparks at speeds greatly in excess of the highest engine demand.

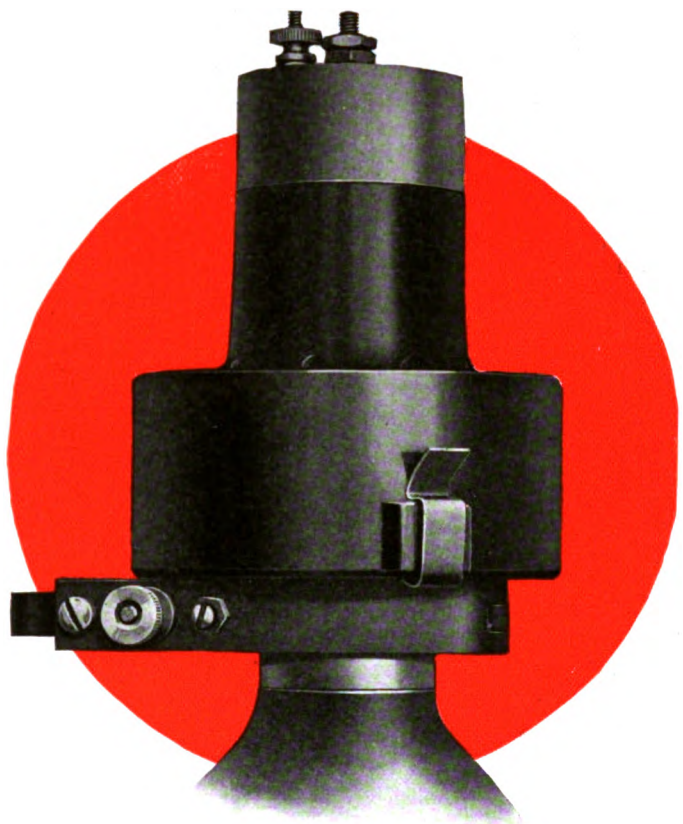
Owing to the simplicity and positive action of the breaker mechanism both electrical and mechanical lags are practically eliminated and the synchronization of the timing is as nearly perfect as is humanly attainable.

Fig. 1 Fig. 2 Fig. 3



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DISTRIBUTOR



SIMPLE, DURABLE, FOOL-PROOF

The whole ignition outfit is exceedingly compact and is made into a single unit, including the coil, so that only one external wire, aside from the spark plug leads, is used. This, of course, is the lead to the battery.

By its very nature the Pittsfield Ignition System assures the most efficient sort of spark, positively and continuously, without the slightest danger of failure, either mechanically or electrically.

PITTSFIELD SPARK COIL CO., PITTSFIELD, MASS.

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When writing ad When writing mention Motor World

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Lexington "Minute Man" SIX $1185

BIG production facilities that merely produce greater quantities of inferior cars are meaningless. But big production facilities that serve the purpose of higher quality at reduced cost are of greatest significance to all car owners and all car dealers. It is in this way, and in this way only, that the automobile industry can make progress—that the owner can get more car per dollar—and that the car dealer can grow and prosper.

When we say that Lexington is one of the big factors in the industry today, we measure the importance of this by what *results* Lexington obtains from its bigness, and not alone because of the number of cars built. You know the advantages big factories have. You know the majority of the cars sold come from the few big factories and the small minority from the many little factories.

Would you consider 5000 expert skilled workmen and an aggregate floor space of scores of acres a big factory?

How many of the big factories you know of *are* this big?

Would you consider an automobile factory *big* that has *close to* it ten large factories devoted exclusively to manufacturing automobile parts?—as close as under one roof?—with aggregate capital of several million?

Do you realize that such a condition exists right here in Connersville? And that this concern is now offering you the chance of a lifetime?

You can appreciate the tremendous buying power of an organization like this—the tremendous saving in *every* part of the car and its manufacture.

And we have only modestly stated the magnitude of our case. We promise a genuine thrill—a big surprise—when we take you into our confidence and explain the powerful forces behind the Lexington car.

Here is a rare business opportunity that successful men will be quick to grasp—appreciating the advantage of marketing a motor car backed by unrivaled facilities, both financial and manufacturing.

The Lexington name—its reputation and its history—is 100 per cent good. But it has been lifted from the crowd of small factories and placed in the front ranks with the few biggest.

The new Lexington is a better car than ever before—but, due to the resources now behind it, it is *selling at a very modest price.*

Lexington-Continental Engine
Six Cylinders En Bloc
40 Horse Power
Moore Multiple Exhaust System
Five Passenger
Aisleway Between Front Seats
Left Drive
Center Control
Genuine Leather Upholstery
116″ Wheelbase
Convex Mud Guards
Over-Size Tires

Price includes full ventilating weather-stripped windshield, speedometer, ammeter, engine-driven tire pump, oil pressure gauge, motometer, electric horn, double-bulb head lamps, trouble lamp, and spare demountable rim.

It means sales like wildfire in every community where we get the right kind of dealer.

Are you that man?

If so, we have many good things to tell you. Just write, or wire, us at once. You will be obligated in no way. Or get on the train and come direct and we promise to "open your eyes" no matter how many big automobile factories you have seen.

And remember this—the Lexington dealer is going to be a bigger money-maker this year than ever before! Our sales methods are as up-to-the-minute as our manufacturing methods.

Deliveries in Rotation of Orders

THE LEXINGTON-HOWARD CO., MFRS., CONNERSVILLE, IND., U. S. A.

Offices and Works: Cor. 18th and Columbia Ave.

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Rie Nie Products

The Most Complete, High-Grade Line of Chemical Accessories Made for the Trade

We Make Every Requisite You Will Ever Need, and Are Equipped to Make Any Special Item for You

The Rie Nie Line is especially desirable both to the Automobile Accessory Jobber and Dealer—First, because every article bears an excellent profit. Second, because each and every Rie Nie product is a rapid seller, giving both dealer and jobber a quick turn-over. Third, the high quality of every article results in a satisfied user, which stimulates confidence in the customer for the dealer, thus bringing him more business. Fourth, the name Rie Nie Products means completeness, simplification of bookkeeping. If there is any article the jobber wants, it is in the Rie Nie line. He does not diversify his orders, but simplifies his bookkeeping by ordering his requirements under one name and from one house.

4 Big Leaders



RIE-NIE
German Radiator Compound

Only one tablespoonful necessary to permanently repair any ordinary leak in any radiator or cooling system. *We guarantee it will not clog the system.* A demonstration has proven that a mend in a water jacket will stand 250 lbs. air pressure after three years' service. Prevents rust and scale formations.

Attractive tins, each...$ .75
Twelve in Carton..... 7.50
Dealer's discount 40%



RIE-NIE
Valve Grinding Compound

Always uniform. Not affected by climatic conditions. Cuts rapidly sticking to the valve seat, but does not grind grooves. Contains no glass or emery. For shop use, three grades—Coarse, Medium, Fine.

Duplex cans, two grades $ .25
Shop size, one grade.... .50
Dealer's discount 40%



RIE-NIE
Auto-Patch

Three ply and fabric. The best patch made. For immediate use without heat or tools. Self Vulcanizing. Layer of cured rubber between layers of raw rubber prevents any possibility of leakage. Mends largest blowout or smallest puncture. Easy to apply and durable.

Patch contains 36 square inches $.50. Dealer's discount 33⅓%.



RIE-NIE
All-In-One Dressing

A black dressing which softens, preserves and water-proofs leather, pantasote and mohair, renews rubber goods and refinishes metal surfaces. Does not form a crust and crack. Sun, heat and dampness do not affect it. Dries in 15 minutes.

½ pts. .....$ .40
Pints ..... .65
Quarts 1.10
½ gallons 2.10
Gallons 4.00
Dealer's discount.....33⅓%

Write for Catalog and Prices on Our 46 Standard Products

Our big line consists of every chemical accessory a dealer has call for, Oils, Enamels, Dressings, Dyes, Greases, Polishes, Soaps, Cements, Shellac, Soldering Paste, Carbon Remover, Carborundum, Graphite (Flaked and Powdered), Paints, Valve Grinding Compounds, Rust Removers, etc.

DURKEE-ATWOOD CO.
MINNEAPOLIS, MINN. U.S.A.

ORDER COUPON

Durkee-Atwood Co., Minneapolis, Minn.

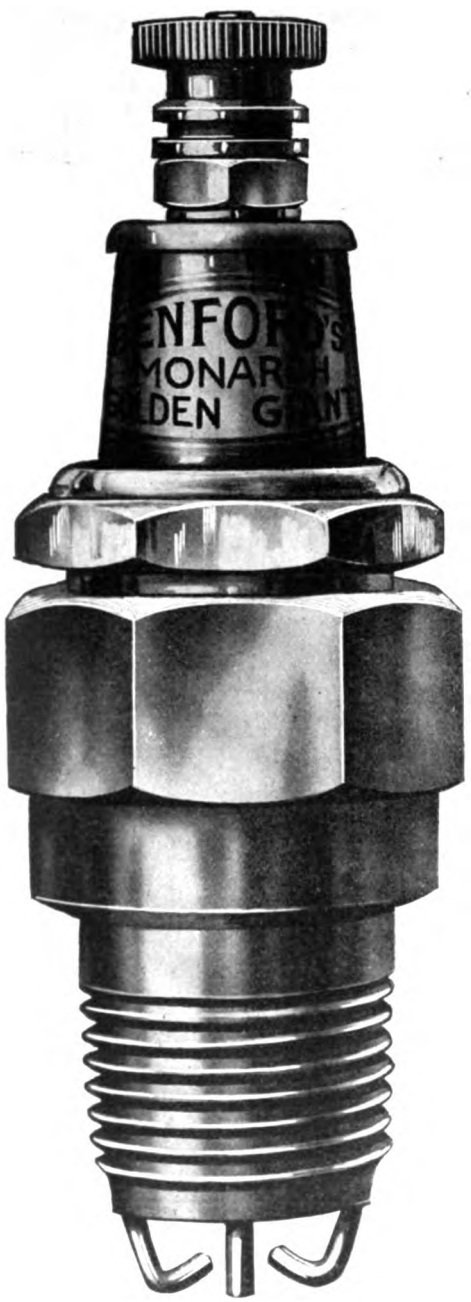
Date.....

You may enter my order to be billed through jobber listed below, for immediate delivery.

German Radiator Compound.....
Valve Grinding Compound.....
Auto-Patch .....
All-In-One-Dressing .....
Dealer's Name .....
Address .....
City .....
Jobber's Name.....City.....

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$50,000 Behind the



The strongest, most progressive, and most influential jobbers in the
These jobbers represent $50,000,000 and upwards of financial strength!
the GOLDEN GIANT into the hands of almost every dealer.
In every city, town or village from coast to coast at least one dealer
has been brought before the mighty three million car owners.

BENFORD'S GOLDEN

THE GOLD P

Julius Andrae & Sons Co., Milwaukee
Albany Hardware & Iron Co., Albany
D. W. Alderman, Jr., Florence, S. C.
Alsten & Goulding Co., Worcester
Auto. Accessories Co., Pittsburgh
Automobile Equipment Co., Detroit
Auto Parts Supply Co., Seattle
Auto Supply Co., Nashville, Tenn.
Archer & Wiggins Co., Portland, Ore.
Automobile Supply Co., Detroit
Berrodin Rubber Co., Philadelphia
J. J. Bantlin & Co., Cincinnati
Barker, Rose & Clinton Co., Elmira
Beals & Co., Buffalo
Beers Bros. Co., Oil City, Pa.
Bright & Co., Reading
Julius Bindrim, Brooklyn, N. Y.
Broadway Auto Equipment Co., Los Angeles, Cal.
Browne Supply Co., Toledo, Ohio
H. F. Brownell & Co., Sioux Falls, S.D.
Geo. B. Carpenter & Co., Chicago
Cahall Supply Co., Philadelphia
Cameron & Barkley Co., Charleston, S. C.
Chandler-Dunlap Co., Seattle
Canton Hardware Co., Canton, O.
Campbell Iron Co., St. Louis
Carolinas Automobile Supply House, Charlotte, N. C.
John S. Cox, Terre Haute
Churchill Drug Co., Cedar Rapids
Churchill Drug Co., Burlington
Chicago Auto Supply House, Chicago
Fred Campbell, St. Louis
Geo. Dehier, Jr., Louisville
Des Moines Auto Sup. Co., Des Moines
Robt. Donahue I&HCo., Burlington, Ia.
Elyea-Austell Co., Atlanta
Elec. Supply & Equip. Co., Hartford
Darling Automobile Co., Auburn, Me.
The Equipment Co., Kansas City
Ft. Wayne Iron Store Co., Ft. W., Ind.
Farmer Auto Co., St. Joseph, Mo.
C. D. Franke & Co., Charleston, S. C.
B. S. Green Co., Bloomington, Ill.
Ph. Gross Hardware Co., Milwaukee
Graham-Seltzer Co., Peoria
Geller, Ward&Hasner H.Co., St. Louis
J. D. Grant, Fargo, N. Dak.
Hardware & Supply Co., Akron, O.
H. T. Hearsey & Co., Indianapolis
Henkle & Joyce Hd. Co., Lincoln, Neb.
F. Hersh Hdw. Co., Allentown, Pa.
Hockaday Auto Sup. Co., Wichita, Kan.
Holley-Mason Hdw. Co., Spokane
A. M. Holter Hdw. Co., Helena, Mont.
Henry Horton, New Haven
H-H-H-Tire & Mfg. Co., Newark, N. J.
W. E. & B. J. Harmon, Portland, Me.
Indianapolis Saddlery Co., Indianap.
Justus & Parker Co., Columbus, O.
Jackson Motor Supply Co., Pittsburgh
Johnstown Auto. Co., Johnstown, Pa.
Janney, Semple, Hill&Co., Minneapolis
E. D. Kimball & Co., Chicago

Everybody loves a winner! Hitch your wagon to our

BENFORD MANUF

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ited States are selling Golden Giant Spark Plugs.
y wield a mighty selling power by means of this vast following—a selling power that has brought

already purchased Golden Giants from some one of these jobbers. In this way the Gold-plated Plug

GIANT MONARCH

ATED PLUG

Kansas City Auto Sup. Co., Kns. City
Korsmeyer Co., Lincoln, Neb.
Kelley-How-Thomson Co., Duluth
Linscott Supply Co., Boston
L.&L. Motor Sup. Co., Sioux Falls, S.D.
Liberty Oil Co., Des Moines
Louisville Auto Supply Co., Louisville
E. M. Long & Sons, Cadiz, Ohio
Manufacturers Supplies Co., Phila.
The M. & M. Co., Cleveland
Martin-Evans Co., Brooklyn
Mossman, Yarnelle & Co., Ft. Wayne, Ind.
Motor Car Supply Co., Chicago
Motor Car Equipment Co., New York City, N. Y.
Motor Car Equipment Co., Boston, Mass.
Motor Car Equipment Co., Newark, N. J.
Motor & Machinists Supply Co., Kansas City, Mo.
Morehouse & Wells Co., Decatur, Ill.
Michigan Tire Co., Grand Rapids
Minneapolis Iron Store Co., Minneapolis, Minn.
Geo. W. Myers, Harrisburg
Morley, Murphy H.Co., Green Bay, Wis.
Nat. Elec. Sup. Co., Washington, D.C.
Geo. W. Nock Co., Inc., Philadelphia
Nicols, Dean & Gregg, St. Paul
Neb.-Buick Auto Co., Lincoln, Neb.
Northwestern Auto Supply Co., Billings, Mont.
O'Dell Hdw. Co., Greensboro, N. C.
The Olmsted Co., Syracuse
Ozburn Auto Supply Co., Memphis, Tenn.
S. S. Parmelee, Macon, Ga.
Peake Auto Supply Co., Kansas City
Pacific Net & Twine Co., Seattle
Phoenix Auto Supply Co., St. Louis
Potter Hoy Hdw. Co., Bellfonte, Pa.
W. E. Pruden Hdw. Co., N. Y. City
Repass Auto Co., Waterloo, Ia.
Syd. B. Roby Co., Rochester
Ross Frazer Iron Co., St. Joseph
Robinson Heavy Hdw. Co., St. Jo., Mo.
Ratcliff-Sanders Gro. Co., Tulsa, Okla.
W. H. Rowerdink & Son, Rochester
H. C. Roberts Elec. Co., Philadelphia
Roehm & Davison Co., Detroit
Rose-Lyon Hdw. Co., Little Rock
Scheffer & Rossum Co., St. Paul
L. F. Schoelkopf, Madison, Wis.
Harrison Smith Co., Oklahoma City
Salina Auto Sup. Co., Salina, Kan.
Severin Tire & Supply Co., Oklahoma City, Okla.
Chas. B. Scott Co., Scranton
Shadbolt & Boyd Iron Co., Milwaukee
C. J. Smith & Co., St. Paul
Sieg Iron Co., Davenport
Sioux City Iron Co., Sioux City, Ia.
Shapleigh Hdw. Co., St. Louis
G. Sommers & Co., St. Paul
Stambaugh & Thompson Co., Youngstown, O.
Strauss-Dilcher A. Sup. Co., Buffalo
Strauss-Dilcher Auto Sup. Co., Erie
Townley Metal & H. Co., Kansas City
Talman Auto Supply Co., Richmond
Tenk Hardware Co., Quincy, Ill.
Thomasville Motor Co., Thomasville, Ga.
Tisch Auto Supply Co., Grand Rapids
United States Rubber Co., Buffalo
United States Rubber Co., Rochester
United States Rubber Co., Syracuse
United States Rubber Co., Boston
Union Supply Co., Toledo
Universal Accessories Co., Indianapolis.
United Auto Sup. Co., San Francisco
Utica Cycle Co., Utica
John Van Benschoten, Poughkeepsie
Fred L. Waldron, Ltd., Honolulu
Waite Auto Supply Co., Providence
Western H. & Sup. Co., Portland, Ore.
Western Supplies Co., Denver
Western Auto Supply Co., San Diego
Weinstock-Nichols Co., San Francisco
Weinstock-Nichols Co., Los Angeles
Weinstock-Nichols Co., Oakland, Cal.
Western Auto Sup. Co., Kansas City
Whiton Hardware Co., Seattle
Whittemore-Sim Co., New York City
Williams Hardware Co., Streator, Ill.
Jos. Woodwell Co., Pittsburgh

ır! *Order from your jobber or direct from us.*

ACTURING CO. Mt. Vernon, N.Y.

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GOODRICH AUTO SWITCH WITH YALE LOCK For Fords



Get This Display For Your Counter

It's Free

With every shipment of a dozen or more Goodrich Lockswitches we are now including an attractive display stand printed in colors, suitable for counter or window.

The stand measures 11 by 13¼ inches and is so designed that an actual Goodrich Lockswitch can be attached to it and operated to show just how the lock works and to demonstrate just how easily it is attached.

It Makes Sales

Many sales which you will never otherwise make can be put across by this counter display. Every Ford owner is interested in a safe, dependable lock which cannot be picked, bridged or removed. This counter demonstrator will attract attention and enable customers to make their own investigations, without any effort or attention on your part. Let customers sell themselves—you ring the cash register.

No Better Lock Made

We have reason to believe that the Goodrich Lockswitch with Yale Lock (formerly known as B. M. Ford Switchlock) is the most popular selling switchlock for Fords made.

A great many thousands are in use and each week our sales grow larger and larger.

The reason for the constantly increasing popularity of this Lockswitch must be attributed to its patented construction, which makes it utterly impossible for thief or joy rider to pick or remove it from the metal coil box to which it is attached.

If you want to handle the best lock—get the Goodrich. Buy from your regular jobber or direct. Send in your order now for your first dozen. The counter demonstrator will sell them for you at a handsome profit in double quick time.

Goodrich Accessory Association

811 Widener Building **Philadelphia**

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26 Extra Features

Mitchell MID-YEAR MODEL

$1325 F. o. b. Racine

The Springfield Type

In our new line of closed bodies we include the Springfield Type.

That is a Sedan with seats for seven, and with all the closed-car luxuries. But the plate-glass windows disappear. Then the sides are entirely open, and you have a Touring Car.

This type of car, for all months and all weathers, is a coming type, we think. So is the Mitchell Cabriolet—a fine coupe which changes quickly to an open Roadster.

John W. Bate's Idea

The Mitchell bodies, like the Mitchell chassis, are directed by John W. Bate. They all represent his ideas of efficiency.

In the Mitchell closed bodies his idea is this: These are luxury models, bought by folks who look for elegance, and who know good taste.

The Mitchell is as fine a car as these folks can buy. So the bodies should include all that daintiness demands.

In the Mitchell luxury models —the Limousine, Coupe, Sedan and Cabriolet — you will see that idea carried out to the limit.

Things Others Omit

The Mid-Year Mitchell has 26 extras, most of which all other cars omit. It has 73 new conceptions, all added within a year.

It has more drop forgings and steel stampings than any other car in the world.

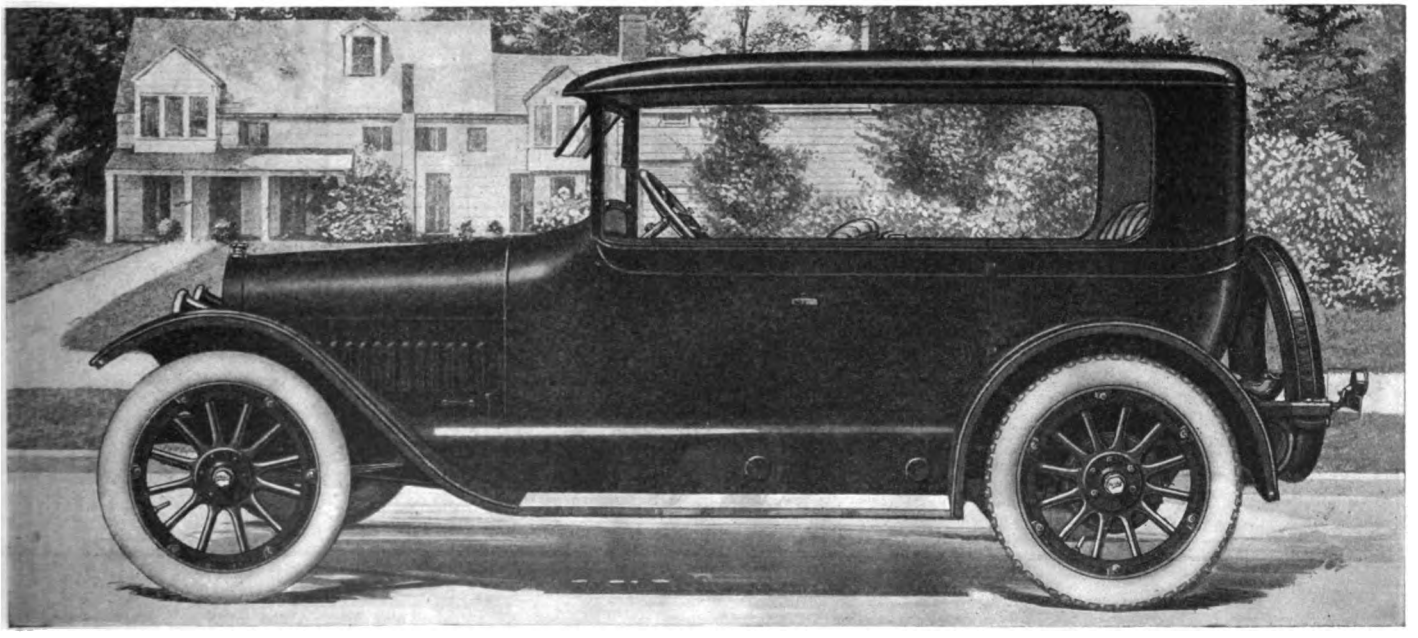
The same liberal ideas are carried out in our closed cars. Nothing is skimped. No attractive idea is omitted. We carefully watch the costliest cars in the world to miss no dainty touches.

We afford all these at the Mitchell price because of our factory efficiency. John W. Bate, in this model plant, has cut factory costs 50 per cent. And the savings pay for the things that buyers want.

$1325 F. o. b. Racine
For 5-Passenger Touring Car or 3-Passenger Roadster
7-Passenger Touring Body, $35 Extra
High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features. Also five types of closed bodies.

The more you know of the Mitchell the more you will want this car. The more you know of the policies behind it, the more you will applaud them.

Mitchell Motors Company, Inc.
Racine, Wis., U. S. A.



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PALMER SERVICE PM DEPENDABILITY MOORE TRUCKS

The Truck of Proven Quality

—is the Palmer-Moore.

It fills to a "T" the need that is at once the largest and most pressing in the truck field. It

MEETS THE BIG DEMAND FOR A TRUCK OF ONE TON OR LESS CAPACITY

The Palmer-Moore is built in 2 models—¾-ton and 1-ton—it sells at a very reasonable price considering the unusually high character of its design and assembled parts.

The Palmer-Moore, with its exclusive Rear Spring Suspension guarding the most fragile loads,

EXACTLY SOLVES THE MERCHANT'S DELIVERY PROBLEM

and gives the Dealer a selling opportunity not to be denied.

This applies not only to Truck Dealers (who are already reaping a rich harvest with this truck), but also to the Pleasure Car Dealers, who find the Palmer-Moore an ideal vehicle for their entrance into the truck field.

IF YOU DO NOT KNOW

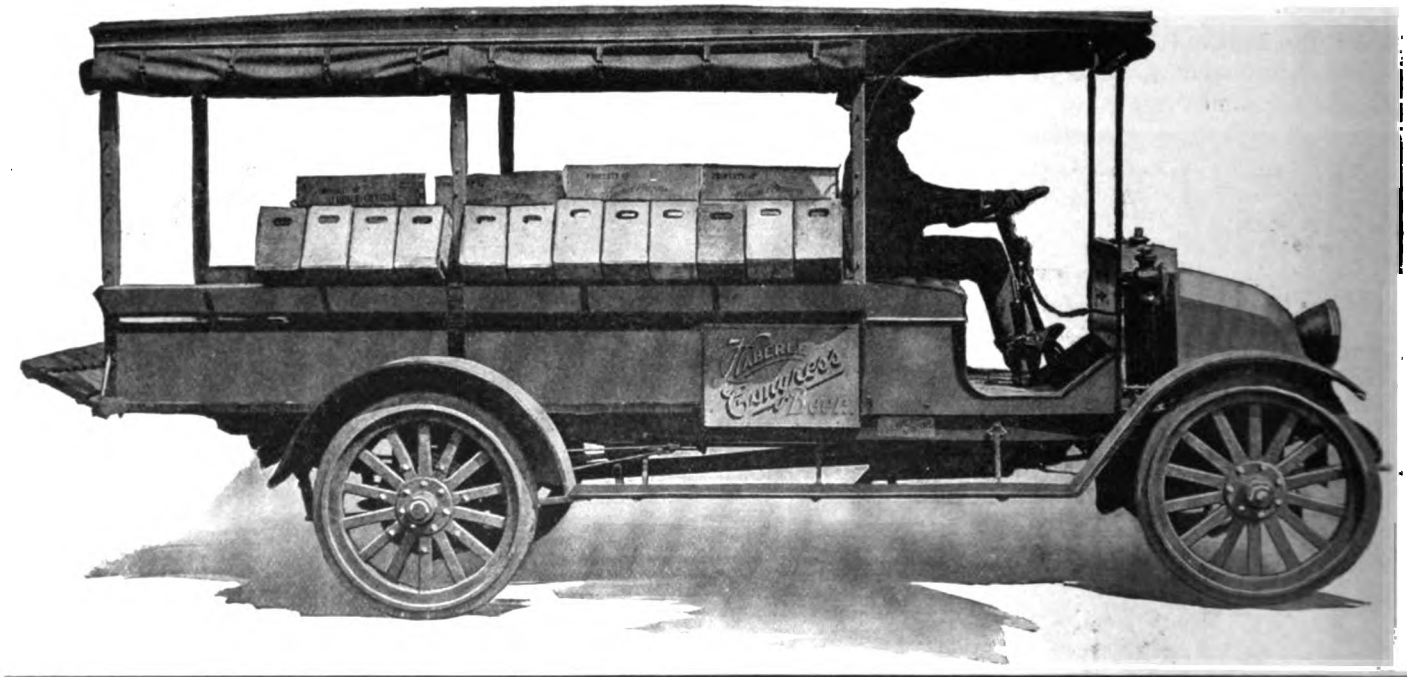
just how *very* good the Truck Field looks these days write us for information that will open your eyes wide.

Our particular distributing proposition is most attractive.

¾-ton Model K Chassis.....$1150
1-ton Model M Chassis..... 1350

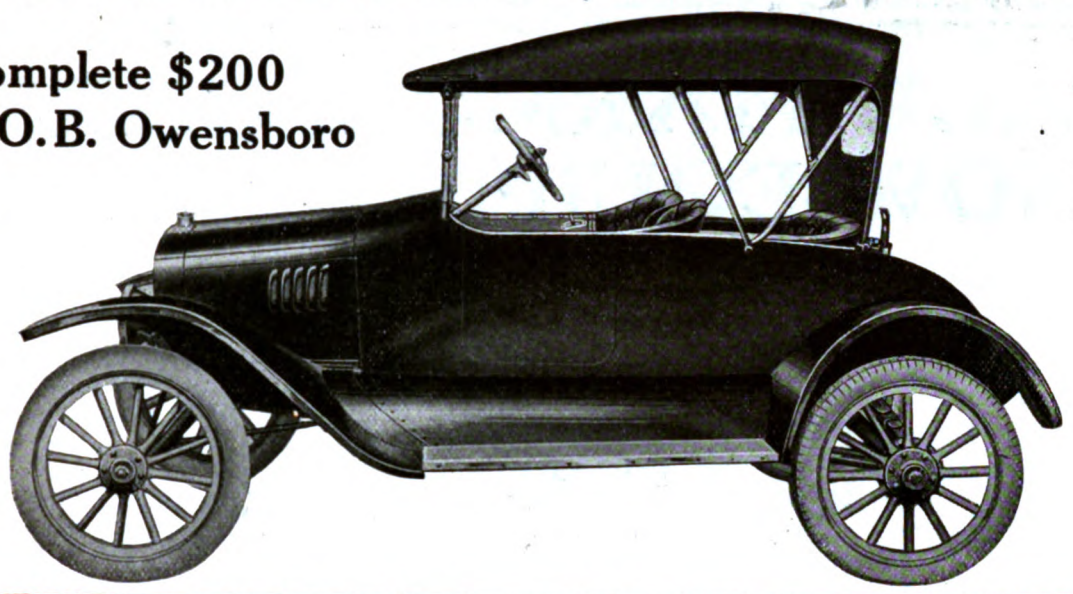
PALMER-MOORE COMPANY

100-120 North Geddes St. Syracuse, N. Y.



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Complete $200
F.O.B. Owensboro



Amesbuilt 3-Passenger Cloverleaf Body For Ford Cars

The Body That Goes With the Year

Five years ago you did not need AMESBUILT Bodies for Ford cars—because in those days Ford bodies were in style. Today the basic lines are out of date—all but Ford mechanism has lost its individuality.

The AMESBUILT 3-Passenger Cloverleaf Body is the latest 1916 style throughout. Most up-to-date roadster body supplied for or with any car selling within several hundred dollars of the combined price of Ford mechanism plus AMESBUILT Body. It is big and roomy, standardly equipped with:

One-man silk mohair top and Jiffy curtains; **Cowl fitting, folding, rain vision,** ventilating windshield; aluminum bound running board; gasoline tank; streamline hood; bull nose radiator shell; crown fenders, and all necessary attachments. Deep Brewster green or glossy black.

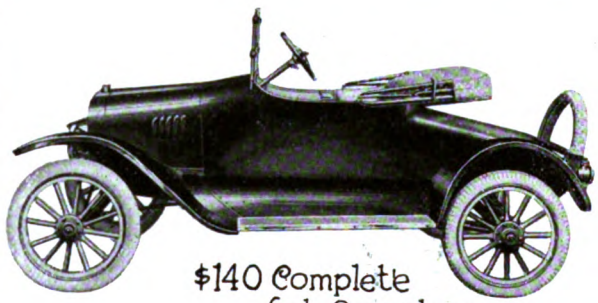
The AMESBUILT Streamline Roadster Body (Cut No. 2) is big, comfortable, roomy. Plenty of leg room. Deep, quality upholstery, 20-gauge steel streamline construction. Complete, $140, f.o.b. Owensboro, Ky.

The AMESBUILT Lotus Racer Body (Cut No. 3) is built for speed. Belongs on the Ford car of every true sportsman motorist. Complete, $97.50, f.o.b. Owensboro, Ky.

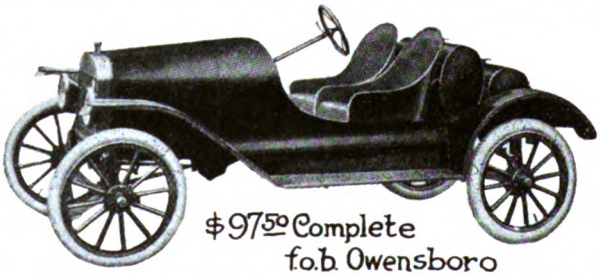
Write for AMES list of commercial, roadster, touring and racing bodies for Ford cars **ready to put on at home.**

AMES DEALERS KNOW NOTHING BUT SUCCESS, WITH PROFITS

THE F. A. AMES CO., INC.
OWENSBORO, KY.



$140 Complete
f.o.b. Owensboro



$97.50 Complete
f.o.b. Owensboro

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ALL MARMON CARS NOW EQUIPPED WITH

U. S.

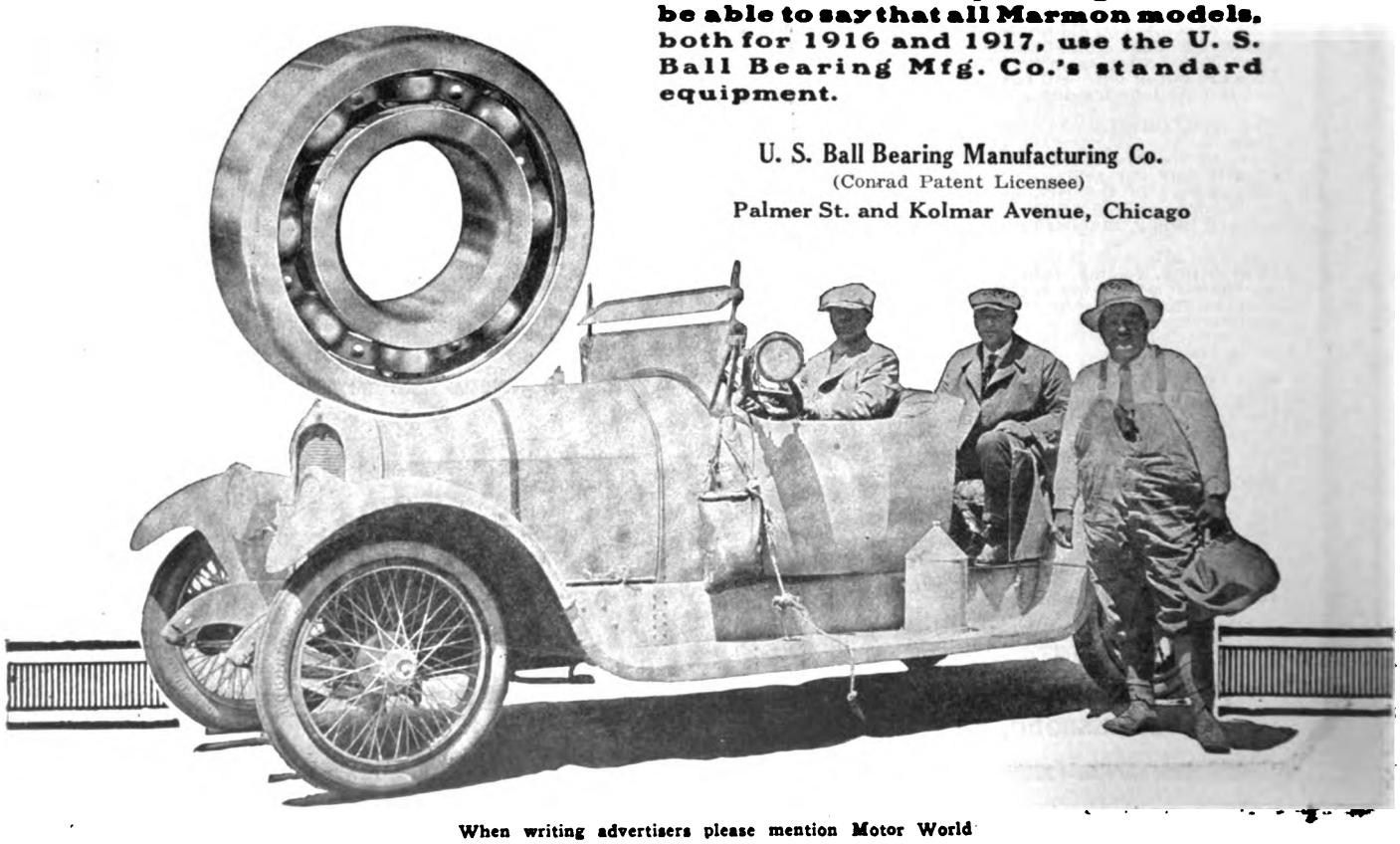
BALL BEARINGS

Ball Bearings again played an important part in setting up a new speed and endurance record when a stock Marmon 34 established a new trans-continental record of 5 days 18 hours and 30 minutes from New York to San Francisco.

For this reason it is pleasing for us to be able to say that all Marmon models, both for 1916 and 1917, use the U. S. Ball Bearing Mfg. Co.'s standard equipment.

U. S. Ball Bearing Manufacturing Co.
(Conrad Patent Licensee)
Palmer St. and Kolmar Avenue, Chicago

Marmon Trans-Continental Record Breaker



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JOHNSON CARBURETOR

Made in Detroit—the Hub of the Automobile Industry—and Used the World Over



It Marks the Dawn of a New Era in Carburetion History

JOHNSON COMPANY
Makers of Superfine Instruments of Carburetion
Detroit, Michigan

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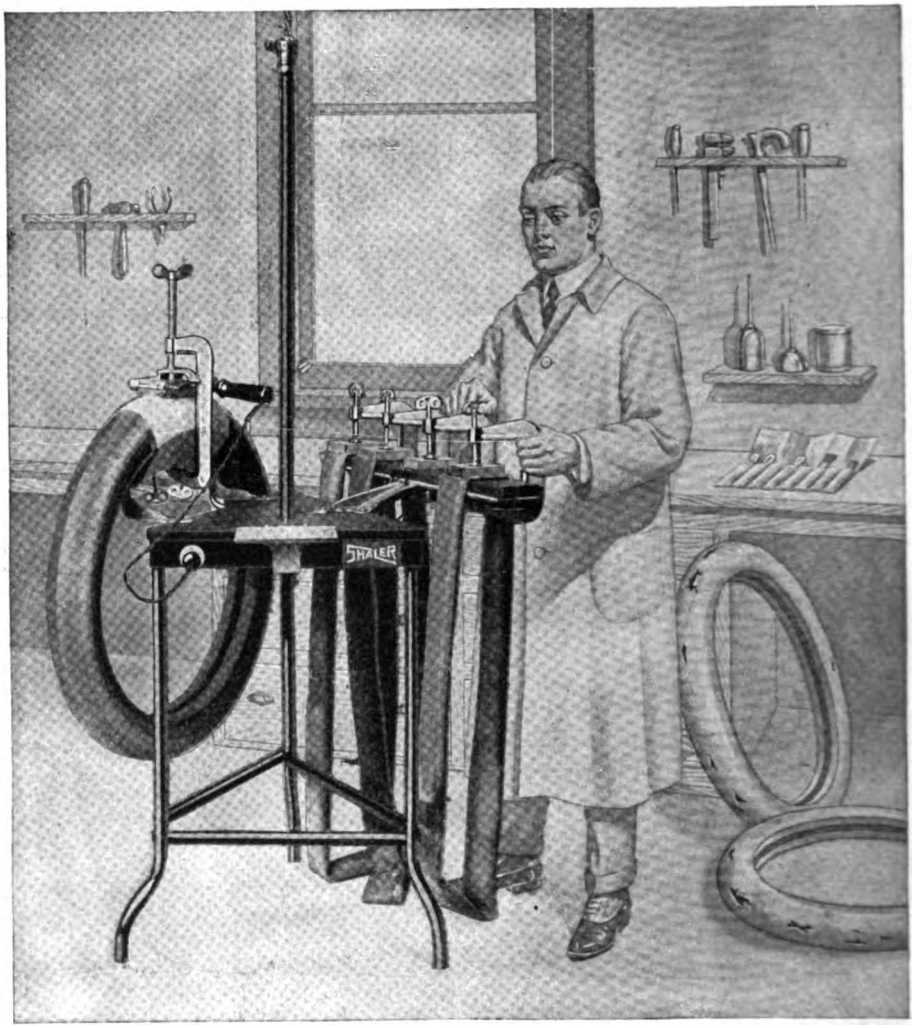
SHALER

Electric

Shop Vulcanizers

$60

Subject to Trade Discount



A Money Maker for Every Garage

Your garage, where every part of the automobile is repaired and cared for, is the logical place to mend tires. Thousands of ambitious garage owners realize it and are increasing their revenue as a result. They utilize the spare time of their help thereby reducing their overhead expense.

Every car you store, repair or adjust means eight prospective tire repair jobs because every car means eight tires per year on the average. These tires need daily attention because they blow out or puncture constantly.

Wrapped Tread Method

This simplifies tire repairing and makes every casing and tube repair perfect and permanent. It is the same method that is used and indorsed by the big tire makers. The Shaler is acknowledged to do better work than the high priced complicated machines.

It is so easy to repair tires the Shaler way that anybody who can clean or wash a car can operate a Shaler the first time and make perfect repairs. It heats from city electric light—uses very little current and requires little bench room.

Automatic Temperature Control

This, together with thermostat attachment, is an exclusive Shaler feature that controls and maintains the temperature of the Vulcanizer exactly at the right point for every type of repair without watching or regulating and without fear of overcuring or undercuring the tire.

Tubes can be repaired simultaneously with casings yet each unit is complete in itself and may be used independently. In casing repairs the Shaler retains the original pattern of any non-skid tread and makes the repair the strongest part of the tire.

Write Today for Complete Catalog

Send at once for the new Shaler Catalog of Shop Vulcanizers and investigate this extra avenue of profit for garages. You'll be surprised how easily and quickly you can add to your revenue. Steam heated vulcanizers furnished if you have no electric current. Mail your letter tonight.

C. A. SHALER CO., 429 Fourth St., Waupun, Wis.

The Largest Manufacturers of Vulcanizers in the World

Canadian Distributors: JOHN MILLEN & SON, Limited, Toronto, Winnipeg, Montreal, Vancouver.

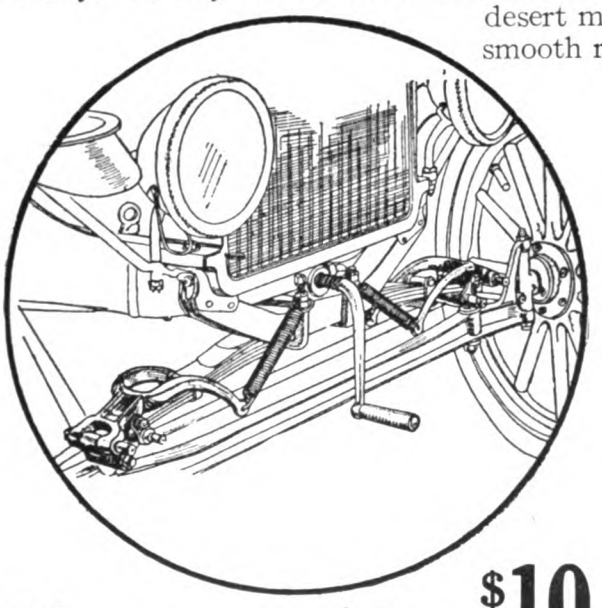
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THE government mail carrier, crossing the Syrian Desert from Bagdad to Damascus on his racing camel, wraps himself cocoon-wise in dozens of yards of linen, to act as shock absorber against the jouncing of his mount. And the camel has velvety padded hoofs and travels in the softest of sand.

Don't Let Your Ford Car Ride Like a Racing Camel

If it jolts and jars over roads that are rough, profit by the experience of the desert mail man, and wrap yourself up in the smooth running qualities of



THE ORIGINAL

W & C

Double Arm Shock Absorbers

that give the final touch of easy riding to rubber shod Fords, traveling on boulevard or country road.

W & C Shock Absorbers are cantilever springs, with action like cantilever suspension on high-priced cars. They transform sharp jerks and bounds into undulating swells that give your Ford the restful motion owners of heavy cars like to boast about.

Get acquainted with the resiliency of W & C Shock Absorbers by equipping your Ford today. No other shock absorber will give you the same results.

We grant exclusive territory to thoroughly high-grade dealers. Write or wire today.

Price per set of four $10

Manufactured by

PHILIP H. WEBBER & COMPANY

HOOPESTON ILLINOIS

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FOSTER
OWL LIGHT

Why?

Why do the finest American and foreign cars use OWL Lights almost exclusively?

Why are more OWL Lights used on such cars than all other makes of searchlights combined?

Why are the personal cars of the country's society leaders OWL Lighted?

Why are the cars of America's most prominent business men OWL Equipped?

The answers to these questions immediately suggest themselves, the first time you *see* and *use* an OWL Light.

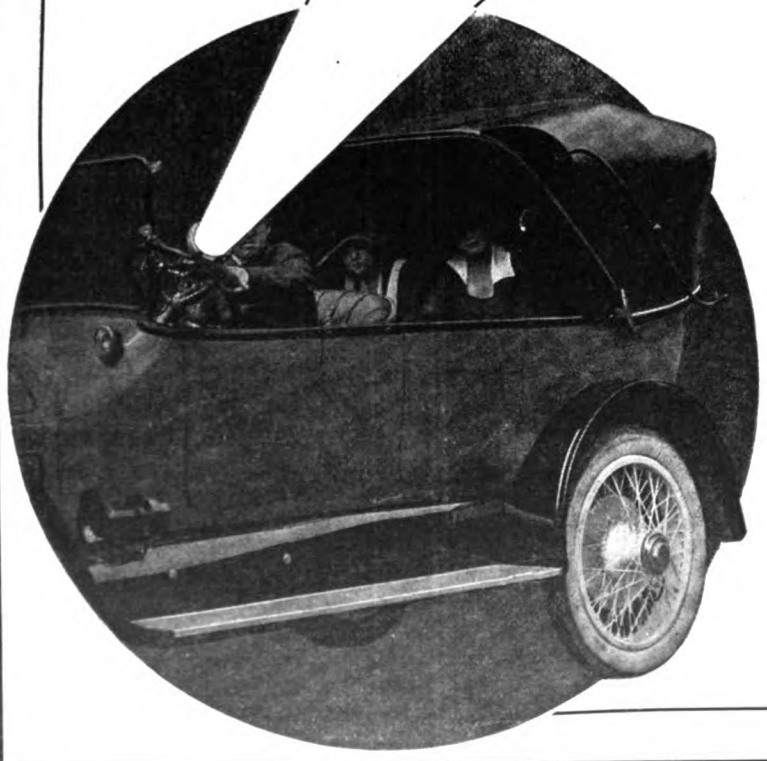
Our 10 day money-back trial gives you the opportunity to investigate the superior features of the OWL Light with no obligation on your part. Ask your dealer, or write direct for full information. Handsome descriptive booklet sent free on request.

NOW ONLY $5



BETTER THAN EVER

Sold on 10 Days' Trial—*Write*



Consider that the new OWL Light at the new price is in many respects a more powerful if not a more handsomely fitted searchlight than the $7.50 model which last year set the quality standard in the searchlight field.

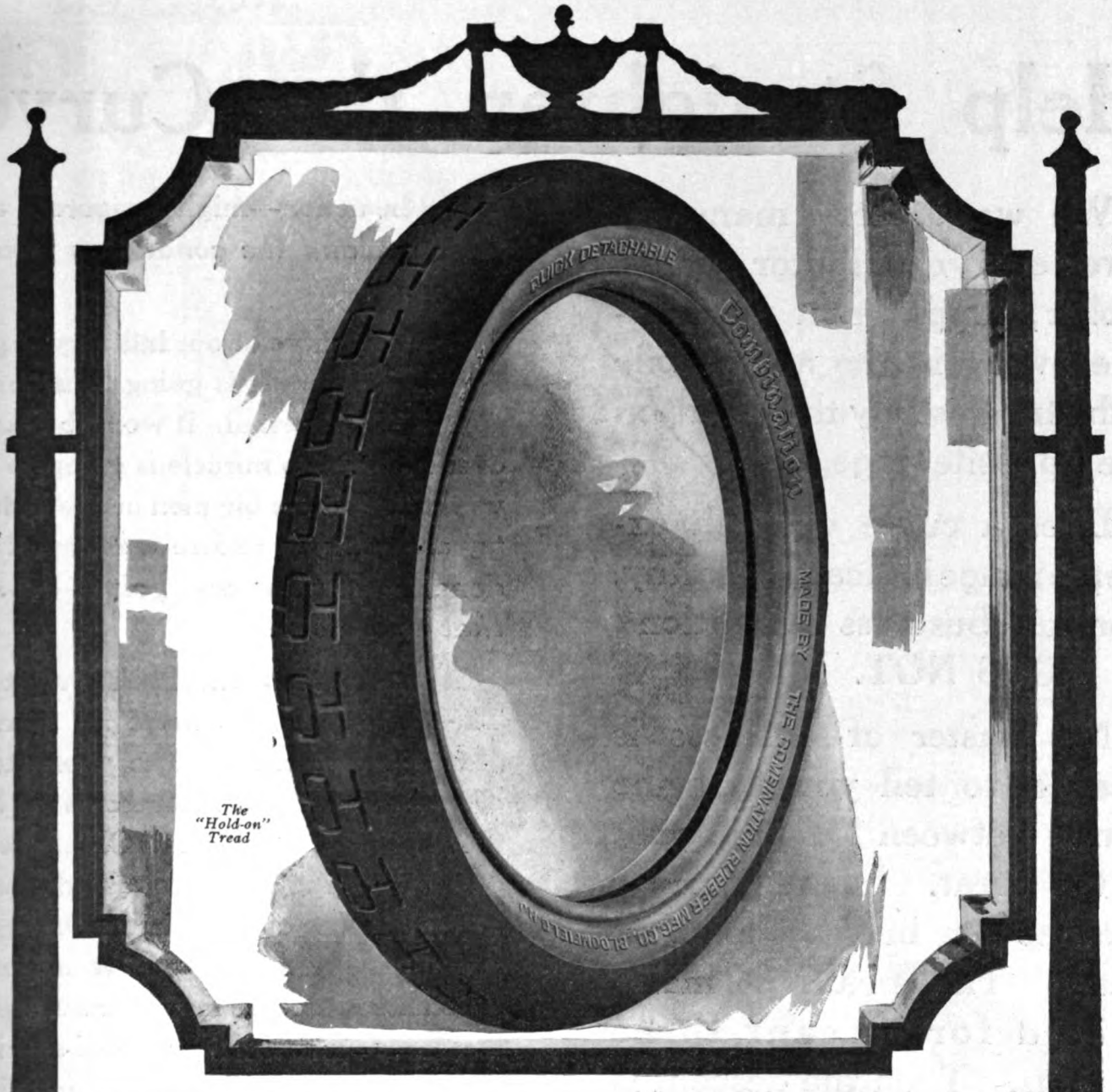
The OWL Light adds to the appearance of any make of car. By means of its clean-cut, positive action swivel the OWL Light stays in any position you put it. This patented Foster Universal Swivel can be obtained on no other searchlight. Look for this exclusive feature—demand it.

In ordering, state make and model of car, also battery voltage.

DEALERS: Wire or write for interesting proposition today.

C. H. Foster Accessories Co.
2303 Michigan Boulevard
Chicago, Ill.

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The "Hold-on" Tread

A REFLECTION OF MERIT

Fifty years' experience, knowledge of fabrics, of workmen, and of the rubber craft, have given us the power to excel. This power has found expression in

Combination Tires

They last. They run smoother than "bumpy" tires, and hang tighter to slippery pavements. Their anti-skid feature works best when most needed.

We know so well how far they outrun our guarantee that when one *is* brought in for adjustment we make good at once without a murmur.

DEALERS: We have a few openings left.
Write for our exclusive territory proposition.

THE COMBINATION RUBBER MFG. CO.

BLOOMFIELD Makers of High Grade Rubber Products for 50 years **NEW JERSEY**

"A Combination That Can't Be Beat"

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Help Straighten the Curve

We want every manufacturer, every distributor, dealer, jobber, supply man and garage owner in the automobile industry to study the chart on the opposite page.

Does a curve of such extreme range indicate a healthy, normal business condition? IT DOES NOT.

No master of business is needed to tell you that the range between low and peak is too great. In the summer months the business is at its peak. The peak is maintained for a scant three months. Then the descent is rapid—alarmingly rapid. It means disorganization and loss of efficiency in thousands of agencies, garages and supply stores throughout the United States—*and at the expense of the industry.*

If the business curve of the steel, the railway, or any of the other big industries, showed as grotesquely as does this automobile business curve there would be action—mighty vigorous action, too, *and the conditions would change.*

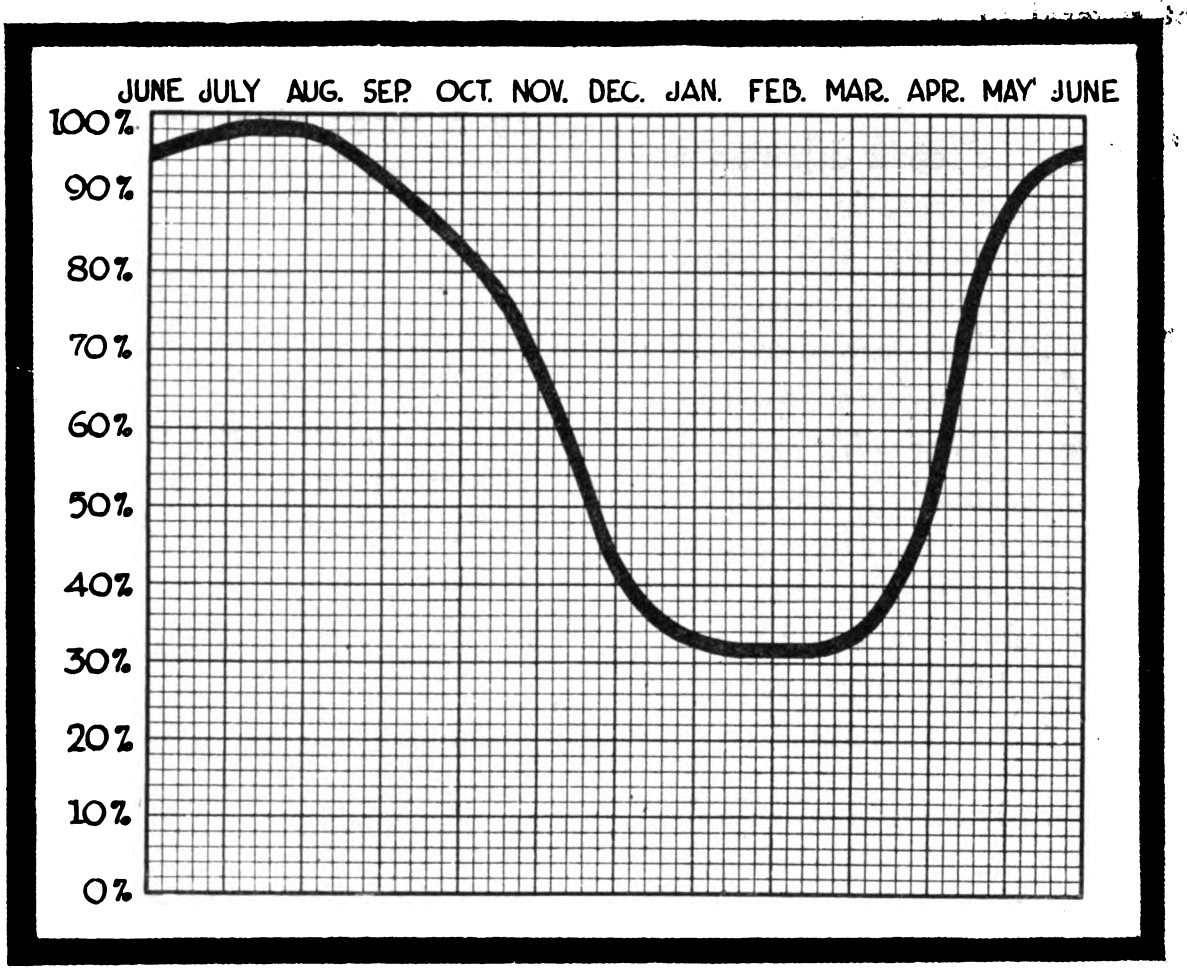
And the curve of our industry is going to change. It is going to become more nearly normal. It won't be done over night. No miracle is going to be worked. But the big men in this industry are going to realize what must be done, *and they are going to see that it is done.*

Winter business must be stimulated. The deficit months must be turned into profit months. The promotion of volume winter business is a big thought, and MOTOR WORLD welcomes the opportunity to take the lead in the building of a sentiment throughout the industry that will result in a substantial increase in winter business. It is a big step in our policy of serving the trade we represent in a practical and sound way.

We announce a WINTER BUSINESS NUMBER. This special issue will be but a start for the accomplishment of an important object in which every member of the trade (from the biggest manufacturer to the smallest dealer and garageman) is mightily interested.

The date upon which this issue is to appear will be October 11, 1916—just in advance of the winter season, so that

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the initial stimulant to keep the wheels turning and all hands working can be taken up and carried forward by every member of the industry.

One of the big features in this issue will be a complete report of the National Association of Automobile Accessory Jobbers convention at St. Louis.

For months we have been planning this campaign for winter business. We have been in direct communication with leading manufacturers, jobbers, retailers, garage and repairshop owners, district managers, road salesmen, etc. Have obtained records of valuable winter business experience and success enjoyed by these men in different parts of the country.

And we are going to tell every other dealer in the country how he may keep going during the winter months—how he can keep his organization intact—how he may *turn deficit months into profit months.*

The dealer will be shown how to sell cars, both new and used, for winter or spring delivery—and how to get his money, or most of it, in the winter time. In this connection a very interesting presentation of successful financing methods will be made.

Dealers can get all the money they need to carry cars for spring delivery. How? We are going to tell them the

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details of several successful financing plans.

How to keep the repair department fully organized and operating to profitable advantage during the winter months has been another serious problem for the dealer and garageman. It can be done. It is being done in ever so many instances. It is possible in nearly every instance. *How?* Thousands of dealers will get the answer in the forthcoming Winter Business Number. The answer is not only in favor of the repairshop owner, but it also promotes an advantage to the car owner.

Of course, a big section will be devoted to the successful selling of accessories in the winter season. The manner in which this important subject is to be handled will be of absorbing interest.

Manufacturers who use the advertising section of this issue are particularly requested to feature winter merchandise thoughts. For instance: a shock absorber is especially desirable when snow makes the streets and roads bumpy, but has anybody ever seen this point brought out in winter advertising by a shock absorber manufacturer? The point illustrates the general tone of all copy.

Not only will MOTOR WORLD'S big Winter Business Number show the dealer how to make more money during the winter, but it will be one more step in the mission of making him *a better merchant, a better business man.*

We ask every manufacturer, jobber and dealer in the country to continue their co-operation with our efforts so that the first annual Winter Business Number may score one hundred per cent success for the industry. Let's all work together. Let's straighten the business curve of the automobile industry.

If you have a message for the trade we invite you to use representative space in this issue. Fill in the coupon below and mail it now to:

MOTOR WORLD
239 West 39th Street, New York City

SPACE RESERVATION

City....., Date....., 1916

MOTOR WORLD, 239 W. 39th St., New York

We are interested in your campaign for the promotion of Winter Business. In your big Winter Business Number we wish our advertisement to appear. Please reserve for our use ..... page ....., for which we agree to pay regular rates.

Name .....

Address .....

Note: Advertising rates will not be increased for this special issue.

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Extraordinary Lift and Overhang

—has the Hilite Portable Floor Crane

With light steel superstructure and heavy cast iron base, its center of gravity is near the floor, preventing top-heaviness and giving it the high lift and deep overhang required in Garages and Shops. The only crane possessing these features, it is lighter, easier to handle and stronger than other cranes. Its trussed Cantilever (bridge type) construction is the strongest known. It is a necessity and a big labor saver in every garage.

No.	Cap.	Lift	Over-hang	Base high	Base wide	Wgt.	Price
66	1-ton	6 ft. 6 in.	38 in.	6 in.	30 in.	425	$64.00
76	1-ton	7 ft. 0 in.	33 in.	6 in.	30 in.	445	$66.00
80	2-ton	7 ft. 6 in.	36 in.	7¼ in.	36 in.	575	$82.00

($14.00 less without lifting device)

The United Engine & Mfg. Co.

"Pioneers in Garage Equipment"

Hanover, Penn.

THE Manley EQUIPMENT

Give Your Motor a Chance!

Practically all motors are good, but certainly you know that a good motor without good ignition cannot do itself justice.

You may have noticed a hesitating miss or skip, or hard cranking, or slow pick-up, or just plain cussedness somewhere in the firing chamber.

It's the ignition! You're wasting gasolene and losing power, time, money and patience.

You certainly need an

EISEMANN MAGNETO

It will give you those full, deep-throated, never-failing explosions which mean power.

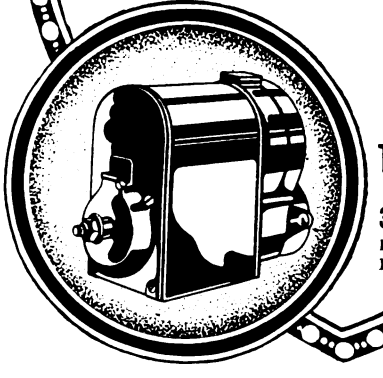
It will make your motor crank easier. It will give you that quick "pick-up" and "getaway" you so much desire.

And it will restore your confidence in your motor!

If you are not now Eisemann-equipped, you're missing something!

Write us about it.

Eisemann Magnetos are the most powerful made. They deliver a hot spark at all speeds. Durable, too—finest material and workmanship. Fully enclosed—waterproof, oilproof, dirtproof, trouble-proof!



The Eisemann Magneto Co.

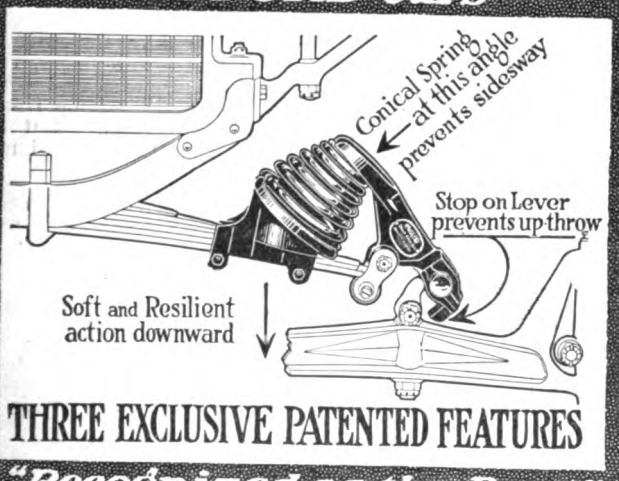
Sales and General Offices:

32-33rd Street - - Brooklyn, N. Y.

Indianapolis, 415-417 N. Capitol Ave.

Detroit, 802 Woodward Avenue.

HASSLER Shock Absorber — For FORD Cars —



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

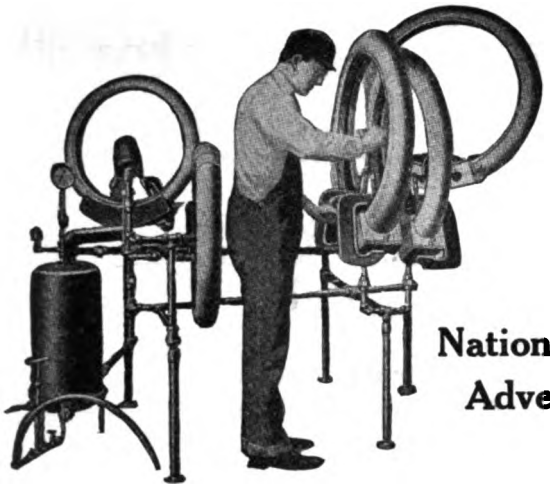
WRITE FOR DEALERS TRIAL SET PROPOSITION

Robert H. Hassler, Inc.
Indianapolis, Ind.

$15 for a Set of four

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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.
1042 N. Capitol Ave., Indianapolis, Ind.

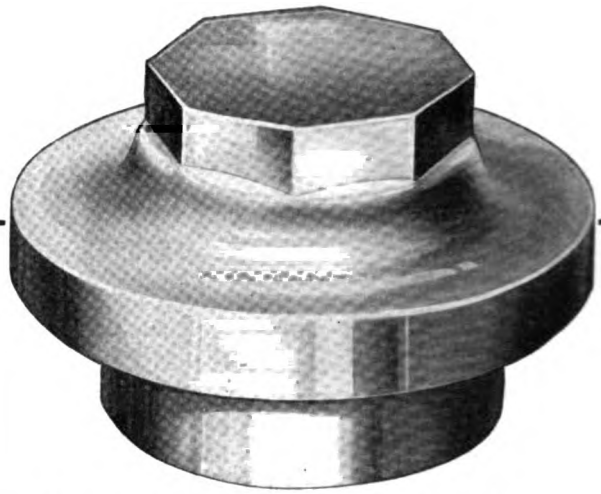
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Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

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Cast Brass Hub Caps
for
FORD CARS

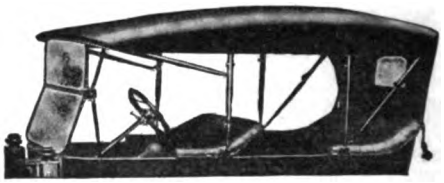
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CINCINNATI, OHIO

Cray Slip Roof For Old Fords

MAKES THE OLD TOP NEW



$7.50

Makes the old top new at about one-third the price of the complete top. The outfit consists of a new heavy, rubber roof, quarters, back curtain and back stays, with celluloid light, stitched and ready to slip over the old top frame. Furnished with necessary tacks and welt. Easily put on by any car owner. Made for 1912, 1913, 1914, 1915 and 1916 Ford Cars. State year of car when ordering.

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Outfit "A" for Touring Car, each, $7.50. Per Doz.....$79.50
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CLEVELAND ONE-MAN MOHAIR TOP FOR FORD TOURING CAR.

Made to fit 1913, 1914, 1915 and 1916 Model T Ford Touring Cars.

In ordering state year of car.

Price, with regular curtains, $19.20.

Price, with Jiffy curtains, $21.60.



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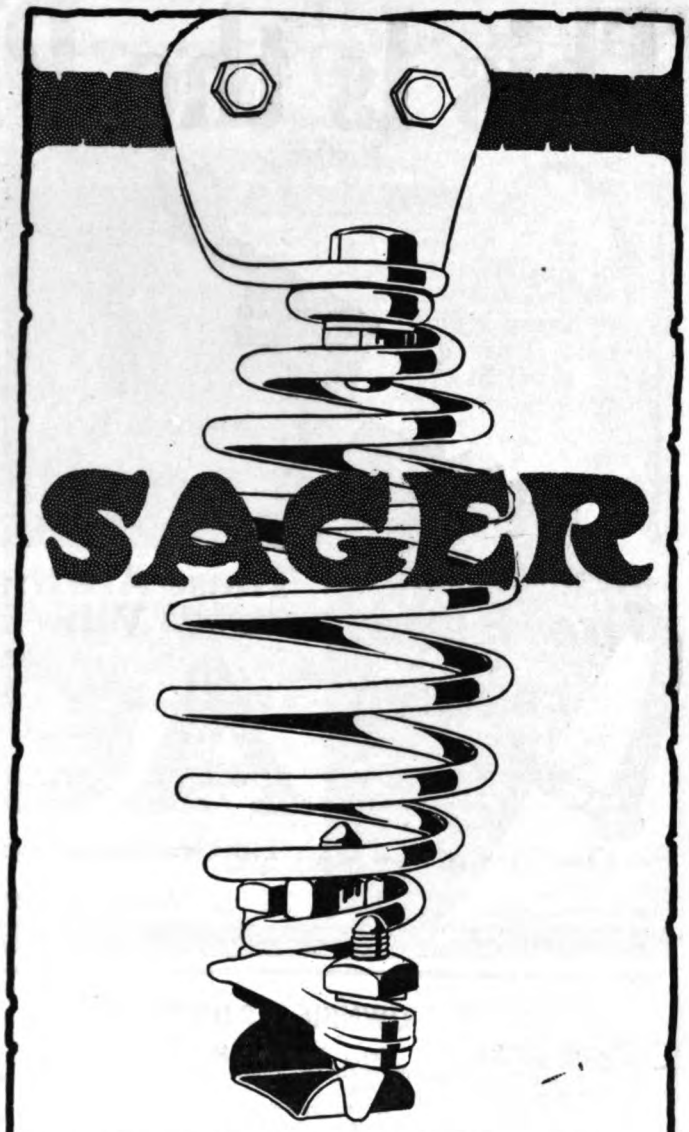
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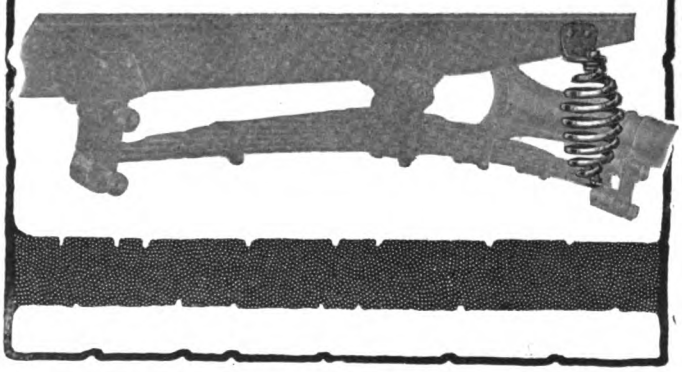
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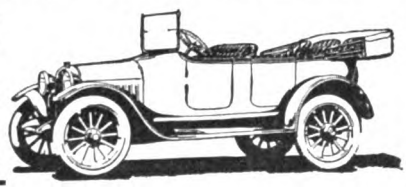
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Every Inter-State has proved its value definitely and conclusively in the hands of owners.

If you want to know about *proved value* and *actual assets* for either the man who buys or sells cars, write to-day.

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Touring Car..... $850
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INTER-STATE MOTOR CO.
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Saves Gasoline
Increases Power
Gives Greater Speed



This valve is the best selling accessory of the season. Every dealer should get in touch with our proposition for selling the well-advertised

BRUGAN $4
Economy Valve

It automatically admits air to the intake manifold cutting down fuel consumption 15 to 35 per cent. It improves combustion, gives greater power, quicker response, and less cylinder carbon.

Write for our proposition. 84-3

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Speedway Type TIRES

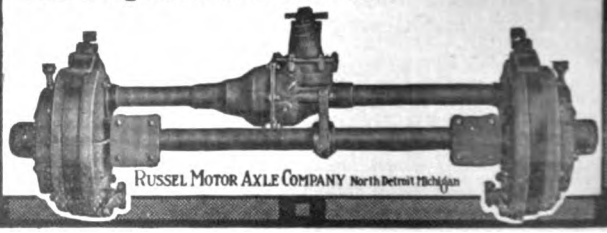


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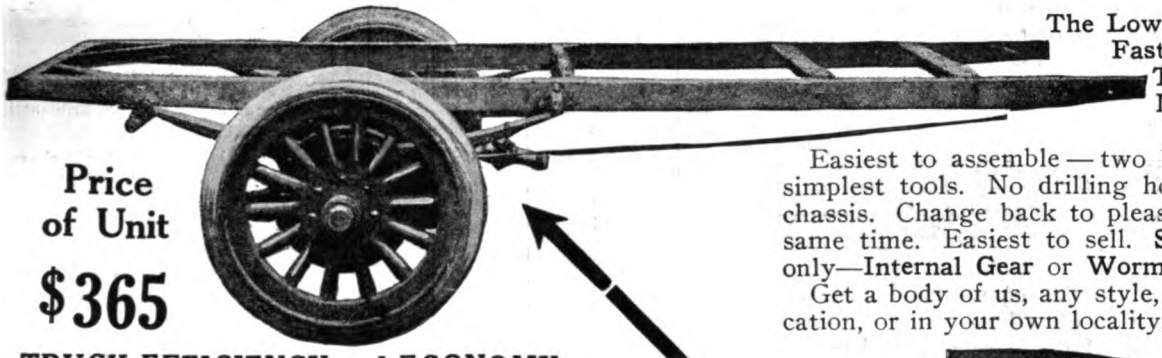
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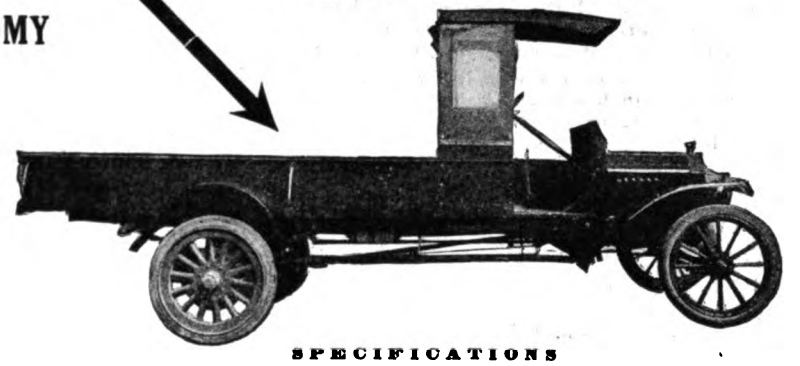
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Good territory and liberal terms to responsible agents.

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Carrying capacity, 3000 lbs. Carrying space—regular 9 feet, more if desired; wheelbase, 127 inches, more if desired; tires, 32x3½ inch solid; speed, 15 to 25 miles per hour; gear ratio can be adapted to any conditions under which truck is to be used; brake on rear wheel, 1⅞-inch face, 16-inch drum; tread, standard 56 inch.

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The Spiral Fluted Is the Only Smooth-Cutting Reamer

We have discontinued manufacturing straight-fluted reamers, because of the superiority of the spiral flute.

The left hand spiral flute gives a shearing cut, reducing the strain on the cutting edge. The reamer has a double support in the hole, which steadies it in action regardless of faults or defects in the metal.

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Put up in substantial leather rolls, or wooden cases. Send today for our bulletin, "Tools for the Automobile," showing automobile tap and die sets and other indispensable tools for the garage and repair shops.

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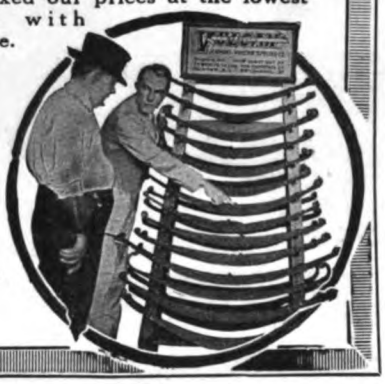
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Dealers make satisfied customers and steady profits by handling VULCAN SPRINGS.
Years of steady, unremitting effort have concentrated in

VULCAN QUALITY

SPRINGS a Quality of material and workmanship seldom equalled.
Our recognition of the value of complete stocks, prompt deliveries and courteous treatment, has led to the development of a constant, unerring Service.
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Needed by over 600,000 FORD OWNERS



Every owner of an electrically-lighted Ford car (1915-16 Model) wants a VAN SICKLEN Concentrator the minute he realizes it will ensure him a safe, certain, brilliant light at lowest engine speeds.

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At all speeds below 15 m.p.h. the VAN SICKLEN Concentrator automatically disconnects the right headlight, shunting double current into the left headlight. At 10 m.p.h., for instance, the left headlight is burning as brightly as it ordinarily would at 20 m.p.h. Above 15 m.p.h. the regular Ford two-light system automatically reasserts itself.

$2

Price, complete, $2, ready to put right on. Installed under hood, on dash. Compact, ornamental. Full instructions with each order. Guaranteed not to injure magneto nor bulb. Absolutely automatic.

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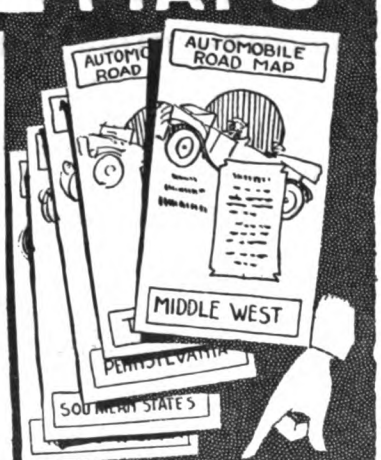


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THE STEVENS COMPOUND PUMP NO. 99

A genuine compound pump, of highest quality, with brass cylinder, bases and ground valves, it will pump to 180 pounds pressure, or more.

Simple and strongly constructed, it will last and remain in good order for years.

List Price $12.00 complete.

HOLDFAST PUMP CONNECTION

It can be instantly attached or removed and is made for long service. Cannot blow off while pumping.

No rubbers to replace. The Holdfast is the only satisfactory connection for continuous garage service.

List Price 30c. each



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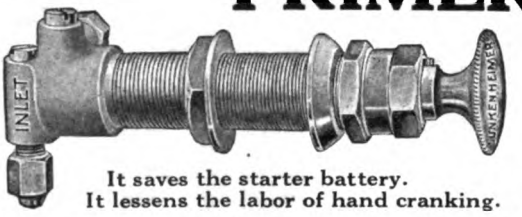
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LUNKENHEIMER

Gasoline Engine

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It saves the starter battery.
It lessens the labor of hand cranking.

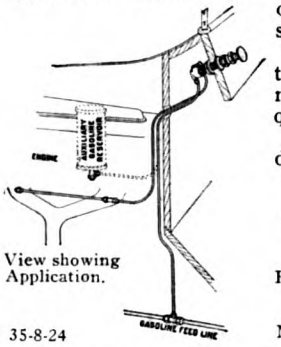
A stroke or two of the plunger forces a gasified charge to points which positively insure its entrance through the intake valves to give a power impulse on the first turnover.

The convenience of this device leads the operator to prime the engine before each start, resulting in a saving of battery energy, or time spent in cranking by hand.

All necessary fittings and tubing for attaching are furnished. No extra parts required.

A profitable accessory for dealers and garagemen.

Write for booklet No. 513.



View showing Application.

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CINCINNATI
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DIXIE 20TH CENTURY MAGNETO

To Users of DIXIE Magneto

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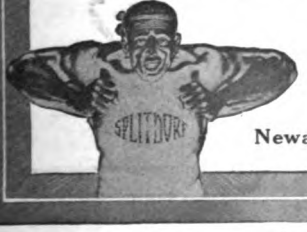
Splitdorf Electrical Co. is the owner of numerous patents covering the DIXIE Magneto, the numbers and dates of same being stamped on every machine leaving our factories. These patents together with the known financial responsibility of Splitdorf Electrical Co. fully protect every user of DIXIE Magnetos.

It has been brought to our attention that certain persons are notifying our customers that DIXIE Magnetos infringe a patent issued in 1903. Splidorf Electrical Co. is fully aware of said patent, which in the opinion of the Splitdorf Electrical Co.'s experts and attorneys does not relate in the remotest degree to the DIXIE Magneto, and in their opinion is invalid.

The patent has lain dormant for over 12 years, and is only resurrected now after the remarkable success of the DIXIE. The owners of the said patent, so far as we can learn, are not now or never have manufactured magnetos and seem to be writing DIXIE users in the hope of forcing Splitdorf Electrical Co. to recognize their claim. The address of Splitdorf Electrical Co. is well known to these people and if they honestly believe their patent is infringed they should immediately sue Splitdorf Electrical Co.

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We respect the valid patents of others, operate under our own valid patents, and fully guarantee our product free from all infringement.



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ELECTRICAL CO.
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HI-LO

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IT has long been recognized by leading mechanical experts that the toggle joint is the simplest method of applying power.

Here is a toggle joint jack that gets under the lowest axle and GROWS STRONGER THE HIGHER IT LIFTS.

It will start lifting at 5 inches and raise its load to a height of 17 to 19 inches.

Each part of this jack is subjected to rigid test at Worcester Polytechnic Institute, and carries our guarantee.

Specially constructed handle keeps applied lifting power always central with travel of jack, assuring even and easy lift at all times.

Auto Jacks—Truck Jacks — Construction Jacks
Prices gladly given on inquiry.

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Jumbo "MOLITE" $1.25

Guaranteed For The Life of The Car

Other types for Fords and other cars, $0.75 and $1.00. Ask your dealer or write direct to the manufacturers. 69-37

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NEW PROCESS GEAR CORPORATION
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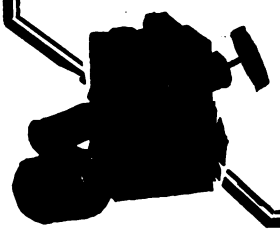
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Garagemen find it cheaper to use than soap and water—cheaper and infinitely more satisfactory to their customers.

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"Klips" SPARK PLUGS

Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

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Mosler VESUVIUS Plug

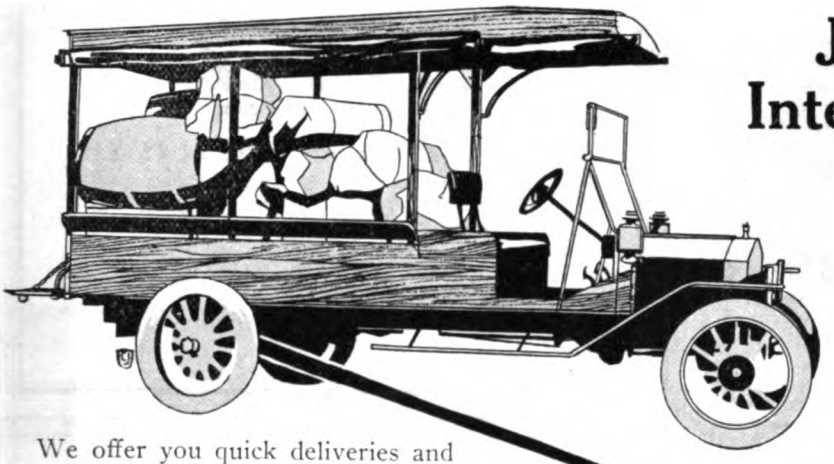


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Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
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You can bet the merchants in your vicinity who need delivery cars are thinking of it—And you can sell every one of them if you go to it right now.

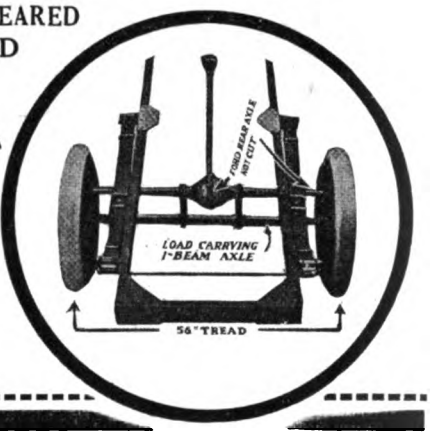
We offer you exclusive territory with a commission on every sale made therein from the moment you order a demonstrator.

We offer you quick deliveries and constant, courteous service, as well as advertising support.

Your prospects know the Ford, they know the internal gear drive, they realize how low our price is as compared with others giving anywhere near our quality. Delay is losing you money. Write at once for our full proposition.

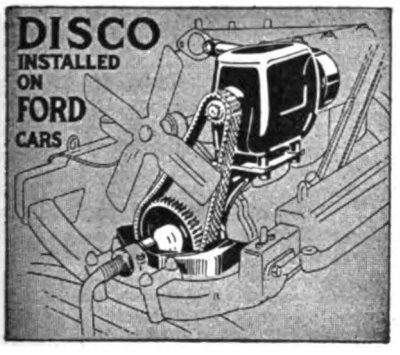
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YOUR Territory May Be Gone Tomorrow—Write TODAY!

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The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system, simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

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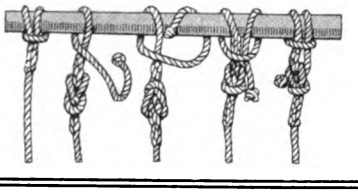
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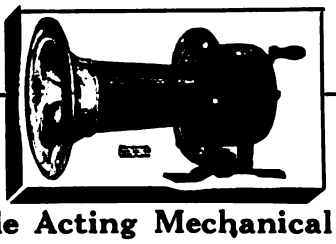
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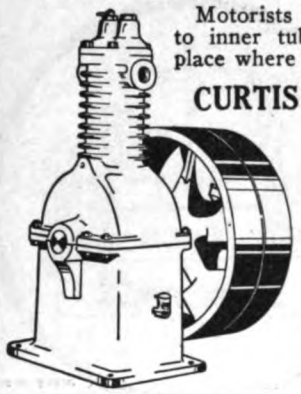
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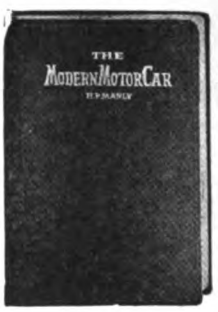
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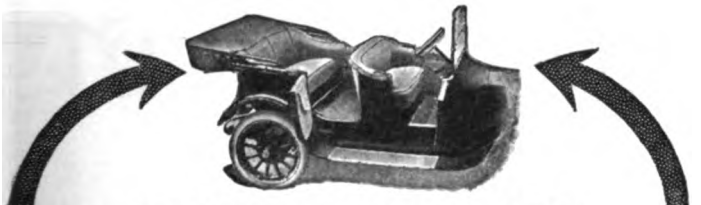
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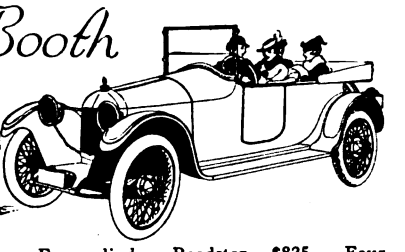
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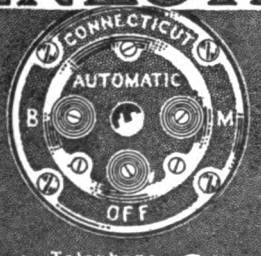


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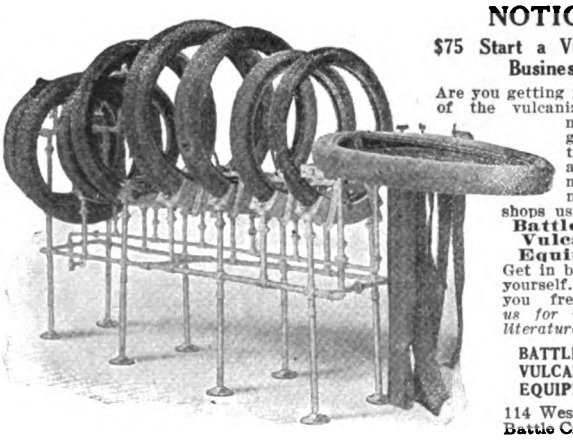
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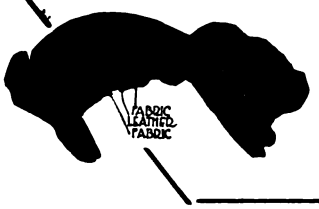
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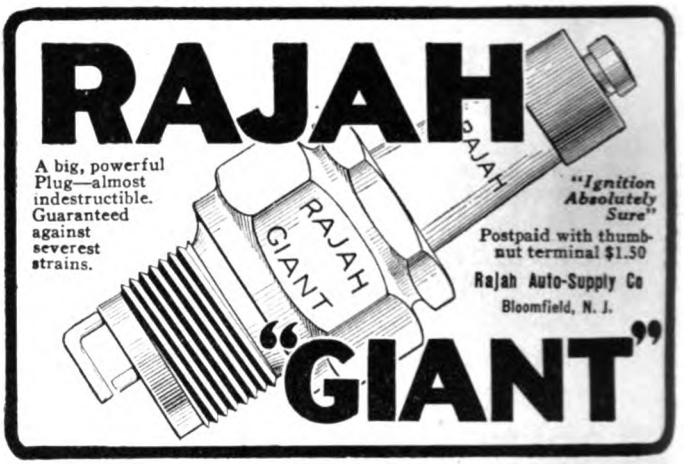
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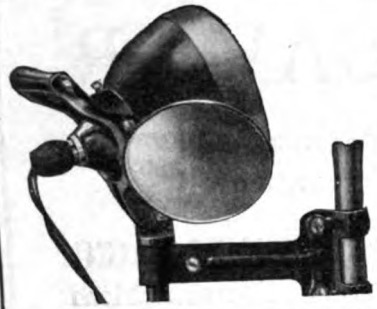
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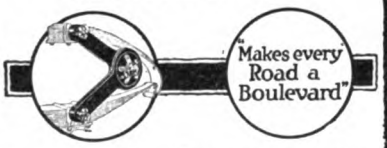
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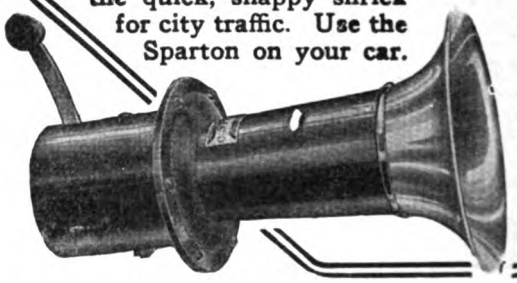
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SUPPLIES

IN FACT, EVERYTHING FOR THE AUTOMOBILE

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1438 Michigan Ave. Chicago, Ill.

ANY AUTO PART We have the parts you want and can ship in 24 Hours. **YOU NEED**
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AUTO MOTORS and MAGNETOS
Michigan 40.....$75 E. M. F. 30.....$45
Hudson 20..... 50 Reading 40—R.C.H.
Franklin 6, other motors low price
Bosch Magnetos—4 cylinder $20; 6 cylinders $25
Johnston, West End, Pittsburgh, Pa.

AUTOMOBILE PARTS

DEALERS SAVE 50%

WE HAVE PARTS FOR MOST ALL STANDARD MAKES OF CARS. WRITE US YOUR NEEDS.

E M F 30	Regals 1909 to 1914
Maxwells Q.F.K.G.&AA	Cadillac 1909 to 1912
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Gears, Bearings, Axles, Crank Shafts, Cylinders for most any make of car.

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No connections with any other Auto Parts Co.'s.

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Guaranteed not to break or pull apart. No solder used. PARTS and REPAIRS for most any make (except instrument). Write for Illustrated Circular.
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DU4 single ignition	$15.00
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For almost every car.....$15.00 each

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Type D R 6 dual, tubular coil included.

SPLITDORF COILS kick switch $7; Remy coils $6; SIMMS MAGNETOS S U 4 cyl. high tension $30; SCHEBLER CARBURETORS model B 1⅛" $7; L 1¼" $6; 1" $5; STROMBERG A No. 2 1¼" $5; C No. 3 $6; A No. 5 2" $15; B4 1" $6; Rayfield 1½" $10; 1¼" $8.

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We can save you money

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Send us your old part and we will ship exact duplicate

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New 1¼ inch Stromberg A-2,B-4.....$5.00
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CASH FOR OLD MAGNETO POINTS
Platinum scrap or gold jewelry, new or broken. Send and receive cash by return mail. Your goods returned at our expense if our offer is not satisfactory. Est. 1899. LIBERTY REFINING CO., 432B Wood St., Pittsburg, Pa.

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Set of Baker wheels including 4 wheels and five straight side rims (all sizes for most any make of car) 23.50
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One man mohair tops complete to fit the following cars....30.00

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Write for measurement chart, radiators, special prices.

This is only a partial list of the many bargains which we have on hand. We can supply practically any part to put a car in perfect running order. Write today for our large illustrated Bargain Bulletin. It is free upon request and contains hundreds of interesting Bargains.

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at Discount for Packard, Regal and Chalmers 30 & 36. Our Parts Absolutely New and Guaranteed.
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Auto Parts & Accessories Co.
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For Transmissions and Differentials

Write our Sales Department about your requirements

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GREAT WESTERN

Service Department has been entirely reorganized. Owners will get real service from now on. All repair parts shipments made the same day orders are received.
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DETROIT, MICHIGAN

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We furnish quick service on all engine, clutch, transmission, differential, front and rear axle, steering gear, wheels, steering knuckles and cones, fenders, frames, and body parts, from original Krit Stock. For all models from 1909-1915 inclusive.

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KRIT

owners will do well to look over their cars and see what improvements need to be made, so as to put them into first-class condition for the beautiful fall touring days soon to come.

Make use of the free consultation department. Our experts will advise you what ought to be done.

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HENDERSON
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If not, drop us a line stating your requirements on repair parts. We are prepared to offer scientific, efficient and prompt service on all cars enumerated as well as all other makes. We are located in Detroit, the heart and center of the automobile industry, and buy our stocks in trainload lots—SPOT CASH buying and selling. You benefit. Prices far below those of manufacturers.

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Service Department entirely reorganized. Prompt and accurate shipment now given on all repair parts for Mason, Maytag, and Mason-Maytag automobiles.
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Michigan Motor Car Parts Co.
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We have second-hand motors for every make of car for $25.00 and up.
We also carry a complete line of
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CRANKSHAFTS at $10.00 each.
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No matter what you need, let us quote you a price that will save you from 25% to 50%.

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Wheels, springs, mudguards, mufflers, $1 each. Four and six cylinder magnetos, $8.50 each; radiators, $10 up; universal joints, $2; 5-passenger upholstered bodies, $10. Write us.

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New 1916 roadster bodies with top and windshield for Ford	$30.00
Studebaker 25 bodies	35.00
E. M. F. 30 bodies	35.00
Prest-O-Lite tanks, Model B	6.00
Prest-O-Lite tanks, Model E	5.00
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Our purchasing power enables us to sell goods at very attractive prices. You can save money on Motors, Radiators, Transmissions, Bodies, Axles, etc., or, in fact, on anything that you may need for the automobile.

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For Ford	$17.50
Buick 10	19.00
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100 New 3 speed selective type transmissions, each	35.00
500 Universal joints, each	5.00
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Write for our monthly bargain sheet.

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Most Durable and Efficient. Makes New Radiator, allow for old one. PRICES RIGHT.

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Save 50 to 75%

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24 Hour Service

Direct Your Orders Our Way

Satisfaction Guaranteed

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THIS WEEK

Commercial Bodies for Fords	$7.00 each
Demountable Rims for Fords (natural wood or black)	15.00 set
Wheels for Ford 30x3½	1.25 each
Fenders, all sizes and types	3.00 up
Windshields, all models and sizes	7.50 up
Touring Bodies	$10.00 up to $60.00
Radiators	15.00 up
Steering Wheels, 16" and 17" Aluminum spider	1.25

Our ad in last week's issue certainly took the country by storm, for orders began pouring in the office from all over the country and there seems to be no let up. Were you one of the hundreds who took advantage of it? You owe it to yourself to see where your dollar will go furthest. Let us know your wants.

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Get a Square Tube Radiator. 25% greater water capacity. Made for any car. New, guaranteed cores placed in old radiators. We also manufacture hoods, fenders, tanks and pans, and do guaranteed repair work. Prompt and satisfactory service.

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SAVE 50% TO 75% ON REPAIR PARTS

BIG BARGAINS in Magnetos, Carburetors, Presto Tanks and other accessories.

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We have them for most any make car.
We save you 50% to 75%.

MOTORS

Send for our list describing them

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Send for our list.
We guarantee all goods in good shape or money refunded.
We also Buy old Autos any condition.

AUTO WRECKING CO.
We Tear 'em up and sell The Pieces.
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Parts for all models of Pope-Hartford pleasure cars, Trucks and Public Service cars — made from the original drawings and patterns, with the original tools, fixtures, etc.—complete stock always on hand. Prompt and satisfactory service.

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REPAIR PARTS FOR
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All Makes and Kinds
Parts, Side and Lock Rings, Bolts and Wedges. Dealers write for prices.

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of all makes repaired and parts furnished. Trade solicited from dealers and garages. Prompt service.
BILLIE, THE SPEEDOMETER MAN.
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Stevens-Duryea Parts and Service
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DAYTON AUTO REPAIR CO.
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STOCK GEARS

IN STOCK FOR { DEALERS GARAGEMEN REPAIRMEN

Transmission Gears for over 100 makes of cars
NO SECOND HAND PARTS OR JUNK
OUR PARTS ABSOLUTELY NEW
Get our price list and make a profit on your Repair Parts.

AUTO GEAR & PARTS CO.
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USED PARTS 50% DISCOUNT

Following Cars: Chalmers, K-F-M, Flanders 20, two and three speed. Buick 10-16-17-19-21 & F. M. M. F. 30; Maxwell AA-E-K-HD-GA. Overland 38 to 59. Transmissions, axles, wheels, bearings, crank cases, connecting rods, in fact, almost any part for any make car.

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(Oldest and Largest used parts company)

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We can fill any order for AUTO PARTS
Our exchange facilities make this possible at lowest prices.
Cleveland Auto Parts Exchange
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Fenders, Tanks, Lamps
REPAIRED IN 24 HOURS
All Work Guaranteed
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AAA SCORED CYLINDERS
Repaired by Patented electric process. Filled with a silver and nickel alloy. (Eliminates Grinding.) No warping or enlarging of cylinder bore. Same piston and rings used. Reshipped 24 hours after received.
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PISTONS and RINGS
Largest Because Best
Send for Price List
HOUPERT MACHINE CO.
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CYLINDERS REGROUND OR REBORED including New Pistons and Rings, $4.75 to $15.75 per cylinder. We are manufacturers of Vulcan Welding and carbon cleaning apparatus.
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By experts on Heald Grinder. All pistons, rings and wrist pins ground mechanically perfect. All patterns and sizes in stock. Write for quotations.
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Special light alloy Pistons
Our special facilities enable us to do highest grade work
Over 225 Piston Patterns
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CYLINDERS
Rebored AND Reground
Including NEW PISTONS and rings
$4.00 to $13.00 per cylinder
We are Manufacturers of Hercules Welding and carbon cleaning Apparatus
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We make new pistons, rings and pins. Regrind crankshafts. Fully equipped Machine Shop with Hydraulic Press. Expert workmen. All work guaranteed. H. S. Anderson Auto Repair
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Garagemen and Repairmen
We rebore Cylinders and equip with our ECLIPSE Rings and extra high quality Pistons, assuring a correct fit and giving extra efficiency to your motor. Give us a trial. Prices interesting.
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Mfgrs. Eclipse Piston Rings,
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Expert Cylinder Grinding
Fords $20.00, Overland, Buick Models 10 and 25, Chevrolets, Studebakers 3 1/8-in. bore only; $35.00 including new over-size pistons and rings fitted complete. Discount to dealers.
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FORD CYLINDERS REGROUND
FOUR NEW LIGHT PISTONS $12.00 .030 in. OVERSIZE ONLY
Write for full particulars.
WILSON'S FORD SPECIALTY CORPORATION
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WE REGRIND CYLINDERS
and furnish our heat treated piston rings and pistons. First class equipment, 15 years' experience. Write for our prices.
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Combination
WATER—SOAP—TOWEL
INDISPENSABLE TO THE
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Washing liquid and full roll of best quality, absorbent paper towels contained in handy receptacle. Instantly removes dirt, grease and oil without injury to the most delicate skin. Compact—can be stowed in tool kit.
AT YOUR DEALER'S OR DIRECT $1.00 Prepaid
Refiller complete, Towel, Roll and Tube of Liquid—price 50c. Antiseptic and Sanitary.
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Special terms to dealers and agents.
Write or wire for territory.

AGENTS—JOBBERS—DEALERS
Special Announcement
"KARBONOID"
DEMAND *HAS BEEN* AND *IS BEING* CREATED BROADCAST
If you can reduce your customers' Gasoline Bill 10 cents per gallon, will they thank you? Will they support the product that will make such a condition possible?
ARE YOU GOING TO SHARE THE PROFITS?
Exclusive selling rights contracts.

Cities under 20M. Pop..	$38. Retails for..	$24
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County	94. Retails for..	216
State	495. Retails for..	1200

Write or wire for available territory. Avoid substitutes and imitations, sell the genuine.
NEW ENGLAND KARBONOID CO.
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Ford "T" Rear Axle Trouble
Gardner Patent Loop Truss puts an end to rear axle trouble. Put in place in 3 minutes. Bolts will not work loose. Differential will not open up. No grease lost. Shaft tube cannot break. Stops that upward twist when starting and the downward twist when stopping. Cannot be struck by obstructions on the road. Weight 6 lbs. 1913-14-15-16-17 cars. $1.50. Agents Wanted. Does not interfere with jacking up car.
Include Parcel Postage when Ordering.
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HANDY POCKET KITTY-KIT Prevents Tire Troubles. Use the wonderful "Kitty-Kit" tire repair kit and your troubles will be solved. Repairs punctured tires in 1 minute. This is a kit of real merit and a help to all automobile owners. Price $3 by mail. Agents wanted. Andrew B. Smith, S. W. Cor. Park Ave. & Cambria St., Phila., Pa.

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All clean stock. Let us supply your garage or repair shop. A trial package, 10 pounds, $1.00, by express, C. O. D. or money order. Edward Corner, 1080 Beach St., Philadelphia, Pa.

THE AFFA COMBINATION HOLDER
Also other Specialties for Jobbers, Dealers, write for prices. Goods Guaranteed.
FORDS
W. S. GRAFFAM 82 Locust St., Northampton, Mass.

Tires

A BIG SAVING IN
TIRES—TUBES
Fresh Selected Stock—Standard Makes Guaranteed

	New Tires	New Tubes		New Tires	New Tubes
28x3	$ 6.00	$1.25	34x4	$18.25	$3.35
30x3	6.50	2.00	35x4	18.50	3.45
30x3½	8.00	2.25	36x4	14.00	3.50
31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
31x4	11.75	2.90	35x5	17.50	5.00
32x4	12.50	3.20	36x5	18.50	5.00
33x4	12.75	3.25	37x5	20.00	5.20

For Non-Skid add 10% to All prices.
Special Bargains in Slightly Used Tires.

	Used Tires	Used Tubes		Used Tires	Used Tubes
30x3	$3.50	$1.35	35x4	$7.50	$1.75
30x3½	4.25	1.45	36x4	7.50	1.75
31x3½	4.50	1.50	34x4½	8.00	1.75
32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.99
32x4	7.00	1.60	35x5	8.50	2.00
33x4	7.25	1.70	36x5	9.50	2.00
34x4	7.75	1.70	37x5	9.75	2.20

All goods shipped C. O. D. subject to examination, on receipt of 10 per cent of order.
TIRE REPAIR & SUPPLY CO.,
1461 Michigan Ave., Chicago, Ill.

A GREAT TIRE AND TUBE SALE
100 Makes—15,000 Tubes and Shoes. New and A1 Stock
AT RIDICULOUSLY LOW PRICES
Saving from 40% to 70% "Cheapest House in the City"
Jandorf Automobile Co., 1764 B'way, New York City

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Various Brands at Following Prices:

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30 x 3½	1.65	35 x 4½	2.40
32 x 3½	1.75	36 x 4½	2.50
34 x 3½	1.90	37 x 4½	2.60
32 x 4	2.50	36 x 5	2.80
34 x 4	2.60	37 x 5	4.00

The above prices are net to dealers. These tubes are fresh stock. Not blemished. Terms: Cash, including postage.
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32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
34x4	13.30	14.25	37x4½	19.45	20.75
			37x5	22.30	23.10

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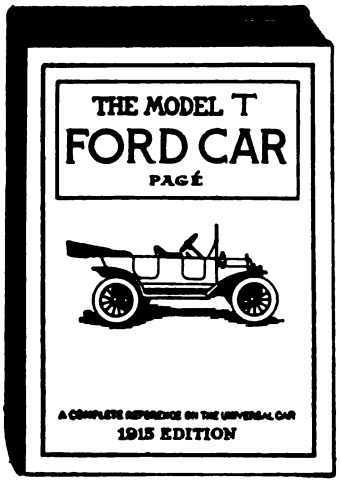
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A New, Complete Book for Every Ford Owner, Dealer, Salesman and Repairman

The Model T Ford Car

Its Construction, Operation and Repair

By VICTOR W. PAGE

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Author of "The Modern Gasoline Automobile," etc.

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Advertisers' Index

A

Ahlberg Bearing Co.	94
Aluminum Mfg. Co.	77
American Ball Bearing Co.	86
Ames Co., F. A.	65
Atwater Kent Mfg. Works	87
Automobile, The	83

B

Backus Novelty Co.	85
Battle Creek Vulcanizing Eq. Co.	85
Benford Manufacturing Co.	60-61
Bosch Magneto Co.	87
Brady, G. S.	83
Brown-Lipe-Chapin Co.	85
Brugan Co	78
Butler Mfg. Co.	85

C

Cassidy, E. A.	68
Champion Ignition Co.	78
Chicago Auto Supply House	94
Combination Rubber Mfg. Co.	71
Connecticut Tel. & Elec. Co.	85
Craven Co., E. T.	85
Cray Brothers	76
Curtis Pneumatic Mchy. Co.	84

D

Disco Electric Starter Corp.	83
Durkee-Atwood Co	59

E

Eisemann Magneto Co.	75
Empire Rubber & Tire Co.	87
Engineering and Tube Bending Co.	94
Evapco Mfg. Co.	87

F

Faw, J. H.	86
Fedders Mfg. Co.	52
Federal Rubber Mfg. Co.	Back Cover
Firestone Tire & Rubber Co.	2
Fitzgerald Mfg. Co.	87
Ford Motor Co.	84
Foster Accessories Co.	70
Fried & Stonier Co.	84
Fulton Co.	82

G

Gibson-Hollister Mfg. Co.	82
Goodrich Accessories Corp.	62
Gray & Davis, Inc.	Front Cover
Greenfield Tap & Die Co.	79
Grossman Mfg. Co., Emil	87
Gulf Refining Co.	80

H

Hampton-Campbell Co.	86
Hartford, E. V.	88
Hassler, Inc., Robt. H.	75
Haywood Tire & Equip. Co.	76
H-Lo Jack Co.	81
Holmes & Bros., Robert	94
Hotel Marie Antoinette	80
Houk Mfg. Co.	84
Hyatt Roller Bearing Co.	86

I

Inter-State Motor Co.	78

J

Jenkins Vulcan Spring Co.	80
Johns-Manville Co.	82
Johnson Company	67

K

Kelley Convertible Auto Truck Co.	79
Krembs & Co.	88

Digitized by Google

Advertisers' Index

L

Laird & Lee 84
Lexington-Howard Co ..... 57 and 58
Long Mfg. Co 56
Lunkenheimer Co 81

M

Mack Mfg. Co 96
Maxwell Motor Co 97
McQuay Norris Mfg. Co ..... Third Cover
Michelin Tire Co 45
Michigan Auto Trailer Co 94
Mitchell Motors Co., Inc 63
Mosler & Co., A. R 82
Morse Twist Drill & Mach. Co 77
Myle Mayker Company 50-51

N

National Rubber Co 78
New Departure Mfg. Co 86
New Era Spring & Specialty Co 94
New Process Gear Corp 82
N. J. Car Spring & Rubber Co 88
Norma Co. of America 3

O

Oakes Co 82
O-So-Ezy Products Co 87

P

Palmer-Moore Co 64
Pfau Mfg. Co 76
Pittsburgh Electric Specialties Co 88
Pittsfield Spark Coil Co 54-55
Pouvallsmith Corp 84
Prest-O-Lite Co 84

Q

Quaker City Rubber Co 88

R

Rajah Auto Supply Co 86
Rayford Co 83
Royal Equipment Co 48-49
Russell Motor Axle Co 78

S

Sager Co., J. H 77
Scripps-Booth Co 85
Seiss Mfg. Co 83
Shaler Co., C. A 68
Sheldon Axle & Spring Co 86
Silvex Co 84
Sparks-Withington Co 88
Spiltdorf Electrical Co 81
Standard Thermometer Co 88
Stevens & Co 81
Stewart-Warner Speedometer Co ..... Second Cover
Studebaker Corp 1
Svensgaard Sales Corp., H 87
Swinehart Tire & Rubber Co 82

U

United Eng. & Mfg. Co 75
U. S. Ball Bearing Mfg. Co 46

V

Van Sickien Co 80
Velie Motor Vehicle Co 47

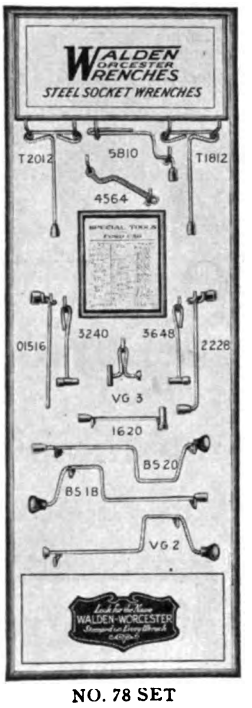
W

Walden Mfg. Co 97
Warner Auto Top Co 85
Warner Lenz Co 53
Webber & Co., P. H 69
Whitney Mfg. Co 96
Willys-Overland Co 4
Wonder-Mist Co 82

Z

Zenith Carbureter Co 84

FORD CAR WRENCHES



NO. 78 SET
Stock and Display Board Special Wrenches Ford Car.

WALDEN WORCESTER WRENCHES

Sell Wrenches the New Way

The Walden Worcester Wrench sales plan not only stimulates wrench sales but cuts the jobber's stock in half. It eliminates 75 per cent. of the usual investment and keeps the stock moving.

It affords the dealer or jobber a complete line and gives the customer the greatest variety of sizes and combinations to select from. It supplies every requirement of the car owners, garage, repair or machine shop man.

This Display Board One Example

The Walden Worcester Wrench Company supplies its dealers with this display board containing wrenches that will fit any nut or bolt on a Ford car and to reach the work from any position.

No Other Wrenches Are Needed

They will take care of any job on a Ford to the satisfaction of the owner or the professional repairman. It is not necessary to stock other makes of different grades and prices when Walden Worcester Guaranteed Ford wrenches are sold by dealers.

The display board is a silent, ever-working salesman, an ornament in any store. It will save the clerk's time and can be placed anywhere.

We have a special storage cabinet for other lines of Walden Worcester Wrenches. It is given free to live dealers and it is highly valued. All of our different display boards for special wrenches make sale wonders in any place of business.

Our new wrench catalogue with revised lists of jobbers' and dealers' discounts is now ready. The complete lines are shown and information is given that will be valued by every buying and selling interest in the trade.

WALDEN WORCESTER WRENCHES

WALDEN WORCESTER WRENCHES are guaranteed; they are made by specialists. Our trade mark protects our goods and assures satisfaction. It will bring the wrench trade to your store.

The Walden Manufacturing Co.

60 Commercial Street, Worcester, Mass.

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TO AUTOMOBILE DEALERS

THE remarkable value represented in the Maxwell Touring Car at $595, and the Maxwell Roadster at $580, has attracted the attention of progressive dealers throughout the country.

A standardized car at such a low price and with a well established and strong company behind it insures a big and permanent business to our dealers everywhere.

The opportunity to sell Maxwell cars is only open to dealers who will make the most of it. Some changes—particularly in the allotment of territory are being made. Therefore, interested dealers should write us now. Address Sales Department A.

Maxwell

Motor Company Inc. Detroit, Mich.

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McQUAY-NORRIS

LEAK-PROOF PISTON RINGS

LEAK-PROOF is the trade mark name of a piston ring.

LEAK-PROOF is not a descriptive name which can be applied to any make of piston ring. LEAK-PROOF belongs to this particular piston ring just as "Uneeda," "Gold Dust" or "Ivory" belongs to a particular biscuit, washing powder or soap.

The success of the LEAK-PROOF Piston Ring has bred many imitations which are sold as "leak proof," the name being used as a description only. Sometimes it's a case of deliberate substitution; sometimes it's simply ignorance.

Wherever this has happened the result has been the same—disappointment, dissatisfaction and money wasted on the part of the dealer or owner. For no other make of piston ring, whatever it is called, can give the same service as the true LEAK-PROOF

BE CAREFUL. When you order LEAK-PROOF Piston Rings be sure you get the Genuine, made by the McQuay-Norris Manufacturing Co., of St. Louis, the inventors and owners. Look for the name LEAK-PROOF stamped on every ring. Insist on seeing it. Examine the ring; make sure it is made of two sections equal in size, fitting around one another angle to angle. That's the exclusive LEAK-PROOF design—vitally necessary to true LEAK-PROOF service.

Send for FREE booklet—"To Have and to Hold Power"—the standard handbook on gas engine compression. It tells what LEAK-PROOF efficiency means. Write Dept. K.

Manufactured by

McQuay-Norris Mfg. Co., St. Louis, U. S. A.

"Ask the User"

Canadian Factory:
W. H. Banfield & Sons, 372 Pape Ave., Toronto

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Cincinnati	Seattle	Kansas City
St. Paul	Atlanta	Denver
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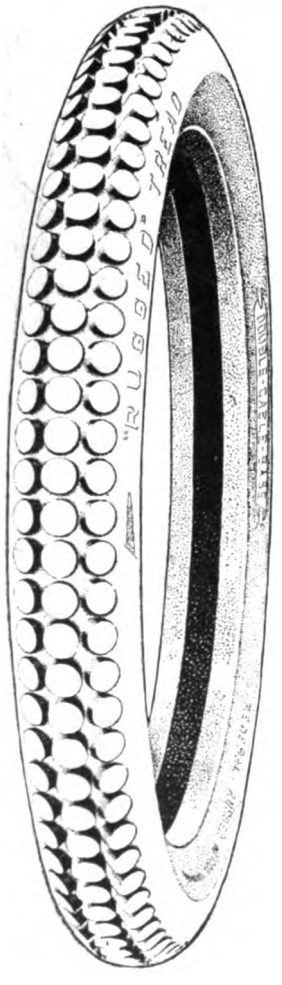
This angle-to-angle interlocking construction is the patented feature of the genuine LEAK-PROOF Ring. These two sections are of equal size and strength, which gives the ring equal tension all around—the only form of construction that makes this possible.

This is the Original and Genuine

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FEDERAL TIRES

"RUGGED"
(Non-Skid)
WHITE TREAD



Some motorists prefer White tires, others insist on Black. To meet all demands, tire dealers should stock both.

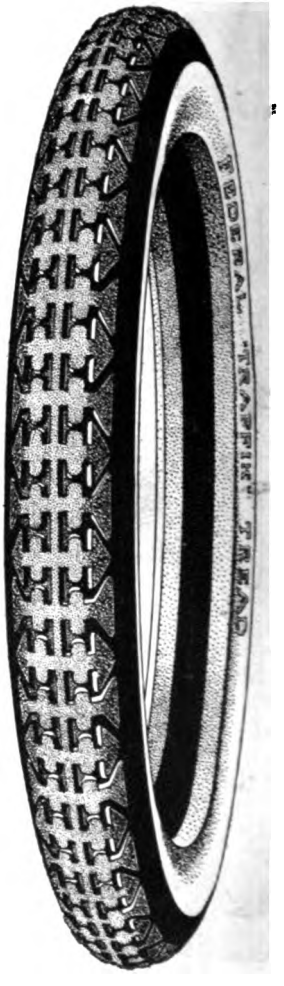
FEDERAL
Double Cable-Base
TIRES

are made in "Rugged" and Plain White treads, and in "Traffik" and Plain Black treads.

Both represent highest quality, and are built for hard service.

An attractive proposition for dealers.

"TRAFFIK"
(Non-Skid)
BLACK TREAD



The Federal Rubber Co.
of Illinois
Factories, Cudahy, Wis.

Mfrs. of Federal Automobile Tires, Tubes and Sundries, Motorcycle, Bicycle and Carriage Tires, Rubber Heels, Horseshoe Pads, Rubber Matting and Mechanical Rubber Goods.

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MOTOR WORLD

for

DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 10

New York, September 6, 1916

Ten cents a copy
Two dollars a year

Champion One Piece
Heavy Stone 7/8-18
Price $1.25

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Champion Dependable Spark Plugs

"TOLEDO MADE FOR THE WHOLE WORLDS TRADE"

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Such a wonderful product demands absolutely efficient spark plugs, and of course, "Champions" were used as factory equipment."

"A Royal Car for His Majesty the American Citizen"

MOLINE-KNIGHT



CHAMPION SPARK PLUG CO., 1413 UPTON AVE., TOLEDO, OHIO.

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The World's Largest Signal Business

Stewart Warning Signals are only one part of our business yet that one department alone does more business than any other exclusive warning signal manufacturer in the world.

Speaks pretty well for the quality of the Stewart Signals.

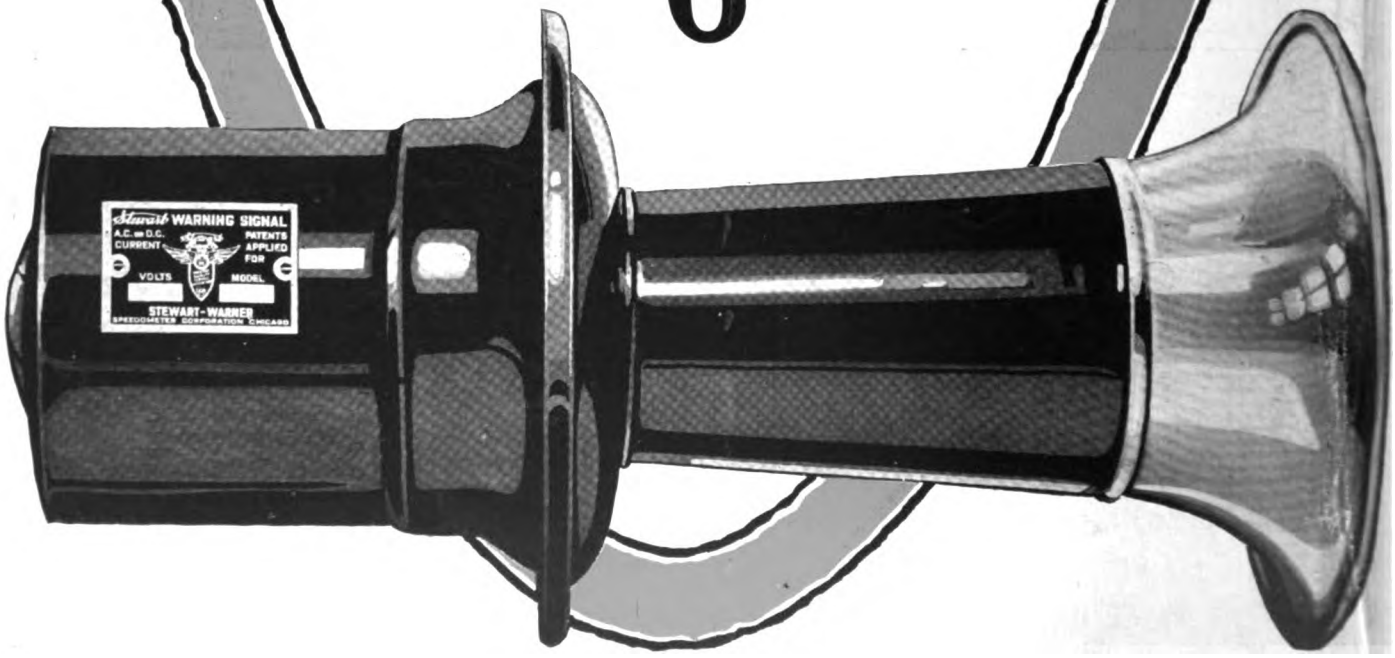
"It will pay you to see that the car you buy is equipped with Stewart Products"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

Stewart

Motor Driven Warning Signal

$6



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You will start wearing the characteristic **DUTCH BRAND** smile the moment your initial shipment of **DUTCH BRAND** Products arrives.

And that smile will broaden as **DUTCH BRAND** Products start moving speedily off the shelves—starting an endless chain of repeat orders. For **DUTCH BRAND** Products are as thoroughly good inside as they are good looking outside.

Thousands of good merchants in all sections of the United States are now successfully selling this most satisfactory line of automobile necessities.

DUTCH BRAND

PRODUCTS

Automobile Patching Cement	Tire-Brite	Motorcycle Cement
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Rubber-Seal	Gasket Shellac	Enamel
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Rim Coat	Mica Powder	Ball Bearing Compound
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DEALERS—Write us for our catalogue illustrating all the above in actual colors. Please mention name of your jobber.

Jobbers in all sections of the country now carry our products. Those jobbers not familiar with our line are invited to get our interesting proposition. Write today.

Illustrations show a few DUTCH BRAND Products and the attractive packages in which they are put up. Their usefulness gives them the lead as profitable goods for every motor car dealer to sell.

VAN CLEEF BROS.

The Rubber Cement and Auto Chemical Specialists

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Today 1916



Yesterday 1899



An Illustrated Story of Remarkable Progress

Yesterday In 1899 the factory of The Fisk Rubber Company consisted of a single building, three stories high, on a plot 100 x 50. There was an ell 50 x 75, making a total floor space of 18,750 square feet.

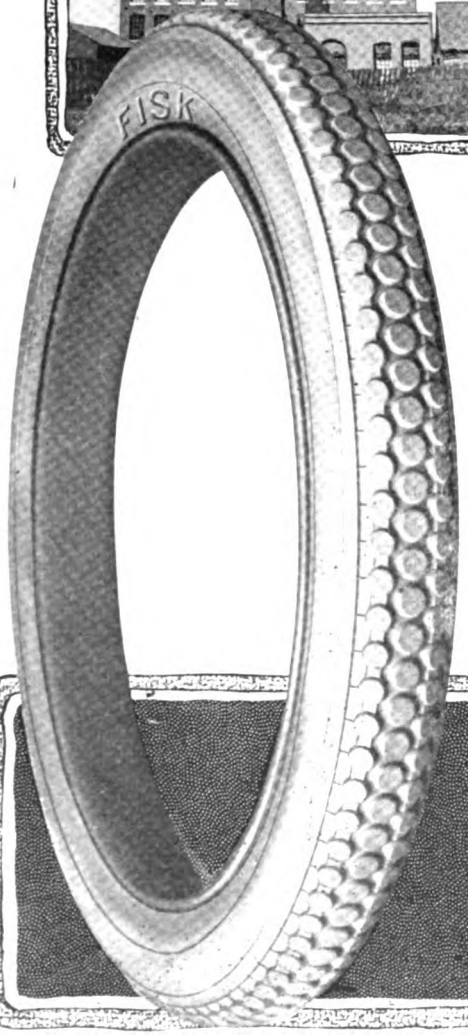
Today To keep pace with the constantly increasing demand for Fisk Tires, factory after factory was added. Today the Fisk Plant is comprised of "29 acres of floor space devoted solely to the manufacture of pneumatic tires," and more than 125 Direct Service Branches in the principal cities throughout the United States. In this group of buildings is one of the largest structures in the world used for manufacturing purposes. It is of five stories and basement, each floor containing 65,124 square feet or a total floor area in this building alone of 390,744 square feet.

One small room, tucked away in a corner of the original factory, served as the office headquarters back in '99. Today the administration building of the company is of seven stories and is devoted exclusively to the offices for the various departments, the dining-rooms, rest rooms, emergency hospital, and so on.

The steady and remarkable growth of the Fisk plant is one of the most fascinating romances of modern business. From the modest beginning in 1899 to the monster plant of today is a long step. Yet it is only a natural consequence—and a fitting monument to an honest manufacturing idea. From the very beginning there has been only one policy—to give the buyer of a Fisk Tire his full money's worth. That that policy has been a success is evidenced by the growth of the plant and the ever-increasing demand for Fisk Tires.

THE FISK RUBBER COMPANY
of N. Y.

Chicopee Falls Mass.



FISK TIRES

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

Milwaukee Dealers Boost State Fair.....6-11
150 motor tradesmen make a six-day tour of Wisconsin to draw the rural population to the State Fair and Fall Motor Car Show.

Lest We Forget..... 12
Do you remember the enthusiastic reception given to the Motor World Simplified System of Accounting last January? Read on page 12 the progress it has made.

Is His Idea Good?.....14-15
A Southern dealer requests a criticism of one of his merchandising suggestions.

Woods Gas and Electric Car..... 22
This is a car that can be gas or electric or both at the option of the driver.

1917 Jackson 33-35
Two fours and two eights and one of the eights is new with a Ferro overhead valve motor.

The New Enger..... 39
The New Empire..... 39

Dealers Who Have Made Good..... 13
A brief biography of C. T. Silver, New York, and some of the reasons why he has been successful.

System Department 16-17
Building Construction 18-19
Legal Department 20
Help Straighten the Curve..... 21
Six Tractor Problems..... 23
Repairshop Short-Cuts 24-25
Accessories and Supplies.....26-27
Editorial Observation 28
Readers' Opinions 29
Retail News 30-32
A B C Starter..... 36
Five Fire Extinguisher Displays..... 27
Do It This Way..... 28
News Pages 39-44
Ford Made $1,000,000 a Week in 1916..... 40
Coming Events 44

Advertisers' Index on pages 112-113

It's Good Enough For Uncle Sam

More striking or conclusive evidence of the superiority of the Corbin-Brown Speedometer could not be advanced than the fact that in the placing of a recent order for 63 motorcycles the United States Government specifically stated that all machines be equipped with this instrument or equal. The order has been placed with us.

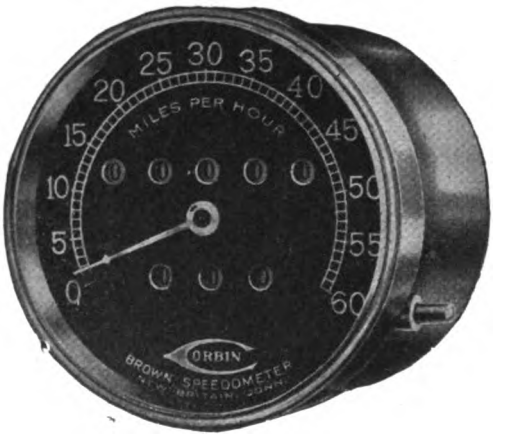
The CORBIN-BROWN SPEEDOMETER needs no stronger endorsement than this.

If it is efficient enough to handle the work cut out for it by the War Department it is efficient enough to warrant its being equipped to your automobile. Do this at once.

Investigate for yourself.

At all dealers.

Catalog on request.



The Corbin Screw Corporation
THE AMERICAN HARDWARE CORPORATION, Successors
NEW BRITAIN, CONN.
BRANCHES: New York Chicago Philadelphia
Makers of Corbin Duplex Coaster Brakes for Bicycles

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More Overlands for Detroit This Year Than in the Entire Four Years Previous

300 *more* Overlands have been shipped to Detroit *this year* than were shipped in the *entire four years* previous.

An indication of the Overland popularity that is turning profits into the pockets of Overland dealers in all sections of the country.

"Made in U. S. A."

The Willys-Overland Co.

Toledo Ohio

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MOTOR WORLD

for

DEALERS, JOBBERS AND GARAGEMEN

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SELL ADVERTISED GOODS!

READ MOTOR WORLD NEXT WEEK

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STREET MEETINGS were held in every little town into which the caravan of boosters entered. The scene above is typical

Milwaukee Dealers Boost Wisconsin State Fair

Tradesmen of Wisconsin's biggest city make a tour of the state in motor cars and preach the Gospel of State Fair throughout a territory of nearly a million people. The motor car show is a big state fair feature. It will be held September 11-16.

By Ray W. Sherman

MILWAUKEE, Sept. 2.—The motor car dealers of Milwaukee to-day concluded their second annual state-fair-boosting tour, which is one of the greatest pieces of dealer enterprise in the United States.

The object of the tour is to put the state fair—September 11 to 16—on the map. Incidentally the object is to make the motor car show at the fair a success.

But since the show is but a part of the fair and since the boosting concerns the fair and not the show the tour is ratable only as civic enterprise.

The tour lasted six days. There were 37 cars and between 150 and 160 members of the motor trade. They left this city at 8.20 last Monday morning and between then and this afternoon covered 555 miles, not including side tours. They visited 44 cities, villages and hamlets, with a population of a quarter million. In each one of these they preached the gospel of state fair.

THEY PARADED, THEY SANG, THEY BRASS-BANDED. THEY SCATTERED LITERATURE AND THEY YELLED AT EVERY FARMER THEY SAW ALONG THE ROAD AND VOCIFEROUSLY INVITED HIM TO COME TO THE STATE FAIR.

That they made an impression on the State of Wisconsin cannot be denied. Their coming was expected, the boosters were warmly greeted and their departures were enthusiastic.



MAYOR D. W. HOAN of Milwaukee was the official speaker for the boosters through most of the tour

Tour Is Spectacular

Much of the impression is due to the spectacular manner in which the tour was staged. Each booster wore a regulation gray duster, white hat with blue band, and carried a bamboo cane. Each car was numbered and labeled. At the front rode a little German band. The long line of cars—carrying no women, and with every driver a skilled automobile man—shot across the country at from 30 to 50 miles an hour.

A procession like that can't go across any state and not be noticed.

The Tour Well Planned

Also, the tour was well arranged for beforehand. Pathfinding had been done, the country newspapers were enlisted, and the event received much valuable publicity before and after.

The chief spokesman for the boosters during most of the run was no less a personage than Mayor D. W. Hoan of Milwaukee, whose mere presence lent prestige to the enterprise. He spoke at every stop, and after Hoan left the boosting was taken up by State Commissioner of Agriculture C. P. Norgord and F. A. Cannon of the Wisconsin Good Roads Association.

How They Did It

The program in each town was much the same. The cars would slow down in the outskirts and close up the gaps. They would then shoot into the town and park in a square or main street. The

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Seven Views of the Milwaukee Booster Tour















1—*Captain "Heinie" Osmond and the little "Cherman Bandt" led the parades at all the stops*

2—*In Lake Mills the crowd that listened to Mayor Hoan was mostly boosters; the townsfolks were shy*

3—*After the parade and speeches the boosters flocked back to their cars and were on their way*

4—*In Johnson Creek the boosters "beat it" hurriedly for the far end of the parked row to get free buttermilk and cheese*

5—*The parade was quite an exhibition as it swung down through the main square in Ripon*

6—*Every time the boosters entered a town the population lined up upon the curb to watch the spectacle.*

7—*Some of the little towns had public bandstands and these were quickly taken advantage of by the speakers*

little German band would start down in front of the line of cars, with the boosters falling into line all along.

Then the Mayor

Then would follow a parade of the downtown section, after which the boosters would Indian-file into a circle around the band and a professional quartet would mount a car and sing. The crowd —oftentimes shy at first—generally gathered to hear the songs.

About this time the Mayor or some other principal personage in the town would mount a tonneau and welcome the boosters, ending with an introduction of the Mayor of Milwaukee or Commissioner of Agriculture. Next came the boosting speeches, and in conclusion the quartet often sang again. Then, with a noisy, hand-waving farewell the boosters piled into their cars, fell into line with precision, and dashed out of town and off across the country to repeat the program from 8 to 30 miles farther on.

When the cavalcade made a night stop it literally took possession of the hotels,

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BART J. RUDDLE, asst. sec of Milw. Automobile Dealers, Inc.

EDGER F. SANGER, chairman of the tour committee

L. H. GLENN, Jonas Automobile Co., Cadillac

B. T. JONES, Velie

P. B. HUSTIS, Motor Car Sales Co., Jordan

F. L. CLINTON, Paige dist. mgr.



W. TORISON, Ross 8

W. G. RAFTER, Winton

CHARLEY SULLIVAN, Northwestern Railway. Guest of the tour

D. F. NICOLAZZO, Monroe

GEORGE A. MOELLER, Milwaukee Sentinel

COURTLAND BABCOCK, Babcock Spring Co.

C. A. BRIDGES, Overland

J. E. MONTGOMERY, Lexington



GEORGE BARMORE Goodyear Tire

JOSEPH ZOWODNEY, Overland

EDWARD J. CZERWINSKI, Oakland Overland

GEORGE W. NIEGELSEN, C. B. COMSTOCK, Harry Newman, Inc.

F. J. CHLUPP, Motor Car Sales Co.

B. NECKER, Packard Overland

ROBERT E. BEVERUNG, PAUL JUSTUS Winton factory

A. W. MIERDW, Burd ring

for generally no one hotel could care for the crowd. With the grime washed off —in part—the boosters sauntered about in the evening and the populace had its answer to the oft-repeated question, "Have the boosters come yet?"

Interested Though Quiet

The question, really, was often asked. The proprietor of a little haberdashery in Markesan said the boosters' tour was one of the events of the month. Country people seldom are effervescent, but they are interested in things that concern them, and this haberdasher said the tour was a topic of conversation.

The Markesan haberdasher said that out of that little town of 900 about 300 people would journey to Milwaukee to the fair. And Markesan is not unlike scores of other rural centers.

The station agent in a little wayside stop below Sturgeon Bay, in northern Wisconsin, through which the tour did not pass, chatted with the train conductor about the arrival of the boosters in Sturgeon Bay. The station agent said he "guessed he'd have to go up to see them." If a man will go to the next town or so to see the boosters, doesn't he seem interested enough to go to the fair?

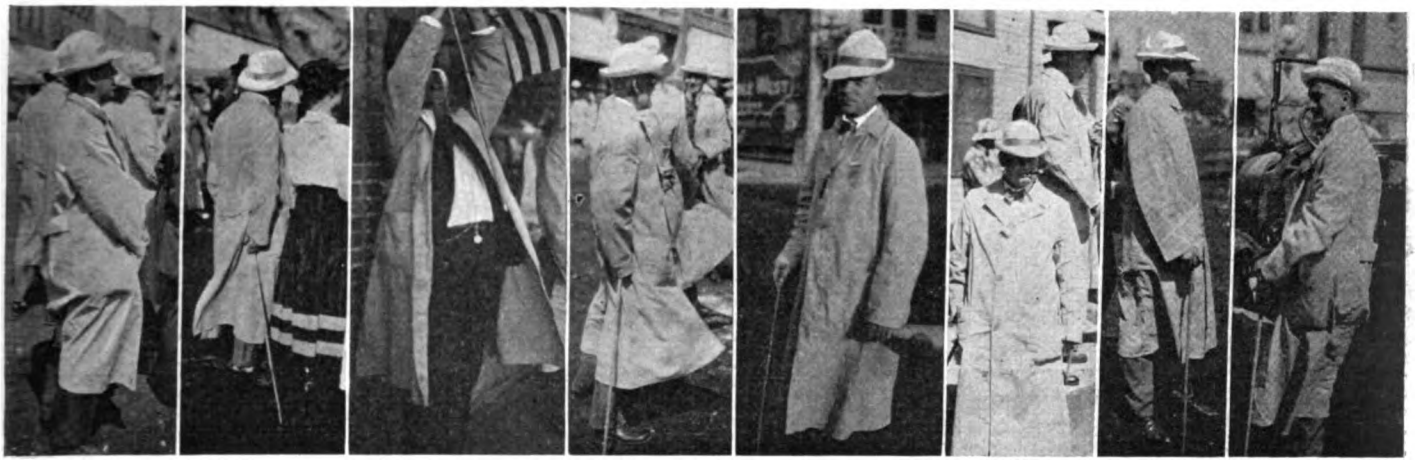
Appeal to the Farmer

The whole appeal throughout the tour was on a rural basis. It was of the educational and development value of the fair. The Mayor and other speakers told

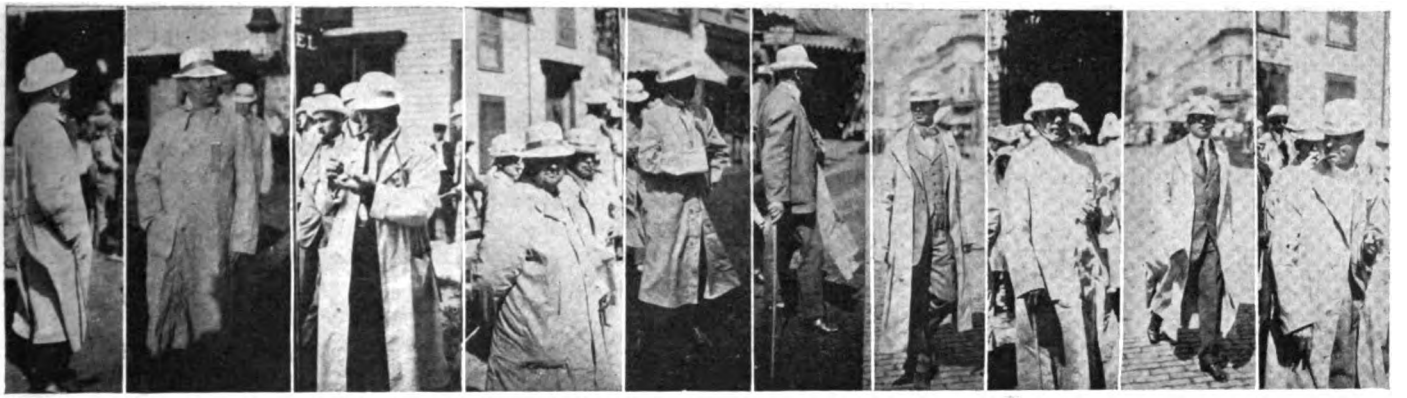
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FRANK SMITH, Chalmers | H. EMERY, Ross 8 | RAY W. SHERMAN, Motor World, New York | V. L. INGERSOLL, Regal | ED. NEWMAN, Portage T. & R. Co. | B. F. DELA HUNT, Milw. Nat. Bank | M. HAENLEIN, Edgar F. Sanger | J. McKENNON, King



DR. L. A. BOORSE, Chandler | CARL MOEBIUS, Moebius Printing Co. | J. C. DONAHUE, Ross 8 | EDWIN DUSOLD, Overland | L. D. FRINT, Monroe and Olds | J. E. NELSON, King | H. W. BONNELL, Mitchell | FRANK DELA HUNT, tour committee



HENRY STAAB, Germania Herold | MANNING VAUGHAN, Milwaukee Sentinel | H. P. ROBINSON, Evening Wisconsin | W. CUPID KNOWLES, Franklin | HANS CLAUSON, Pan-American Rubber Co. | JOSEPH ZAWODNEY Overland | JESSE SMITH, Jesse Smith Auto Co. | L. E. RANSOM, Harry Newman, Inc. | W. L. BAUMBACH, Kelly-Springfield tire | ORRIN R. HUGHES, Scripps-Booth

how the offering of prizes and the exhibit of products led to the development of stock and produce, and they said each fair was of wonderful value from an instructive standpoint, with its best and new in everything from stock and produce to farm and household machinery. They also said the fair was FOR Wisconsin, but that it couldn't be a success if it didn't have the support OF Wisconsin's people.

Last Year's Results

The booster tour does help the fair. That was demonstrated by the first tour, held last year. A normal increase in attendance is 5 to 10 per cent, but after the first booster tour the gain in attendance was 20 per cent.

Also, the motor car show at the state fair has become a big drawing card. It is a bigger show than Milwaukee's midwinter exhibition. Last year 840 dealers registered at the state fair show, and the

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Mostly Comedy



1—The noisy man in the Ripon band. 2, 3 and 4—N. E. Osmond, Osmond-Vogel Motor Car Co., Milwaukee, used to be in burlesque and he hasn't forgotten it all yet. 5—Ed Otte was a cop comedian and the more than six feet of Case Sanger made a fine Uncle Sam. They led the parades. 6—He's FOR the fair. 7—F. J. Chlupp, the only "female" in the tour, was much in love with George Niegelsen. 8—Chlupp "swiped" that bottle in Ripon. 9—This happened "anywhere in Wisconsin." 10—Why bother with a cup. 11—The tour boasted a professional quartet, W. Grisham, C. Grisham, Ben J. Ealy and W. Kempen. 12—The Overland outfit had an organ in the tonneau. 13—This happened everywhere late in the day. 14—The constibule by heck!

winter show registration is only about 900.

At the state fair show an admission of 10 cents is charged to the exhibit to keep out the disinterested, and of the 124,000 who entered the fair's gates last year 71,000 visited the motor car show.

Biggest Show of Year

Last year eighty-two factories were represented at the fair show; at the midwinter show there were but seventy-two.

The show receipts on Milwaukee Day at the fair are donated to good roads. They should be from $3,000 to $5,000 this year.

And the motor car men help swell the attendance by other means than the tour. Tickets are sent to business men to be purchased by corporations and given to their employees. The movement proved popular last year and will be repeated.

Idea Proved Popular

The tour idea has taken hold with the dealers. Last year but seventeen cars were in line; this year there were thirty-seven. It also has taken hold in the country. Last year, on the first tour, a route was laid out as an experiment. This year it was altered to permit boosting in a new section, and there were twenty-five towns which wanted the boosters but which couldn't get them because the schedule was full.

Boosters Well Received

The receptions along the route were gratifying. Sometimes the shy country population didn't say much, although it listened, but often lunches were served. In Johnson Creek buttermilk and Danish cheese were dispensed. In Jefferson were two tubs of beer. In Luxemberg the town gave away a dry, non-alcoholic champagne, which it manufactures, and the mayor gave away a big, red paper key to the village.

The boosters bought out a bologna shop in another little burg, and generally the commercial associations in the larger cities welcomed the boosters.

May Become Trade-Promotion Tour

Bart J. Ruddle, assistant secretary of the dealers' association, says he believes the event may become a Milwaukee trade-promotion tour, not unlike those promoted by the Twin Cities in the Northwest.

The motor car dealers, he states, get good results in a business way from the tour, although it is not held for that purpose. Often retail sales are made en route, and generally there is an after-business that is worth while.

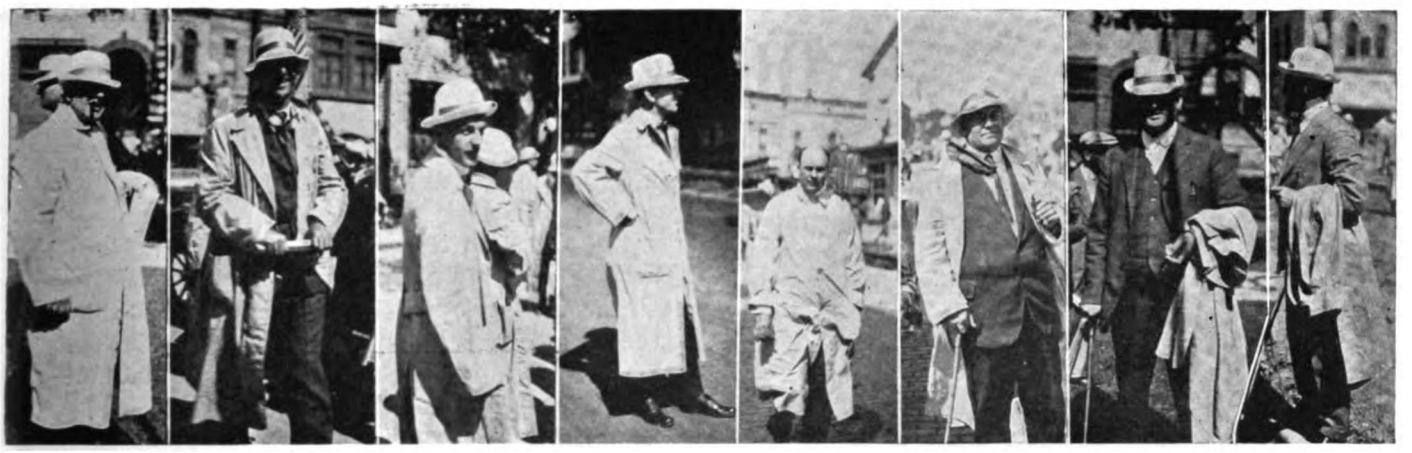
The Tour Management

The tour is managed by a committee of the Milwaukee Automobile Dealers, Inc. Edgar F. Sanger is chairman, and much of the detail is handled by Bart J. Ruddle, the association's assistant secretary. Work on the plan is begun 2 months before the run is held.

The Route of the Tour

The tour did not cover the whole State of Wisconsin. The boosters concentrated in the section from which greatest results might be expected. The route led west to Madison, 105 miles, and then ran northwest to Sturgeon Bay, 247 miles, and south to Milwaukee. This took in the more thickly populated southeastern half of the state and that which is tributary to Milwaukee. The northwestern corner of the state is, from a motor car standpoint, hitched onto the Twin Cities, and it is in many respects unattached to Milwaukee. The bulk of the state fair

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MORRIS MELSTER, Marion-Handley | *C. H. SANGER, Stearns-Knight* | *HUGO BOORSE, Chandler* | *HENRY STAAB, Germania Herold* | *GEORGE BROWNE, Overland* | *H. H. BUTTON, Stearns-Knight* | *A. F. TIEGS, Marion-Handley* | *F. J. EDWARDS, Kissel*

visitors come from the territory covered by the tour. The route follows:

FIRST DAY		SECOND DAY	
Mileage.		Mileage.	
	Milwaukee		Madison
18	Waukesha	12	Sun Prairie
14	Oconomowoc	8	Marshall
20	Johnson Creek	5	Waterloo
8	Jefferson	12	Columbus
8	Lake Mills	5	Fall River
12	Deerfield	15	Randolph
10	Cottage Grove	7	Fox Lake
15	Madison	16	Markesan
		14	Green Lake
105		94	

THIRD DAY		FOURTH DAY	
Mileage		Mileage	
	Green Lake		Green Bay
8	Ripon	17	Luxemburg
13	Berlin	6	Casco
14	Omro	5	Rio Creek
11	Oshkosh	12	Forestville
14	Neenah	10	Sturgeon Bay
1	Menasha		
6	Appleton	50	
8	Kaukauna		
22	De Pere		
6	Green Bay		
103			

FIFTH DAY		SIXTH DAY	
Mileage		Mileage	
	Sturgeon Bay		Elkhart Lake
20	Algoma	8	Plymouth
13	Kewaunee	25	Fond du Lac
24	Two Rivers	17	Campbellsport
10	Manitowoc	6	Kewaskum
37	Elkhart Lake	8	West Bend
		16	Cedarburg
104		19	Milwaukee
		99	

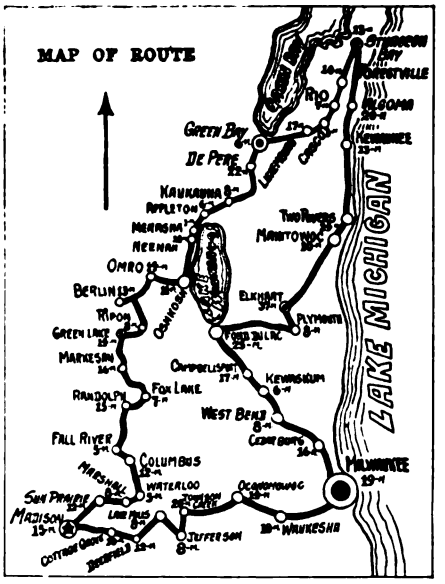
Total towns 44
Mileage 555

The Leedle Cherman Bandt

The little German band was successful as an attention-getter. It played all the time and never seemed to tire. It was abducted en route a year ago, and when Bart J. Ruddle, assistant secretary of the association, wanted the band this year he couldn't find it. So he sent 300 letters, general delivery, to 300 small towns, addressed to Otto Schulz, the band leader, and one of these letters located Otto in Sioux City, Iowa. Otto came.

Otto was a German officer and he accepts orders from only one man in the tour. Last year it was George W. Browne. "What time shall we show up in the morning?" asked Otto one evening. "Five o'clock!" said Browne, "and play 'Tipperary' in the lobby until I come down."

And Otto did. And clerks, guests, bellhops or police couldn't stop him. Said Otto: "Dose are my orders."



Planned to Meet Strike

BOSTON, Sept. 1—In anticipation of the railroad strike, Boston dealers, particularly those handling large cars and trucks, were besieged with inquiries relative to what could be done in the way of getting vehicles if the railroads were tied up. Men representing big corporations hastened to the dealers to get some idea of vehicles available. From Worcester, Manchester, Providence, Lowell, Lawrence, Portland and elsewhere that have big manufacturing plants came telephone inquiries and personal visits to get options on machines.

The truck dealers were asked to hold certain types in readiness for delivery in case of a strike. Indications pointed that it would be impossible to get a motor truck, new or used, or a motor car in Boston 1 week after a strike was declared.

Men were giving options on the better lines of vehicles. These were a 10 per cent deposit, to be forfeited in case they were not taken within a few days after Labor Day. Big dealers were taking care of their regular customers, who had bought from them for years, by accepting options but not demanding cash deposits.

Speculators entered the market and tried to get options on some of the big trucks throughout the city. They offered blanket options on everything. One of the big dealers nearly fell into the trap, until he made an investigation of who was behind the deal. He then realized that when his vehicles were turned over to the speculator the latter would sell to some of the dealer's customers the trucks secured, and, of course, at an increased cost, so that it would be a bad bargain, for in future the dealer would have a hard time retaining such customers, who would feel that they had been victimized.

Gasoline Down Another Cent

NEW YORK, Sept. 5—Gasoline prices in this city, Long Island and Connecticut have been lowered 1 cent a gallon wholesale to 22 cents by the Standard Oil Co. Texas gasoline sells at 23 cents wholesale. Quotations for other localities are as yet unchanged, though prices are expected to drop on account of the large expansion in gasoline-manufacturing capacity, the improvement in refining methods enabling a larger gasoline yield and a corresponding increase in the production of crude oil.

SOME JOKE!

COLUMBUS, Sept. 1—Some jokester played a trick on the gasoline-buying public in Columbus and central Ohio, when he called up local papers and informed them that gasoline had taken a drop from 22 to 19 cents per gallon. All of the papers published the alleged information, with the result that gasoline distributers and dealers were busy the few following days explaining that the publication was a mistake. Up to Sept. 1 the price of gasoline in Columbus remained at 22 cents.

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1,000 Do

TO-DAY 1,000 garages and dealers are using Motor World's Simplified System of Accounting. There are 36,000 garages and dealers in the United States. This means that to date Motor World system is used by one out of every 36 dealers and garages.

This is an unprecedented adoption of a new system in 9 months. No other standardized system has been adopted in numbers to compare with this.

The Motor World Simplified System of Accounting is in use in every state in the United States and in many foreign countries.

Systems are in use in Ireland, Belgium, France, Scotland and Manila. Yesterday came an order from New Zealand.

Motor World's Standardized System of Accounting has the distinction of being used in greater numbers than any other system of accounting designed for a special class of retailers.

Five thousand complete instruction books covering the Motor World system have been secured by dealers and garagemen.

Add to this the 1000 *dealers using the system in its entirety and we have* 6000 *dealers and garages all thinking along the same channel of Better Business efficiency.* These 6000 dealers and garages constitute 16 2/3 per cent or 1/6 of the entire dealers and garagemen of the United States.

ONE IN EVERY SIX IS THINKING MOTOR WORLD'S METHOD OF ACCOUNTING.

The work of the Motor World Simplified System of Accounting already has spread beyond the confines of motor car dealers and garages. The Graduate School of Business Administration of Harvard University has requested the system for its library. The Federal Trade Commission, Washington, D. C., has approved it and now carries it on file.

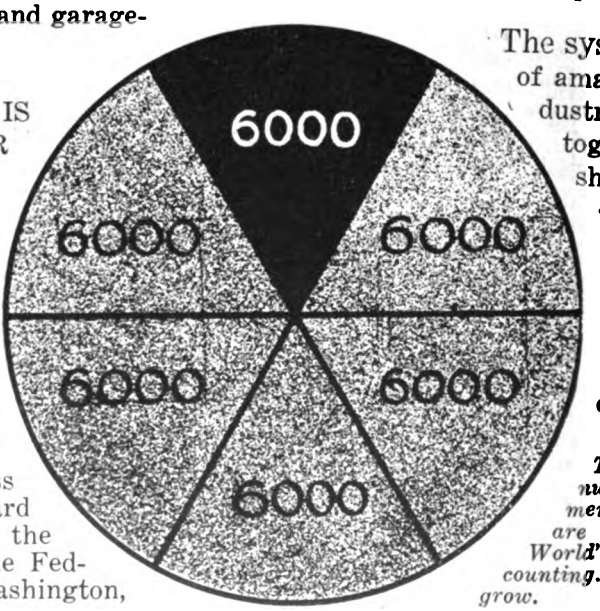
The Associated Advertising Clubs of the World is now preparing to standardize retail accounting for the hardware trade, the shoe trade, the drug trade and the grocery trade. In this connection it is working in conjunction with Harvard University and the Federal Trade Commission.

T. W. Snead, of the Accounting and Business System Department of Motor World, who developed Motor World system, is a member by invitation of the Committee of the Associated Advertising Clubs of the World, which has these new systems in charge.

These are days when business success requires up-to-date business systems. Six thousand dealers thinking along the same channel of business accounting are learning to talk in a single business tongue. These 6000 men understand each other better in talking their business. They are brought closer together by virtue of Motor World's System. *The business cost figures that this system produces from these* 6000 *will accomplish greater results toward standardizing business methods than any other single factor.*

If these 6000 men met at conference to talk Better Business, they would understand each other better and accomplish greater results because they have a common conception of the meaning of such business terms as "earnings," "expenses," "profits."

The system is doing its work of amalgamating this great industry, which must get close together to develop as it should develop; to handle adequately the big problems it must handle; and to give each man or woman in it that share of profit which his or her intelligent effort deserves.



This diagram shows the total number of dealers and garagemen in the United States who are vitally interested in Motor World's simplified system of accounting. Watch the black section grow.

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The third in a series showing

Dealers Who Have Made Good

TOM SILVER is a product of the country. He was born in Little Silver, N. J., thirty-two years ago. He is a slender, quiet man, somewhat retiring and shy of the limelight.

But you can always reach him. No barriers in the Silver organization. When you want him you say so—and he's always ready to see you. He is an inveterate fight fan, chases the little pill around the links and puts in an appearance at a fair percentage of ball games.

There is no better known motor car merchant in the Metropolitan territory than C. T. Silver. Yet he has been in the automobile business only 6 years. Which speaks volumes for his personality and his business methods.

He got his first taste of the trade in 1909 under a Brooklyn, N. Y., Buick dealer. A year later he became a subdealer for the Overland in the same territory and opened a store.

The first season he sold 125 cars. Before that there were only 35 Overlands in the whole territory. Then, the following year, the Willys-Overland Co. selected him as distributer for the Metropolitan district, Long Island and the state of New Jersey. The first year he sold 550 cars and by 1913 the business had grown to such proportions that new quarters were needed.

Toward the end of 1913 the Peerless company gave up its New York branch and Silver became Peerless distributer in addition to handling the Overland. Jan. 1, 1914, the beautiful Peerless building became Silver's. It represents an investment of $1,800,000.

Just recently he relinquished the Overland business and closed a contract with the Chalmers Motor Co., calling for $6,250,000 worth of cars, the biggest of its kind ever closed.

The Why

SILVER has surrounded himself with a nearly perfect organization. He has made a STUDY of merchandising motor cars and works accordingly. Special bodies that reflect the personality of the Silver organization and a sterling brand of service are his long suits. With a chassis in the popular-price class, he has attracted New York's elegant trade.



Conover Thomas Silver

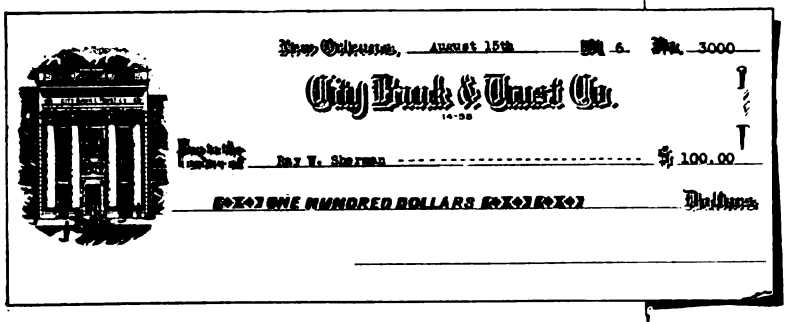
President

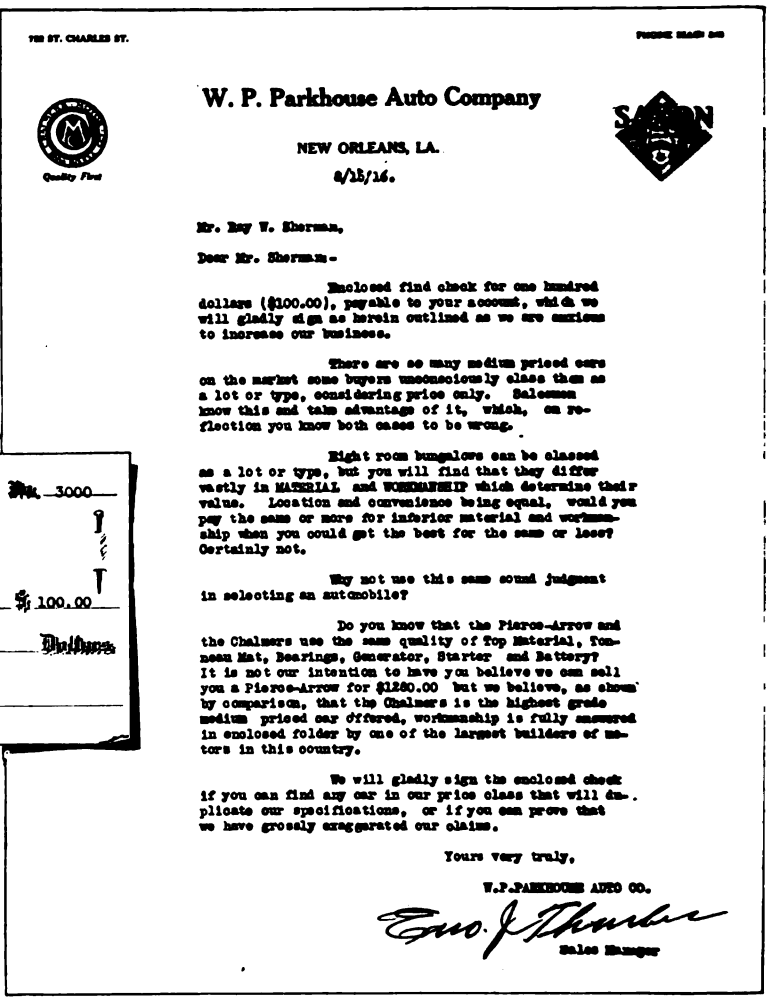
C. T. Silver Motor Co., New York

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Is This Idea Good?

This sales idea was sent to MOTOR WORLD *with the request that the idea be discussed as to its sales effectiveness. The story is the answer to Mr. Thurber's letter.*





W. P. Parkhouse Auto Company

NEW ORLEANS, LA.

8/15/16.

Mr. Ray W. Sherman,

Dear Mr. Sherman-

Enclosed find check for one hundred dollars ($100.00), payable to your account, which we will gladly sign as herein outlined as we are anxious to increase our business.

There are so many medium priced cars on the market some buyers unconsciously class them as a lot or type, considering price only. Salesmen know this and take advantage of it, which, on reflection you know both cases to be wrong.

Eight room bungalows can be classed as a lot or type, but you will find that they differ vastly in MATERIAL and WORKMANSHIP which determine their value. Location and convenience being equal, would you pay the same or more for inferior material and workmanship when you could get the best for the same or less? Certainly not.

Why not use this same sound judgment in selecting an automobile?

Do you know that the Pierce-Arrow and the Chalmers use the same quality of Top Material, Tonneau Mat, Bearings, Generator, Starter and Battery? It is not our intention to have you believe we can sell you a Pierce-Arrow for $1280.00 but we believe, as shown by comparison, that the Chalmers is the highest grade medium priced car offered, workmanship is fully assured in enclosed folder by one of the largest builders of motors in this country.

We will gladly sign the enclosed check if you can find any car in our price class that will duplicate our specifications, or if you can prove that we have grossly exaggerated our claims.

Yours very truly,

W.P.PARKHOUSE AUTO CO.

Sales Manager

This check and letter are sent to the prospect who has had a demonstration and a catalog and is thinking of buying. With them goes the chart on the opposite page

By Ray W. Sherman

YOUR letter asks for an analysis of your follow-up letter, including an unsigned check and a sheet on which the prospect is invited to compare the Chalmers with any other car or cars.

We have given this matter great consideration and question whether very great results will be secured from it. It is possible that your sales record for the season may be good, but we believe a minute analysis of your sales will not show a high degree of effectiveness for this letter.

To begin at the beginning: We believe you are sending it at the right time, which is after the prospect has received your catalog, has had a demonstration and has expressed himself as being interested in cars in your price class. Were the letter to be sent any earlier than this, it would be useless.

Consider the effect upon THE PROSPECT who receives this letter:

When he opens it he sees a check made out to himself, and for an instant he does not notice that it is not signed. His own name and the amount are the biggest things on it. The first sight of the check brings his interest up to an extremely high point and your letter gets his undivided attention. The check causes him to forget everything else for the time being.

Having sustained this shock, due to finding himself the recipient of $100, he begins to read the letter, and as he reads he finds that he really doesn't get $100, but that you believe firmly in the Chalmers car and are willing to back up any claims you make with your good money.

As he continues through the letter, his interest begins to fall, and by the time he has finished the letter it is back somewhere near normal. It is like a plotted curve which rises abruptly and then falls gradually.

The effect is that of anti-climax.

It is all right to assume that his interest should not be so highly aroused because the check is unsigned, but we cannot get around the fact that a check is a check and that when we receive one in the mail the psychological effect is much the same whether it is signed or unsigned; a second look at it tells us that it is unsigned, but the effect, nevertheless, is there.

We do not believe any man ever would go to the trouble of trying to earn this $100 in the way you suggest, and do you not think he is likely also to have, away back among his mental processes, a perhaps subconscious suspicion that there must be something the matter with your arguments if it is necessary for you, as a business man, to back up your statement with a bet?

There is also the element of comparison:

Do you believe comparison is ever valuable in selling goods?

Does it have a good effect upon you when a salesman for an overcoat tells you the lining in it is just as good as that in some well-known brand that sells for twice as much?

Are we not pretty well educated to the fact that goods are worth the price and not much more? And are we not prone to disbelieve any statement to the contrary no matter how well it is backed up? The prospect is a very peculiar animal and his actions are governed generally by very little things.

In your letter you mention the Pierce-Arrow, and you must remember that the man who reads your letter doesn't always get the impression you attempted to convey to him. While you may mention certain parts specifically, and while these may be identical with those on the Pierce-Arrow, do you not think the prospect is likely to get the impression that you are endeavoring to convince him that there isn't much difference between a Chalmers and a Pierce-Arrow? You yourself, will admit there is a difference between the Chalmers and the Pierce-Arrow; in fact, are we not all agreed that there is considerable difference between all cars, regardless of how high the ratio of value may be in each?

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After the prospect has seen the check and read the letter, has it made any great impression upon him?

Whether it has or not, he turns then to your folder, labeled "Why," and while this idea of comparison may not prevail in the minds of all prospects, I believe the folder is weakened at the beginning by the word "comparison" at the top. I believe this part of the folder would be greatly strengthened if instead of the word "comparison" you said, "Be Your Own Salesman," and if you, in this first paragraph, under the word "comparison," told the man that he should investigate carefully and base his purchase upon his own opinion. While the comparative nature of the page would still be there, we believe it would be largely eliminated for all practical purposes.

At the bottom of the page you again mention the names of other cars, and I do not think it is a strong argument.

The heading on the right-hand half of your "Why" folder says, "Is this motor too good for you?"

Do you think anything is too good for yourself, or do I think anything is too good for myself? Do we not all believe that nothing is too good for us, even though we are unable to buy it? This right-hand page, we believe, could have been better worked in if the prospect had been invited to make it a part of the evidence upon which he was going to base his purchase.

The second page mentions a man who said the Chalmers was good enough to go into a $5,000 or $4,000 car. Let us conceive that this is true, and then let us imagine ourselves trying to make the average prospect believe it. It would be a difficult job.

This condition is well illustrated by the story of a manufacturer of a number of years ago whose car really had exceptional value in performance. His advertising manager insisted upon putting this seemingly extravagant claim into the advertising, despite the protestations of the manufacturer. *The manufacturer's contention was, that while a story and demonstration might convince the prospect, the claims if set up in type or put into a letter sounded so absurd that they were not believed.*

The tendency to-day with the average public is to discount advertising claims, and no matter how true they may be, the effect of the claim is lost if it seems extravagant.

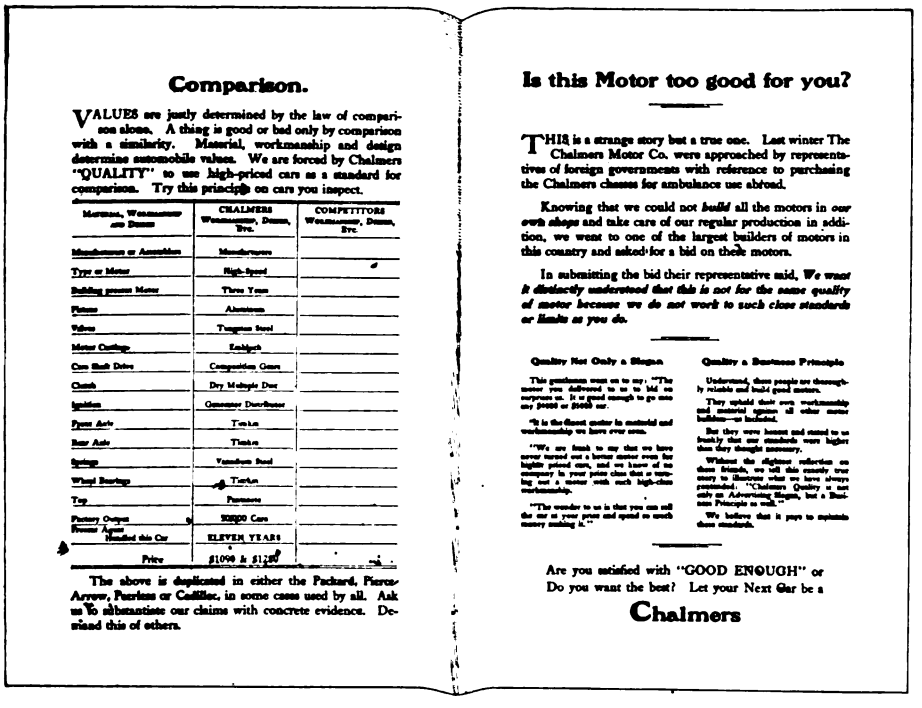
I also think there are certain detracting features in this proposition. To go back to the beginning: Your desire is to so convince the prospect of the value of the Chalmers that he will buy it, and in order to convince him you must present him with your selling points.

Do you not think this idea of comparison and the check are disturbing features and serve to draw his mind from a fair consideration of your claims?

Ever since this letter was received, I must confess I have thought of little except the check.

Another point is that there are a number of misspelled words in the comparative table in the folder, which may be intentional or may be due to careless proofreading in the print shop. For instance, instead of saying type of motor, you say "Type or motor." Tungsten ends in ten and not "ton." It is "en bloc" and not "enbloch." Timken ends in "ken," not "kin."

We appreciate your having requested a criticism of your plan and we have endeavored to base this criticism upon psychological principles entirely. We might ask you what success you have had with it, because, in the end, results are what count, regardless of principles. We should very much like to know what success you have had with it, but request that your reply on this point be very analytical, because, as we said at the beginning, while your sales may have been good, the part the letter played may have been very small; in fact, it may have been a detriment.



Comparison.

VALUES are justly determined by the law of comparison alone. A thing is good or bad only by comparison with a similarity. Material, workmanship and design determine automobile values. We are forced by Chalmers "QUALITY" to use high-priced cars as a standard for comparison. Try this principle on cars you inspect.

Materials, Workmanship and Design	CHALMERS Workmanship, Design, Etc.	COMPETITORS Workmanship, Design, Etc.
Manufacturers or Assemblers	Manufacturers	
Type or Motor	High-Speed	
Building present Motor	Three Years	
Pistons	Aluminum	
Valves	Tungsten Steel	
Motor Castings	Enbloch	
Cam Shaft Drive	Composition Gears	
Clutch	Dry Multiple Disc	
Ignition	Genuine Distributor	
Front Axle	Timken	
Rear Axle	Timken	
Springs	Vanadium Steel	
Wheel Bearings	Timken	
Top	Permanent	
Factory Output	30000 Cars	
Present Agent Handled this Car	ELEVEN YEARS	
Price	$1090 & $1295	

The above is duplicated in either the Packard, Pierce-Arrow, Peerless or Cadillac, in some cases used by all. Ask us to substantiate our claims with concrete evidence. Demand this of others.

Is this Motor too good for you?

THIS is a strange story but a true one. Last winter The Chalmers Motor Co. were approached by representatives of foreign governments with reference to purchasing the Chalmers chassis for ambulance use abroad.

Knowing that we could not *build* all the motors in *our own shops* and take care of our regular production in addition, we went to one of the largest builders of motors in this country and asked for a bid on their motors.

In submitting the bid their representative said, *We want it distinctly understood that this is not for the same quality of motor because we do not work to such close standards or limits as you do.*

Quality Not Only a Slogan

This gentleman went on to say, "The motor you delivered to us in '14 is everywhere on. It is good enough to go into any passenger car.

"It is the finest motor in material and workmanship we have ever seen.

"We are frank to say that we have never turned out a motor equal to the highest priced cars, and we know of no company in your price class that is turning out a motor with such high-class workmanship.

"The wonder to us is that you can sell the car at your price and spend so much money making it."

Quality a Business Principle

Understand, these people are thoroughly reliable and build good motors.

They upheld their own workmanship and material against all other motor builders—in England.

But they were honest and stated to us frankly that our standards were higher than they thought necessary.

Without the slightest reflection on these friends, we will this morning scan closely to illustrate what we have always contended: "Chalmers Quality is not only an Advertising Slogan, but a Business Principle in truth."

We believe that it pays to maintain these standards.

Are you satisfied with "GOOD ENOUGH" or Do you want the best? Let your Next Car be a

Chalmers

This comparison chart is enclosed with the check and letter shown on the opposite page

Columbus Holds Show at Ohio's Fall State Fair

COLUMBUS, OHIO, Aug. 31—The annual fall show, held in conjunction with the Ohio State Fair, opened Aug. 28, to continue 6 days. The show is held under the auspices of the Columbus Automobile Show Co., composed of dealers of the Buckeye Capital, and was in the South Machinery Hall. No admission fee was charged.

In all, about seventy-five cars of about forty different makes were on display. All the local dealers participated. Of the thousands of State Fair visitors annually a large proportion are from the rural sections. Thus the fair is considered an excellent occasion to show the new models of cars, as the farming population is the best buyer of automobiles in the Buckeye State.

Despite the hot and dry summer, conditions among the farmers of Ohio are excellent in every way. High prices for all farm products have placed thousands of dollars in the bank accounts of the ruralites. They are spending their money more liberally than ever before.

The cars and dealers showing them follow: Oscar Lear Motor Car Co., Buick; Columbus-Cadillac Co., Cadillac; Kissel Service Co., Kissel; F. E. Avery & Son, Packard, Jeffery and Detroit electric; Standard Motor Car Co., Hudson; Ohio-Saxon Co., Saxon; Twyman Motor Car Co., Inter-State; Winders Motor Sales Co., Velie and Chevrolet; Willys-Overland Co., Columbus branch, Overland and Willys-Knight; Broad-Oak Automobile Co., Studebaker; Ohio Metz-Elcar Co., Metz and Elcar; O. C. Bolt Co., Franklin; Curtin-Williams Co., Cole and Dort; Snyder Automobile Co., Allen; Owen Magnetic Motor Co., Owen Magnetic; Cruikshank, Son & Robinson, Pathfinder, Argo; Central West Motor Car Co., Oakland; Ohio Auto Sales Co., Dodge; J. Renner, Davis; Campbell-Fisher Sales Co., Madison; Capital Motor Car Co., Reo; Westcott Motor Sales Co., Westcott; Everitt Auto Sales Co., Maxwell. In addition, quite a few motor trucks were on display, including the Indiana, Federal, Buick, Cadillac, U. S., Sternberg, Service, Jeffery, Packard, Reo, Republic and Smith Form-a-Truck.

Sell Advertised Goods.

Read MOTOR WORLD *next week.*

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Accounting and Business Systems



By T. W. Snead

Accounting Car Cost

Editor Motor World:

I do not see in your system where we can keep the cost of cars to owner of garage. This I call my maintenance account. Our repairshop does work on cars taken in trade. What shall we do, call this car we have taken in trade a customer's account?

For example: Salesman A sells John Brown a 1916 Reo for $1,300 and allows Brown on the old car $650.

John Brown will take his new car in March and pay us the balance of $650. We take Brown's old car now and call it the Brown Reo. We cannot sell the Brown Reo until it goes into the repairshop. The expense for labor and new parts amounts to $68. The demonstrator works 5 days to sell the car and then sells it for $650. How do we show the profit on this sale in December when the new car will not be delivered until next March?

The following is a list of the departments I want to keep:

(1) Automobile sales; (2) Tires and tubes and rubber stock; (3) Vulcanizing department; (4) Repairshop; (5) Bicycle accounts; (6) Proprietor's personal expense; (7) Livery; (8) General merchandise account; (9) Gasoline and oils; (10) Storage account; (11) Expense account; (12) Freight and expense.

Can I keep all these in your one book and with my 500 customers and purchase ledger accounts? Would you send me a sample of the bill for customer account and ledger leaf; the rest of the book I presume is like Forms 1 and 2 which I have received.—E. D. Walker, 25 Main Street, Nashua, N. H.

Story of the Business

We believe that by using the system as outlined in our articles you will be able to tell the "Story of your Business" as you have outlined it and with no increased expense in your office. On the other hand, we believe that the amount of labor and time will be considerably lessened.

The "Cost of Cars to the Owner," which you call a maintenance account, we take to mean the expense of maintaining a demonstrating car, or else the cost of rebuilding a purchased used car. As long as you have given us an example, let us take your case and work it out on our system. You will find on Form 1, which is for Sales and Incomes, and on Form 2, which is for Expense, etc., a Department for Car Sales. It makes no difference whether you are selling used cars or new cars, every car you sell would come under this department of your business. In this department, the Income, or earnings, would be from Sales of Cars only, either old or new. The expense of this department would be as follows for the average dealer:

Wages or salaries
Supplies
Cost of demonstrator (upkeep, etc.)
Depreciation of demonstrator
Entertainment
Free service
Miscellaneous
Advertising
Cost of rebuilding

and any other division that is large enough to make it a real expense. Now that we have a rough outline of this department, let us take your example and make the entries on our system.

This Is How It's Done

We sell John Brown a 1916 Reo for $1,300 and agree to deliver the car to him in March. We agree to take his old car *now* for one-half of the amount, or $650, and he is to pay the balance, $650, in March when the new car is delivered.

The sale is made and Brown delivers his old car, which we will call the Brown Reo, Factory No. —. We have received something of value, or we have received a benefit, and any such transaction should be shown by a debit on our books. Debit means to receive a benefit. What department received that benefit? The Car Stock account received the benefit, for it was put into it, or it will be after we have brightened it up in the repairshop, into stock to be sold, just the same as we buy gasoline and put it into stock ready for sale. So, we must debit our Car Stock account.

We turn to Form 2, and under Column 1 on the debit side we write $650, and after that we would write in the "name" column—Car Stock, Brown Reo No. —. Now we have made our Debit entry.

A credit means to give benefits. Who, or what, gave that benefit? The business has given nothing in return as yet for the $650 car, and John Brown has delivered the car. It is obvious, then, that we owe John Brown for the car until we fulfill our agreement and deliver the new car.

Then John Brown gave the benefit, so we must credit John Brown, which we do by turning to the Credit side of Form 2, and under All Other Accounts, Column 9, we write John Brown. Now at the end of the month, when we separate the various accounts in this column, we would not include this amount under Accounts Payable, for that we mean, generally, the Current Accounts. We would show this as a separate liability on our Statement; we would show that we owe John Brown $650, but by not including it among our Current Accounts Payable we call attention to this particular debt. And we do so because, while we owe the money it has a "string tied to it"; it is a contingent debt—contingent upon our performing some agreement.

When we have performed that agreement we will no longer owe him this amount; but until we perform the balance of the agreement we must show that we are indebted to him for that amount.

Summing up, then, the first part of the transaction would leave the $650 in Car Stock on the Debit side of our books, and on the Credit side we would show our liability to John Brown.

Charging Up Repairs

Now you say that the car we took from Brown is turned over to the Repair Department to be rebuilt, etc., and the cost of doing so amounts to $68, being divided, we will say, into $50 for labor and $18 for new parts. The parts were taken out of the Parts and Accessories Stock.

We will assume that the Repair Department uses a job ticket for every car that is taken for repair, etc. The car is finished and the ticket comes back to the office, just the same as if it was a customer's car.

On the ticket, the cost of the labor is shown as $50, and in another column is shown the various parts taken from stock, amounting to $18.

This repair job we should enter, just the same as any other, on Form 1, as follows:

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What received the benefit? The Car Sales Department, for by spending $68 we were able to sell the car for $650.

What gave the benefit? The Repair Department and the Parts and Accessories Department, for they did the work and gave the parts.

So we debit the Car Sales Department $68 and credit the Repair Department $50 and the Parts Department $18, and the second phase of the transaction is finished.

One point should be remembered in transactions of this kind between one department and another: the figures should always be at cost; no profit should be added to the parts or the labor, for it obviously is foolish to charge yourself with added profit. You will not find on Form 1 a Car Sales Department on the Debit side, for, as a rule, such items would come under this department on Form 2, so we make the entry on the the Debit side of Form 1 under All Other Accounts, as $68 Car Sales Expense, cost of rebuilding, and, if the information would prove of any value, you may add the name and number of the car rebuilt.

Now at the end of the month this expense is added to the various expenses of this department found on the Expense Sheet, Form 2. Now bear in mind that all this time we are still showing our liability to Brown for this car, also that the Repair Department has performed a job and they have been credit for it, and the Car Sales Department has been charged with the cost of the job.

Suppose, for example, that we did not succeed in selling the car. What would our statement show? It would show this: That we owe Brown $650 for his car; it would show that the business owns a car for cale (Car Stock); it would show that the Car Sales Department made no sale and had no Income; and it would show that the Car Sales Department had an expense of $68.

Story It Should Tell

Right away, then, you say we lost money in the Car Sales Department. You certainly did, and *that is just what you accounting system should show you.* The big mistake made in this kind of a transaction with most garagemen is that they do not give credit to their Repair Department for the labor, etc., given to an old car in order to make it salable, and they do not charge the Car Department for this labor, consequently the Repair Department is the one that shows the loss, when all the time the loss is in the Car Sales Department. The garageman does not find this out until he has abolished his Repair Department and is still losing money at the old stand—the Car Sales Department.

The root of the transaction is a Straight Sale all the way through. When we sell the old car, it goes on Form 1 as a Cash or Charge transaction and credited to Income—Car Sales. When we deliver the new car, we receive $650 in cash and wipe out the debt we owe Brown and credit the Car Sales with $1,300. Let us assume that this car cost us $1,000, and when we paid for it, on Form 3 we Debited it to Car Sales—Cost of Cars Sold. Then our Income and our Expense Account in this department would be as follows:

Income—		
Sale of cars.....	$650	
" " "	1,300	$1,950
Car Sales Expense—		
Cost of cars sold.....	1,000	
" " " "	650	
Wages	....	
Supplies	....	
Advertising	....	
Etc., etc.....	....	
Cost—Rebuilding	68	$1,718
Profit Car Sales Department for Month of		$232

Accounting All Departments

You have given us a list of the various departments that you would like to open in your business.

The system is designed to care for all such items and accounts. The ruling of the forms will show you some of these departments directly. Taking your departments and accounts by numbers and they would be shown on the system as follows:

(1) All Income of Automobile Sales, and all expense of Sales Department would be entered under Car Sales Department on Form 1 and Form 2.

(2) Tire Sales Income and the expense of selling these would be entered under Parts and Accessories Department on Form 1 and Form 2. If you desire to separate your Income from Sale of Parts and Accessories, and show Tire Sales, Etc., separate, this could be done by analyzing or picking out all tire sales from one column. And just so with every other part or accessory.

The idea is that in making this one of the departments we aim to separate the business into departments according to the expense of running the department. For example, the same salary that you pay the man that sells tires goes to paying him for selling horns, or spark plugs, etc., and this all comes under the head of Sale of Parts and Accessories. The total from this column you can separate at the end of the month by any plan that you may desire.

(3) Vulcanizing would come under the head Repair Department, as the same money spent in the repairshop goes to help pay the vulcanizing end of the business. Remember that after the various columns, are columns for explanations, in which the memos can be made, and from the total in the Repair Department at the end of the month you can very easily separate vulcanizing income from Car Repairs, etc. But, possibly, you could not separate the expense unless you ran an elaborate cost system in connection with your accounting system.

(4) Repair work, of course, would come under that head, both on the Income sheet and the Expense sheet.

(5) Bicycle Account.—If by this you mean sales, etc., I would place all sales and expenses either under the Car Sale column or the Parts and Accessories column and separate it at the end of the month. The expense of selling bicycles is, in all probability, shared by either one of these departments. Bicycles would, of course, be carried in Stock For Sale, just as Gasoline or Cars.

(6) Proprietor's Personal Account is simply the name you give this account to which all moneys drawn out by the proprietor is charged. If it is a proprietorship, this should be written off once a year to Profit and Loss. All such entries are made in the All Other Account columns. (See supplement of Forms 1 and 2 for example.)

(7) Auto livery, if only a small income, you would include under the miscellaneous column. If this end of the business amounts to very much you would enter it under the same column as Storage, and, if need be, separate it from the Storage Income at the end of the month.

(8) We cannot determine just what you mean by General Merchandise Account, unless you mean merchandise carried in stock, which has been explained in previous paragraphs.

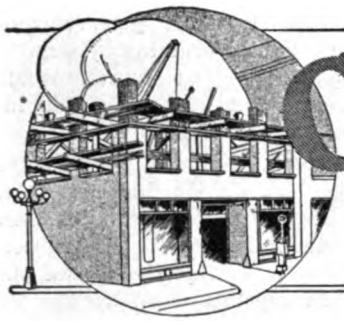
(9, 10, 11 and 12) Gasoline and Oil have a separate column both for Income and Expenses in the system, likewise Storage. Expense accounts of all freight and express, if paid for by you, are simply one item of Expense to be charged to whichever department it is benefiting. That is, if you are shipping a horn, it would be Parts and Accessories Expense, called Freight and Express. If you were paying the freight on a car coming to you, it would be Car Sales Expense—Freight and Express. If the customer is to pay this, it would be charged to him when you paid the bill on Form 2.

Customer's Account Ledger

We believe that you can carry all of your accounts in the one binder, and there is no transaction that occurs in the garage and dealer business that cannot be accounted on the system. If you should find that your Customers' Accounts make the binder inconvenient, it would be a simple matter to separate them by putting them in another binder.

We are sending you a sample of the Customers' Account Sheet, which you will note is punched to fit the same binder as Forms 1 and 2. These sheets stay in your binder until filled up and your bills and statements to your customers are made up from this sheet. If we can be of further service to you do not hesitate to call on us.

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Scientific Construction

GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

GARAGE, SALESROOM AND ACCESSORY STORE 55 X 130

Fig. 1

Editor Motor World:

I am figuring on building a garage of cement, 55 x 130, and wish you would send me a floor arrangement and about what a garage like that would cost from the following description and drawing showing basement and two streets:

It will have a 10-in. wall and rough finish on the outside as common to garages. I want a fairly good sized showroom so that I can stand one or two cars, also to display accessories, parts and tires; a private office, lavatory and repairshop.—Louis De Witt, Buena Vista Garage, Buena Vista, Col.

The arrangement, Fig. 1, is compact and convenient. The reason for placing the garage entrances at the side is to allow full use of the valuable frontage space for the display of cars and accessories.

We believe that the features of this plan will instantly appeal to you; but if there are any points about it that you are doubtful about and you would like to have us explain in detail why we did this or that just the way we did, why, please call upon us.

ADDITION TO GARAGE

Figs. 2 and 3

Editor Motor World:

We have a garage 50 x 120 and contemplate building an addition at one side according to the attached sketch. The size of the proposed addition is approximately 30 x 50, but it could be a few feet wider if it could be shown that the storage capacity could be much increased by a few additional feet.

We subscribe to the Motor World, and notice that you help many people out who are about to build garages. We would appreciate any suggestions made by you as to the number of cars that could be stored in this extra space and the best location of the door, also any other information along these lines.—William Truscott Strehlow, Terrace Garage, Omaha, Neb.

The 30 x 50-ft. addition to your garage will allow cars to be stored with fair economy, providing entrance is on the alley. In this case eight cars, Fig. 1, may be accommodated, which makes the greatest space taken up by a car 187 sq. ft.

According to your plan, it seems likely that you would prefer to have the entrance in the side of this extension so that it connects with the main garage floor. If you do this it will be impossible to store the cars economically and, furthermore, there will be waste space in your main garage, because it will be necessary to leave the aisleway open from the aisle of the main garage to the extension.

However, if you can make this extension 40 ft. instead of 30, Fig. 2, you will find it more economical than the first plan, as fourteen cars may be stored. Including the space taken up by the aisle connecting the main garage and this room, the space required per car is only 160 sq. ft., as against 187 in the former instance; and if you consider only the area of the room itself, the cars take up only 143 sq. ft.

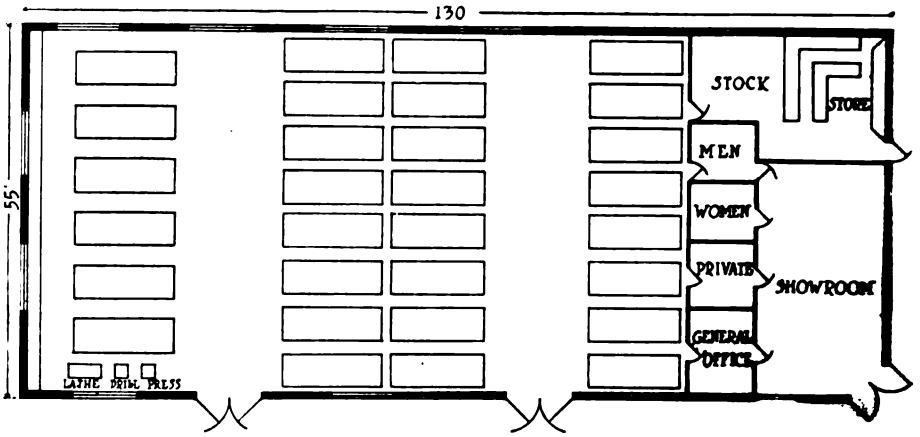


Fig. 1—The entrances are placed at the side and permits the entire front to be used for the display of cars and accessories

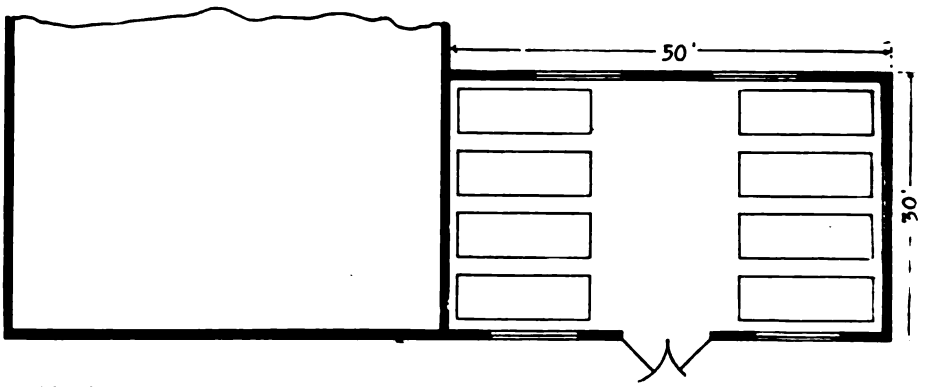


Fig. 2—This addition of 30 x 50 to the main garage will only permit 8 cars to be stored and is not connected to the main building

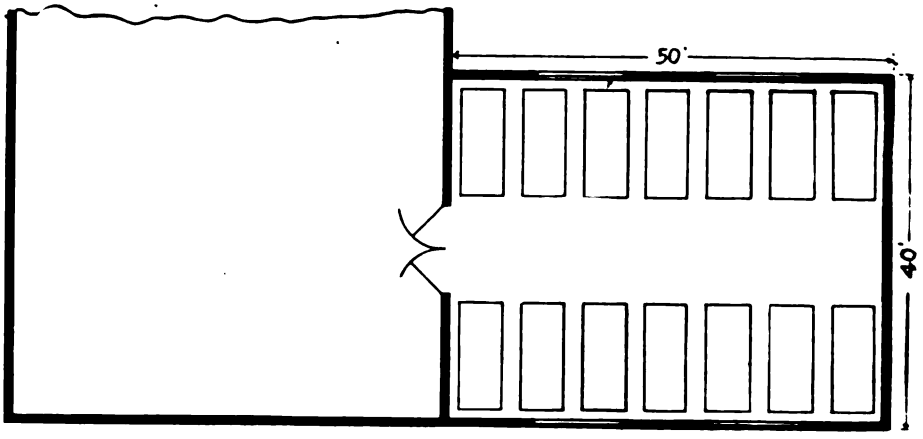


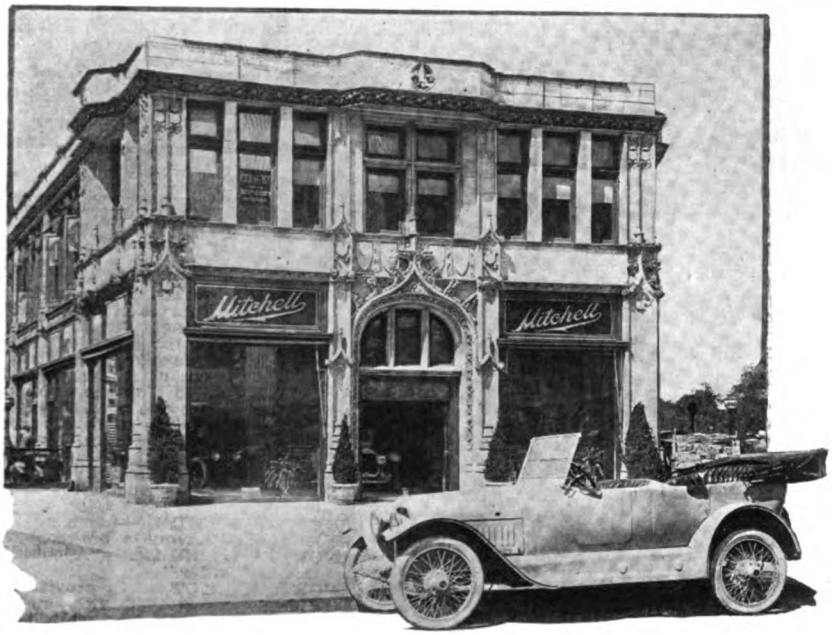
Fig. 3—An increase of 10 ft. in the width of the addition permits 6 more cars to be stored, bringing the total number up to 14. By making the total area 33 per cent greater, 75 per cent more cars may be accommodated

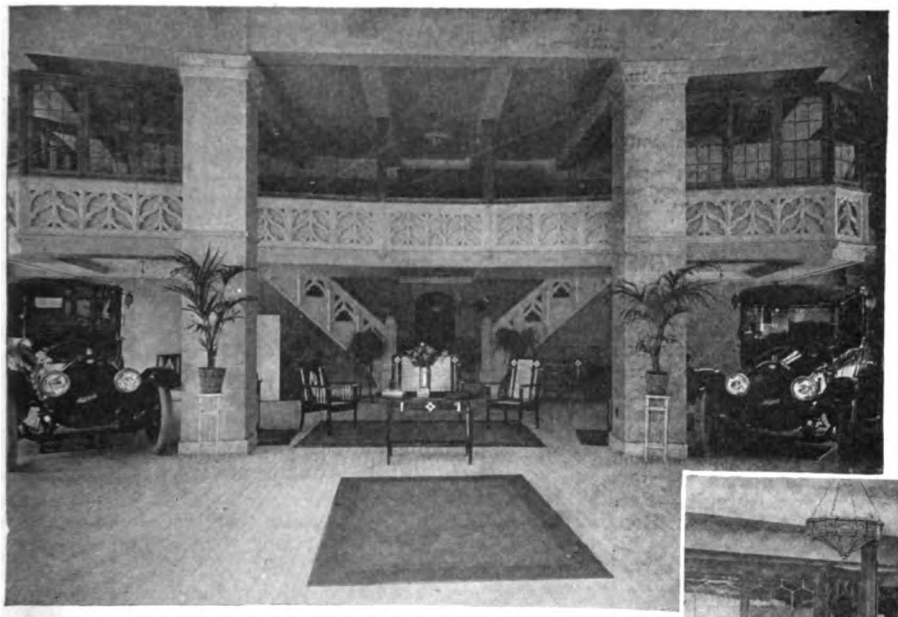
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Beauty in Two Modern Salesrooms

The Mitchell "Place in the Sun"

The Maxwell "Oasis"

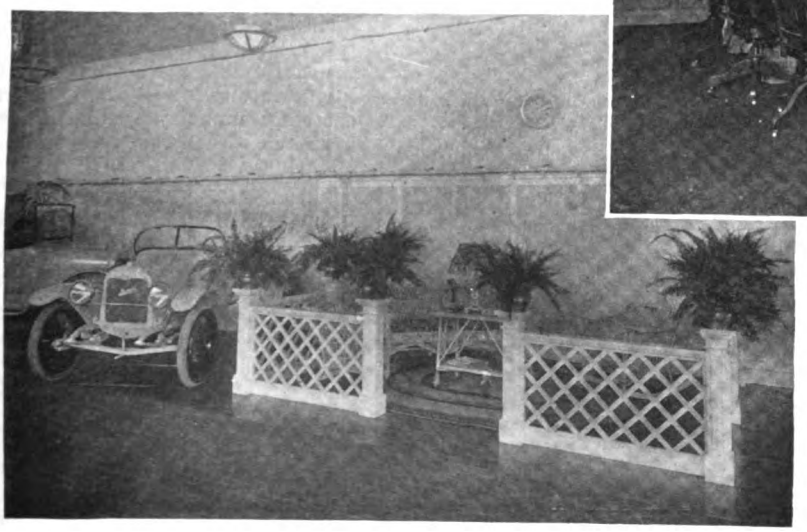




WHEN the Carl H. Page Motors Co. took over the distribution of Mitchell cars in the metropolitan district a distinctive salesroom was sought—something out of the ordinary, both from an esthetic point of view and for utility. The picture above almost tells the whole story. "A place in the sun," it is styled, and it is one of the most beautiful salesrooms in New York. It is what is probably the most prominent location in the city, being directly at the entrance to Central Park and yet right on Broadway. It is finished entirely in white outside and inside.

The view above shows the Mitchell salesroom in perspective. The stairs lead to a hanging gallery in which the salesmen have their individual desks. At the right is shown the arrangement of the desks in the gallery.





In the salesroom of the New York branch of the Maxwell Motors Co. there has been put up a light grill work "fence" enclosing a carpeted "Oasis" with wicker furniture. It serves as a resting place for prospects and also is used by salesmen in making sales.

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ANGLES OF THE LAW



By George F. Kaiser

What About Brakes?

Editor Motor World:

Will you please advise me, by return mail, in the self-addressed envelope inclosed herewith, *whether any States have specific and definite laws as to brakes on an automobile*, such as to how many there shall be, or what kind there shall be?

The only one that the writer is familiar with is in the State of *Missouri*, which simply states that they *must have adequate brakes.* Inasmuch as this question has come up, I shall be very glad to get any information on this matter.

I was told by a gentleman in the trade that there was an article in one of the trade magazines covering this, but I have been unable to find same in any of the old issues in our possession, three or four of which we are subscribers to.—Woods Electric Vehicle Co., Ralph K. Drake, general manager, 437 North Euclid Avenue, St. Louis.

Nearly all the States have specific and definite provisions in their motor vehicle laws regarding brakes on motor cars, as, for instance, the Missouri statute—with which you say you are familiar—provides that brakes must be "adequate, in good working order and sufficient to control such vehicle at all times when the same is in use." As I know of no article in any of the trade magazines covering this matter, I have drawn up the following:

SUMMARY OF PROVISIONS IN THE DIFFERENT STATUTES WITH REGARD TO BRAKES ON MOTOR VEHICLES

ALABAMA—No provision.
ARIZONA—"Good and efficient."
ARKANSAS—"Adequate."
CONNECTICUT—Same provision as New Jersey.
COLORADO—No provision.
DELAWARE—"Good and sufficient."
DISTRICT COLUMBIA—"Every vehicle engaged in carrying loads on the streets and highways within the fire limits, shall be equipped with an effective brake, where the load, including the vehicle, weighs ten tons or more, on hills having a 4 per cent grade or more."
FLORIDA—No provision.
GEORGIA—No provision.
IDAHO—"Adequate."
ILLINOIS—"Good and sufficient."
IOWA—"Adequate."
INDIANA—"Good and adequate."
KENTUCKY—"Good and sufficient."
KANSAS—"Good and sufficient."
LOUISIANA—No provision.
MARYLAND—"Adequate."
MAINE—"Two efficient brakes—foot brake and emergency lever brake."
MICHIGAN—"Adequate." . . . "Sufficient to control the vehicle at all times."
MINNESOTA—"Adequate."
MISSOURI—"Adequate—in good working order and sufficient to control said vehicle at all times when the same is in use."
MISSISSIPPI—No provision.
MONTANA—"Adequate brakes."
NEBRASKA—"Good and sufficient brakes."
NEW JERSEY—"Automobiles of more than 10 horsepower shall be provided with at least two brakes powerful in action and separated from each other, of which one brake must act directly on the drive wheels or on the parts of the mechanism which are firmly connected with the wheels; each of the two brakes must suffice alone to stop the automobile within a proper time; one of the two brakes must be so arranged as to be operated with the foot, provided, however, that on automobiles not exceeding 10 horsepower one brake will be sufficient."
NEW MEXICO—"Adequate—in good working order."
NEW HAMPSHIRE—Same as New Mexico.
NEVADA—"Adequate brakes."
NORTH CAROLINA—"Adequate—in good working order."
NORTH DAKOTA—No provision.
OHIO—Failure to provide sufficient brake punished by fine not more than $25.
OKLAHOMA—No provision.
PENNSYLVANIA — "Good and sufficient brakes."
RHODE ISLAND—"Adequate brakes."
SOUTH CAROLINA—"Good and efficient."
SOUTH DAKOTA — "Adequate—in good working order."
TENNESSEE—No provision.
TEXAS—"Adequate."
UTAH—"Adequate."
VERMONT—"Adequate."
VIRGINIA—"Good and sufficient brake or brakes."
WASHINGTON—"Good and sufficient."
WEST VIRGINIA—"Good and sufficient."
WISCONSIN—"Efficient."

YOU SHOULD BRING SUIT ON THIS CONTRACT

Editor Motor World:

You will find inclosed our contract with the —— Auto. Co. We have demanded our money back and they have refused to return it. We could have sold two cars last fall, but they didn't have them and we lost the sales. I would like you to advise if you think it would be best to start suit.—Fred Collenbaugh, J. M. Collenbaugh & Son, Rock Valley, Iowa.

The Contract

THIS AGREEMENT, Made and entered into the.....day of....., 19.., by and between....., of ....., County of..... and State of....., distributers of the automobiles, party of the first part, ... and..... of....., County of..... and State of....., party of the second part,

WITNESSETH:

Said party of the first part grants unto the said party of the second part the right to sell.....automobiles in the following territory, to-wit: ..... for the season of 19.. and terminating..... ....., 19... Further, the said party of the first part agrees to furnish said second party, upon his order, as soon as possible thereafter, automobiles at a discount from the catalog lists thereto affixed, of..... per cent, f.o.b. factory at.....

The party of the first part guarantees its automobiles the same as the factory to be free from defects of labor and material for one year from date of factory shipment to the extent that defective parts will be repaired providing they are returned to the factory, charges prepaid. This guarantee does not apply to tires, as we use only standard make, subject to guarantee of the manufacturer.

The party of the second part agrees to deposit $100, of which the sum of $50 shall apply on the purchase price of each automobile as delivered to the party of the second part. Said second party agrees to purchase of said first party..... automobiles during the life of this contract.

In consideration of the above the said party of the second part agrees to prosecute the sale of said automobiles with all reasonable diligence and is liable for his deposit money only. Any verbal or written agreements other than above are null and void in this contract.

It is understood that this contract may be terminated by a written notice of..... days by the distributers.

The party of the first part agrees to furnish such printed matter, cuts and photographs as are furnished by the factory, as may be needed to successfully prosecute sales.

.....
By.....

Witness:
.....

If the contract was broken by the other party's failure to deliver the cars to you, you were undoubtedly entitled to a return of your deposit money; if there was no clause requiring that you should keep a demonstrating car, there was no obligation on your part to keep one.

The contract you inclose is the usual form, providing for a penalty in the event of breach on the part of the dealer, but not providing for any penalty in the event of breach on the part of the distributer. I am inclined to doubt whether or not it is a good and valid contract as it stands.

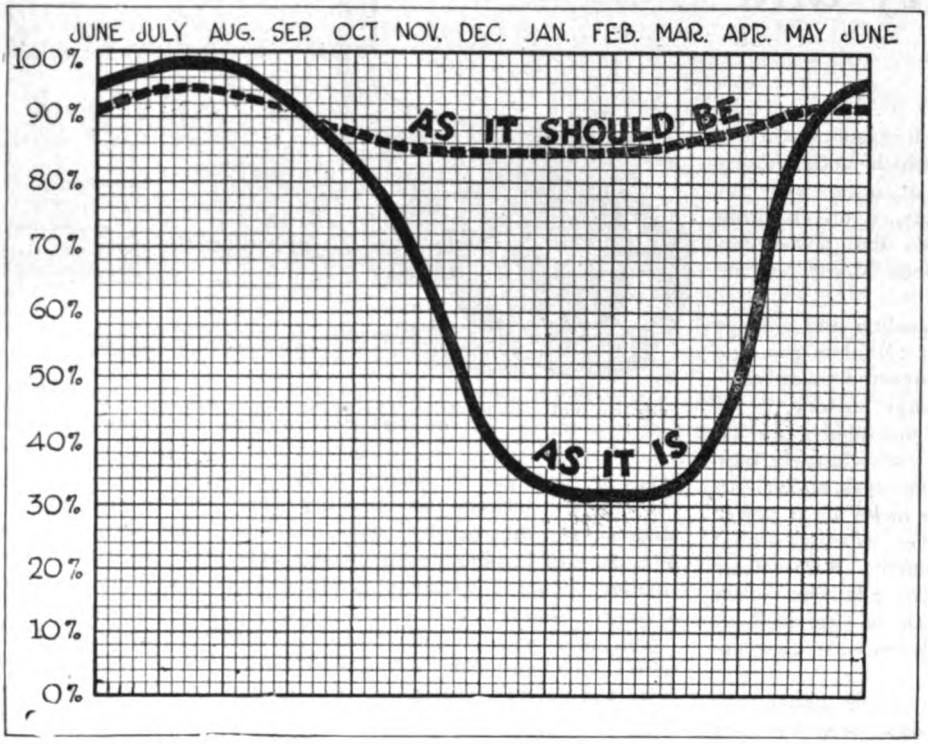
However, if I were you, I would not hesitate to bring suit for the deposit money, as, if you were ready and willing to sell the cars which your contract called for and were prevented from doing so through fault of the distributer, it certainly cannot be said that there was a breach of contract on your part.

Anonymous Requests

ALL requests for information are answered direct by mail prior to their publication. Some inquiries have been received, signed only with the initial of the sender, and hence have received no attention. Motor World will not publish the name of the writer, if a request be made to that extent, but all communications must be signed with the name and address of the writer.

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Help Straighten The Curve



THE sag in the business curve during winter months is dead wrong. It is a valley of despair to dealer, garageman, repairman and supply man.

But it can be improved. The two high peaks will remain. And the dip that has meant death to many in the trade can be cut out.

There is just one way that it can be done:

1—Concentration.
2—Hard work.
3—Interchange of ideas.

Motor World will issue a WINTER BUSINESS NUMBER Oct. 11 which will be *the first step ever taken by a business trade paper* to HELP STRAIGHTEN OUT THIS CURVE.

For months we have been in close communication with the best dealers, garages, repairshops and supply houses in the United States on this important question. From them we have been collecting their best ideas for taking this discouraging dip out of the curve.

Many of these men already have solved this trouble in part. Others admit that they have never been able to see a way out of the difficulty.

By publishing the methods that brought success to the successful ones, Motor World will directly benefit all the others. More than that, it will directly benefit the jobber and the manufacturer, because to straighten the curve you must

SELL MORE GOODS

during the winter months, when business ordinarily is slack.

It can be done. Motor World will show in minute detail exactly how it is being done. No mere generalities. That is not the Motor World Way.

Now for your part of it: When we write you asking for suggestions and information regarding YOUR methods, please let us have a prompt reply. Do all you can for the other fellow, because he is doing all he can for you. Be a benefit to the industry.

Send us right now your best thoughts on increasing winter business.

From a Manufacturer and a Jobber

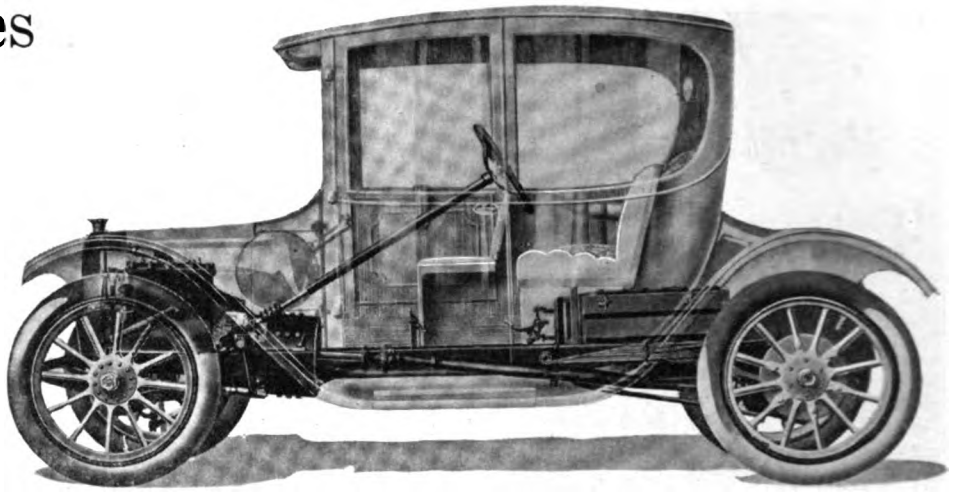
We want to say that we think your winter business campaign is an admirable one. Of course, we jobbers who are located in the East in large cities do not suffer so badly from the winter falling-off as some of our Western contemporaries. We believe, however, that the analysis of conditions which you are attempting will help us all to make a big improvement in the present conditions.—George B. Shearer, President Gaul, Derr & Shearer Co., Philadelphia.

We want to take this opportunity of assuring you how much we appreciate Motor World. The many instructive business items you have been carrying in your paper have done and are doing a world of good to the dealer who is apt to be careless in his business as well as to the business man who tries to be up to the minute.

All manufacturers should take particular note of your winter campaign and further show their appreciation by patronizing your advertising columns. You can depend upon our giving you our best co-operation in this direction, and, with our best wishes for your continued success, we remain. —J. G. Swindeman, President the Union Supply Co., Toledo, Ohio.

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Woods Combines Electricity and Gasoline



The gasoline motor is mounted under a forward hood, magnetically connected to an electric motor-generator. The battery is at the rear. Either gasoline or electricity may be used alone, or they may be used together

AN electric car, a gasoline car, or a vehicle in which both powers may be used at once, with the elimination of dependence on charging stations, is the Woods dual power car, produced by the Woods Motor Vehicle Co., Chicago.

It is a combined gasoline and electric vehicle, with a four-cylinder gasoline engine electrically connected to an electric motor and a storage battery.

It is made in but one model, an attractive combination of characteristic gasoline and electric car types, and selling for $2,650, this figure including a power tire pump, motor-driven warning signal and other usual equipment. Wire wheels or slip covers are $25 additional each and special colors can be provided at $100 additional. Deliveries are now being made.

The body is an aluminum panel construction, with wide doors and windows which may be lowered. The seats will accommodate four passengers comfortably, the driver's seat being staggered ahead of the wide seat for two; the third passenger is accommodated on a folding auxiliary seat.

Three Units in Car

In the mechanism of the car there are really but three units, irrespective of the driveshaft and rear axle. The gasoline motor is located conventionally under the hood. Directly behind this is the electric motor, a unit in the same drive line. Located under the front seat is the storage battery set. The connecting unit between the gasoline and electric motors is in the form of a magnetic clutch, which is simplicity itself. When the gasoline control lever is raised about an inch from full retard, the flywheel of the gas motor becomes magnetized. The magnetic force pulls a copper disk against the face of the flywheel and the electric and gas motors are connected.

The gasoline motor is block-cast, with 2½-in. bore and 3½-in. stroke. Because of its small cylinder sizes and its high-speed operation, the motor is unusually smooth running; in fact, is nearly as quiet in operation as the electric motor. The lubrication is effected by a gear pump which lifts the oil from a lower chamber to a compartment around the valve tappets, from where it flows by gravity to the various bearings. Ignition is Atwater Kent, automatic spark advance. Cooling is thermo-syphon through a honeycomb type of radiator.

A one-piece gasoline tank with a capacity of 9 gal. is located under the cowl. The battery is specially constructed for this car by Exide and has 24 cells with 11 plates each, considerably smaller than the batteries required for driving all-electric cars.

The rear axle is semi-floating type with Baush hour-glass type of worm gear.

At the driver's foot there is a pedal, the pad of which may be oscillated forward and backward. On the steering wheel are two levers located in the conventional manner in which spark and throttle levers are applied. On the dash before him is a large meter which tells just what is happening to the electricity.

To start the car he either moves the outside lever as he would to apply more gas, or he releases the foot pedal, raises the same hand lever an inch or so, takes his foot off the pedal and glides away with the characteristic smoothness of an electric.

Driving on electric power alone, he can bring the car to a speed of 20 m.p.h. Acceleration is accomplished by pushing the hand lever up on the quadrant, not by notches, but any amount he desires. There is no jerk as more power is fed to the motor, just a gradual, smooth acceleration. During such driving the electrical meter will show him that a full charge of current is passing from the battery into the electric motor.

Now let him move up the other hand lever slowly. There will be an almost imperceptable breaking effect on the car and the electric clutch engages the gasoline motor, which is started by the electric motor. He is now driving on both powers. There is now a variety of operating options before him. If he wants to speed up to 35 m.p.h. he can open wide the electric and the gasoline control levers. If he wants to use both powers and still maintain a fair speed, he can open the gasoline motor wide and cut down on the supply of current fed to the electric motor. The excess current created by the generating action of the motor will then be turned back into the batteries and the electric meter will show that these batteries are being charged at the same time the electric motor is transmitting power to the rear wheels. Or he can fully retard the electric control lever and run on the gasoline motor alone. Under these conditions the electric motor has become a generator and all of the current created is charging the batteries.

Simplicity of Operation.

Now the driver comes to a street crossing and is obliged to stop, gasoline motor giving all the power. A pressure of the pedal, and the clutch is released and brake applied at the same operation. He is again ready to start. The throttle lever may be advanced, the pedal released, and the car will start like an ordinary gas car. Or he may move up the electric control lever an inch or two, thus throwing in the electric power, and start off with both powers, insuring himself against stalling the engine. There is yet another option. He may stop the gasoline motor by merely setting the throttle lever at full retard, and start on electricity alone.

The oscillating movement of the pedal is for the purpose of opening and closing the switch of the electric motor. Of course, this same operation can be performed with the hand control lever. With the hand lever set at an operating position and the pedal pad oscillated forward there is no current passing to the motor. A movement of the foot and the switch engages and the car starts.

The gasoline motor drives one way only, there being no gearset, and so the electric motor must be called on to run the car backwards. Oscillate the pedal pad forward, place your heel on the small lever against the heel board under the driver's seat, oscillate the pedal backward, and the action of the electric motor is reversed, and consequently the car starts backward.

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Six Major Tractor Problems

Reliability, Efficiency, Weight, Drive, Control, and Size

THERE are six major problems of farm-tractor engineering which must be solved before these iron horses reach the stage of development of the modern passenger or commercial motor vehicle. These are:

(1) Reliability is not good enough yet, not nearly good enough. This is partly due to poor engineering that can be recognized as such, and partly to the peculiarly difficult conditions of a tractor's work.

(2) The efficiency of the machine as a whole can be improved very greatly; must be improved, in fact. At present, the horsepower at the drawbar and the horsepower at the flywheel are too widely different.

(3) The weight is usually out of proportion to the horsepower. Weight is an essential in order to permit a sufficient drawbar pull, but it can be applied scientifically so that every ounce tells, or otherwise. Frequently the amount of waste weight is as great as the amount of useful weight.

(4) The question of drive is unsolved. We have one-wheel, two-wheel, three-wheel and four-wheel machines, all track-laying machines and machines which are combinations of the wheel and the track-layer. They cannot possibly all be right, yet there is not enough experience to-day to enable any one system to be named as the best for all purposes.

(5) The trouble of rapid turning is important. There are some machines which can turn in their own length, but to do it they require mechanical features regarded as revolutionary by the more conservative builders. The advantage of a square turn is very great, and it must be decided whether this advantage can be given without any drawback.

(6) Then there is size. We have now every conceivable size and power, from very little to very much. There are too many sizes. The biggest machines will always have a market, but a limited one. The very small machine will also have its uses, but it will have to be decided just what size the great big majority of farmers will find most efficient. This is best stated in terms of drawbar pull, and the ideal size for general work is variously estimated at anywhere from 1500 up to 6000 lb. This is a matter for experience mainly, but study can help to solve the problem.

Automobile engineers are going to take up the tractor, and men trained in the automobile industry are going to make possible 13 years of progress in 5 years or less. They are going to do this largely apart from any business reasons.

They are going to enter the tractor field as individuals, because of the immense fascination of the machine. There are many passenger-car engineers who have never been able to work up much enthusiasm over the motor truck, probably because the truck is rather like a passenger car shorn of many refinements, but the tractor has a different appeal.

Even among tractor engineers it would be difficult to find a man who would contend that the gasoline tractor has reached more than an early stage in its development. To make a comparison with the automobile or motor truck is far from easy, the conditions of service and the requirements being so greatly different, but it is fairly close to the truth if we say that the gasoline tractor to-day is at about the same stage of its development as was the passenger automobile in 1903.

This does not mean that the tractor is going to need another 13 years to reach a stage equal in development to the 1916 automobile. Probably what took 12 years for the passenger car will be done in 5, or fewer for the tractor, general accumulated experience now being so much greater; but the amount which remains to be done will provide sufficient work to give the tractor engineers a very full 5 years.

An automobile engineer, in approaching the problems of tractor design, must first clear his mind completely of all prejudices. He must manfully resist the natural impulse to compare tractor features with, for instance, motor-truck convention.

In many ways it would be possible to draw a closer parallel to the motor boat than to any road vehicle. Really, though, the tractor is not comparable with any other self-moving machine. While it is more difficult a problem than the automobile, in some ways, it is easier in others, but is essentially different. A most successful truck engineer could easily make a very bad tractor if he took on the job with a light heart.

None the less, the automobile is going to benefit by reason of what will be learned in developing the tractor. To give an example, the kerosene carbureter is essential to the tractor, and already experience is being gained which will be valuable throughout the whole range of internal-combustion engineering. Another thing which is as yet imperfect for tractors is the ignition system, and a curious little thing which comes to light in this respect is a growing demand from the tractor men for a smaller spark plug, the engineers quoting all the arguments recently advanced by aeroplane-engine builders in favor of the metric size of plug shell.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 842) TIME-CARD HOLDER

The time-card holder shown herewith is always in sight and keeps the card flat and clean. The back of the holder is leather, with a transparent front of celluloid. It may be fastened to the windshield or door handle, and being soft will not injure the varnished surfaces. Much delay may be avoided by having a pencil fastened to the holder, and the holder may be used as a support when filling out the card.—M. Marc (Maxwell), Boulevard, Jersey City.

(No. 843) SLOTTING BOLT HEADS

The removal of many inaccessible bolts is facilitated by slotting the heads to permit the use of a screwdriver. A single hacksaw blade is too thin for this purpose, but if two blades be fastened in the saw frame the resulting slot will have the proper width. The slot should not be made over ⅛ in. deep or it will impair the strength of the head. —W. R. Davis, Worcester, Mass.

(No. 844) SLIP-COVER FASTENER

The retaining straps of the top slip-cover may be securely anchored in place by tying a ball of waste on the end of each strap and placing them beneath the cushion in the manner shown. To remove, it is only necessary to slide the cushion forward and pull the straps out, which is much easier than when buckles are used.—C. B. S., New York.

(No. 845) GARAGE DOOR LATCH

A door latching device for a double swinging garage door is illustrated. Ordinary draw-bolts are fastened at the top and bottom of the inner edge of one door and fit loosely into sockets in the door frame. These may be operated simultaneously through ¼-in. iron rods fastened to a horizontal strap iron member controlled by turning the door knob. The other door is held shut by an overlapping strip fastened to its inner edge. The feature of the device is that the door may be opened from the outside and may be locked from the inside without the necessity of a separate lock. To lock, the cotter pin is removed from the squared rod and the cross-member drawn back, thus disconnecting the draw-bolts from the knob. A small side door, however, must be provided.—Frank Mankowski, Old Bridge, N. J.

(No. 846) CROWNED FENDER ANVIL

An anvil to be used in conjunction with a rubber mallet for straightening crowned fenders may be made in the manner shown. A block of hard wood about 7 in. square is placed in the lathe and turned to a mushroom form, after which it is sanded to a smooth finish. The upper surface should not be that of a section of a sphere, but one of a solid with a gradually increasing radius, so that some part of it may always be found that will fit the curve of the fender. To straighten a bent fender the anvil is pressed up against the under side of the damaged part and the fender worked back to shape by means of a rubber mallet.

(No. 847) FILE HANDLE

A universal file handle in which the file is held by means of a clamp and thumb-screw may be readily made and will accommodate any file or scraper. The steel centerpiece is ⅛-in. flat steel plate and fitted with wooden handles and notched at the end to hold the clamp in place. The clamp is slipped in place and pinched into the notches by means of a vise, after which the handle is ready for use.—Frank Mankowski, Old Bridge, N. J.

(No. 848) TESTING CONNECTING-RODS

Any misalignment of the connecting-rod bearings may be determined by the testing stand shown herewith. The base supports a stud, on which the crankshaft bearing is fitted, and the upright is drilled and reamed to a running fit for the main test-plate. A similar test-plate is placed in the wrist-pin bearing and the two surfaces of the test-plates brought together. In case of misalignment of the bearings, light will be seen between the plates, and may be corrected by the use of a heavy wrench. The entire construction is of cast iron with the exception of the crankshaft arbor, which is of steel. The two test plates should be brought to a flat surface in the same manner as employed in making a surface plate. It is essential that all parts of the apparatus be made very accurately and by a toolmaker, if possible.—Dodge Bros., Detroit.

(No. 849) SIGNAL WHISTLE

The sound of a whistle is more penetrating than that of a bell and hence it is a more suitable instrument for signaling above the din of a repairshop. An electrically controlled whistle operated from the compressed air line may be readily made for this purpose. A low-voltage circuit with convenient push buttons is connected to a magnetic relay that makes the connection between the lighting circuit and the solenoid operating the whistle cord. The relay is simply a U-magnet connected to dry cells. The solenoid consists of several layers of fine wire wound onto a hollow cardboard core containing the steel rod connected to the whistle rod in the manner shown.—Bemb-Robinson, Detroit.

(No. 850) REMOVING CYLINDER-HEADS

Detachable cylinder-heads may be forced off without injury to the gasket by means of a bolt and collar threaded to fit the spark plug hole. This device is also valuable in holding the valve down so that the retaining washer may be pried up when removing the valves.

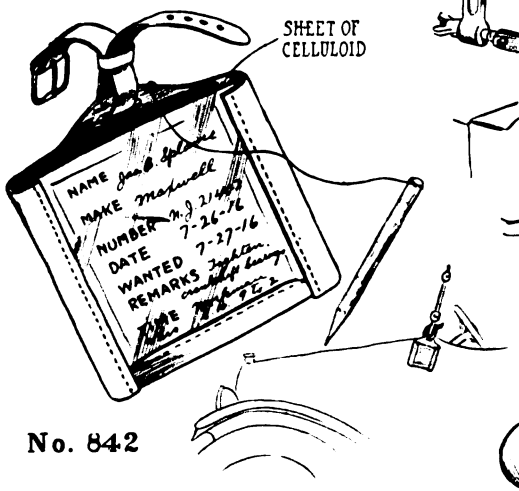
(No. 851) CYLINDER LAPPING FIXTURE

Where there are many cars of one cylinder bore to be overhauled, an old piston split and mounted in the manner shown offers a ready means of lapping the cylinder to a fine finish. The handle is made of strap from 1½ x ¼ in. and is held by the cross-member made from a piece of 1-in. pipe. Pressure on the sides of the cylinder is obtained by tightening the screw in the handle.—Dodge Bros., Detroit.

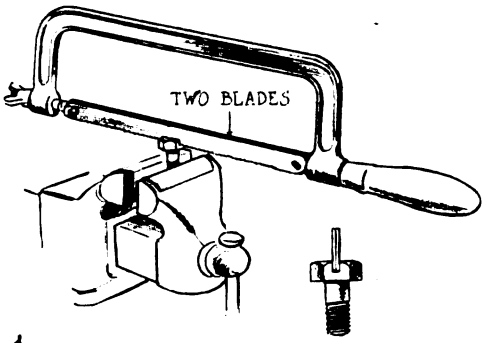
Sell Advertised Goods

Read Motor World Next Week

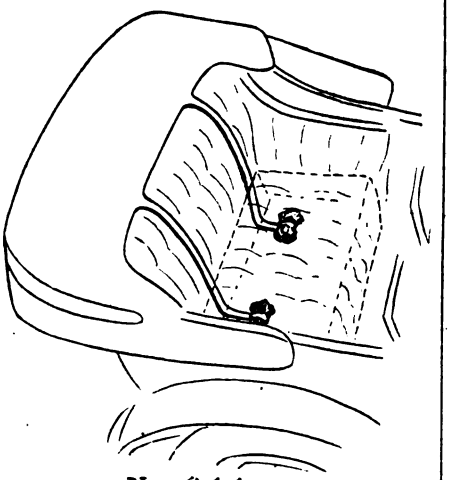
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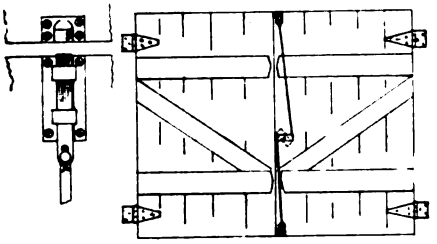
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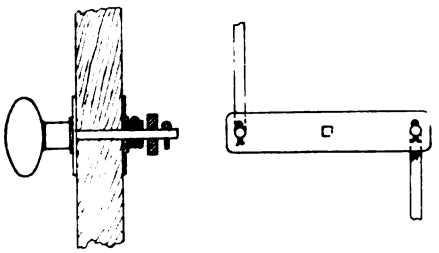


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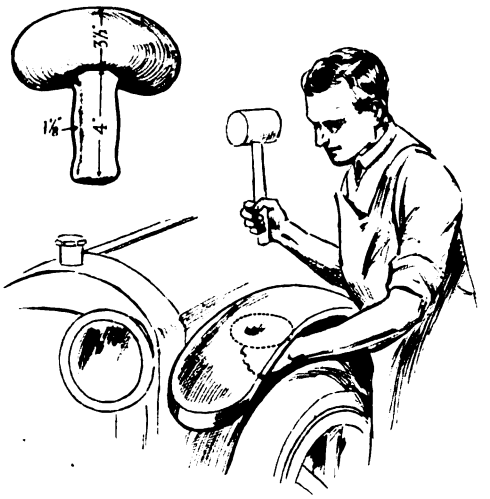


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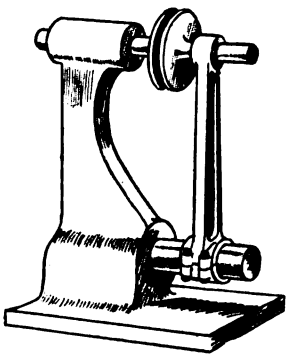


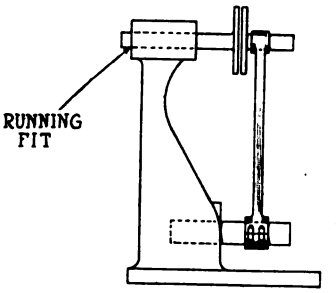


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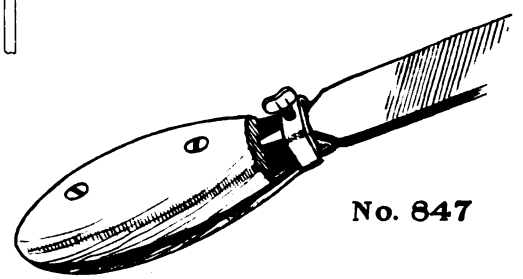


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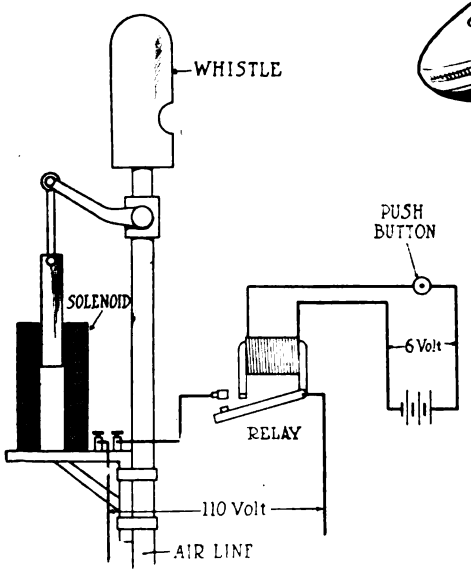




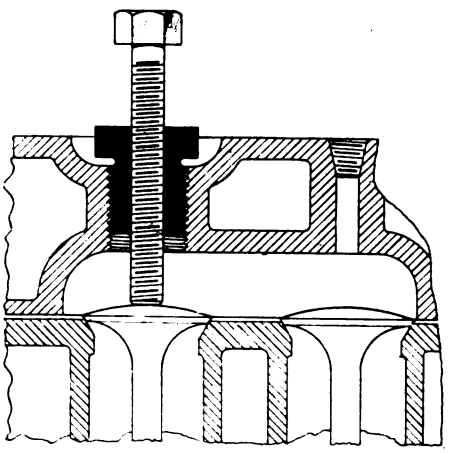
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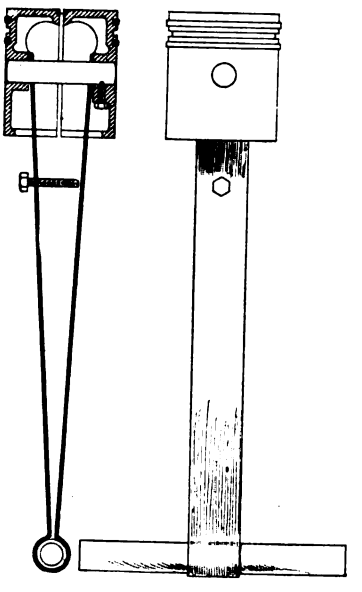
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No. 849



No. 850



No. 851

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Accessories & Supplies



UTILITY LOCK

The Backus Novelty Co., Smetheport, Pa. PRICE, $1.

Luggage may be locked to the robe-rail or foot-rest by this lock. Two steel fingers may be closed together and locked. Gloves or coats may be clamped to the steering wheel, a suitcase may be locked to the foot-rest, or the control levers may be fastened to the steering-wheel quadrant. Two keys are supplied with each lock.

BADGER SPRING BUMPER

Auto Parts Mfg. Co., Chicago. PRICE, $12 with 2-in. nickel bar, $10.50 with black bar.

A two-piece spring steel bumper that may be fitted to almost any car. The cross-bar is high quality spring steel, specially tempered, though resilient to cushion shocks, and sufficiently stiff to protect the car. The bar may be adjusted to any angle.

KENNEDY AUTOMOBILE SIGNAL

Nu-Way Tire & Rubber Co., 1004 South Michigan Avenue, Chicago. PRICE, $12, complete with wiring and switches.

Two signals, one on each of the rear fenders, are electrically controlled from the driver's seat, indicating by night or day the driver's intentions. Each signal is controlled independently and turns in the direction the car is to be turned, showing two red lights, an arrow and the word "Turn," and remains a signal until the turn is completed. A pilot light attached to the switch shows that the signal is in working order.

TAROF TAR REMOVER

Cooper & Osterhout, Watertown, N. Y. PRICE, per pint, 50 cents; per quart, $1. Dealers, in case lots of 12 pt. or 6 qt., 30 per cent, plus 5 per cent for cash.

A liquid for removing tar or road oil from varnished car surfaces. After washing the car with soap and water and removing grit, cotton waste is saturated with the liquid and applied. Allow it to stand for a few minutes, and then rub thoroughly with the same waste. Polish with cheesecloth.

INSYDE TYRES

American Automobile Accessories Co., 621 Main Street, Cincinnati. PRICES, 3 in., $4; 3½ in., $4.75; 4 in., $5.75; 4½ in., $7.25; 5 in., $9.

Insyde Tyres are a secondary casing, without bead or tread, to be cemented inside the outside casing. They are made from several layers of tough fabric vulcanized together over tire molds and shaped to fit the inside of the casing for which they are made. The outside is coated with a self-vulcanizing cement that secures it to the casing, and the inside is treated so that the tube cannot stick. When the outside casing is worn out, the Insyde Tyre may be removed with gasoline and put into another casing.

MACHINIST'S VISE

The Fulton Machine & Vise Co., Lowville, N. Y. PRICE, No. 295, with 3-in. jaws, $7.50; No. 31, with 4-in. jaws, $10.50.

A light-weight swivel-base repairshop vise. The jaws are cast steel welded to the face of the vise. The vise may be swiveled to any desired position and locked by a taper-head bolt.

COMBINATION GASOLINE LOCK

Turner Brass Works, Sycamore, Ill. PRICE, $3.50, for cars with cowl boards; $3 for straight dashboards.

The gasoline supply may be shut off from the driver's seat and can be turned on only by one knowing the proper combination. The locking mechanism consists of three disks revolving in a chamber and engaged with each other in the same manner as the disks in a combination lock. Each disk is pierced by holes that may be thrown into alignment, permitting the gasoline to flow, and may be thrown out of alignment by one turn of the control. Any desired combination may be had, and the lock may be opened in the dark by feeling the notches instead of watching the numbers. The installation may be made by the owner.

BREATHER PIPE FOR FORDS

Auto Parts Co., Providence. PRICE, 50 cents.

A breather pipe for the crankcase of Ford cars. An upright pipe, containing a fine screen, is secured to the oil intake by a hooked bolt that fastens around the timer retaining bolt. The device facilitates renewal of the oil supply and prevents oil from spraying. The cover is easily removed or replaced and the screen prevents the entrance of dirt.

AXLE TRUSS FOR FORDS

Hoyt's Auto Supply Co., 370 Fairfield Avenue, Bridgeport, Conn. PRICE, $1.50.

The Ford rear axle is strengthened by a steel rod passing under the differential housing and clamped at each end to the axle. The device is intended to take much of the strain from the central retaining bolts and promote the life of the rear end assembly. It is easily installed and may be bolted in place by the owner.

SPECIAL PISTONS

Butler Mfg. Co., 1124 East Georgia Street, Indianapolis.

Standard cast-iron, semi-steel or aluminum alloy pistons are made for all cars. The semi-steel and aluminum alloy pistons are made extremely light and provided with supporting ribs for strength. All pistons are drilled in a groove below the rings to provide a return for excess oil. Cylinders are reground and oversize pistons fitted by this company.

SEBRING EFFICIENCY TIRE

Sebring Tire & Rubber Co., Sebring, Ohio. PRICE, 30 x 3, $18.10; 30 x 3½, $23.60; 32 x 3½, $27.20; 33 x 4, $35; 35 x 4½, $43,20; 34 x 4½, $42.40; 36 x 4½, $47.75.

A seven-ply tire impregnated with pure gum rubber and having a non-skid tread. This gum friction coat is built between the fabric and the tread and is said to promote easy riding and to require a low tractive effort. Straight-side tires are offered and are applicable to any type of rim. The tires are retained on the rim by twenty-three strands of piano wire. The Ford-type tire is the only exception to this form of rim and is a regular clincher.

SAVIDGE STEERING DEVICE

The Savidge Co., Indianapolis. PRICE, $4.90.

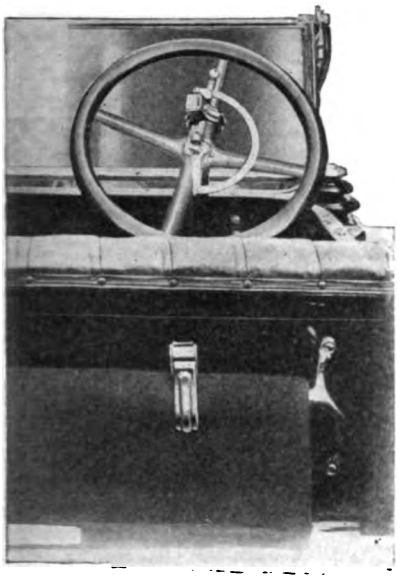
A graduated resistance is applied to the tie-rod of Ford cars, tending to act as a shock absorber on the steering column and steady the front wheels. It is attached to the front axle and the tie-rod. An oil-tight case contains a cam acting under pressure of a heavy coiled spring, and gives an accurate graduated tension on the tie-rod in proportion to the turning radius.

GEARSET BAND CLAMP FOR FORDS

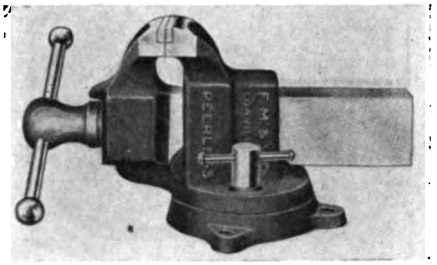
The New York Motor Car Device Co., 200 Eleventh Avenue, New York. PRICE, 50 cents.

A device known as the Premo transmission band clamp for assistance in replacing the gearset bands in Ford cars. The bands are held firmly around the drums with the ears in position permit of slipping the three shafts in place as the cover goes down, and the clamp is then removed through the small door in the gearset case cover.

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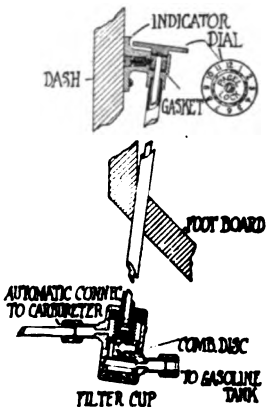
Backus Utility Lock



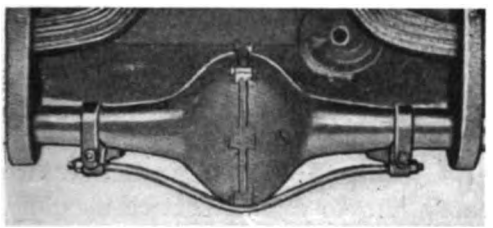
Peerless Machinist's Vise



Butler's Special Piston



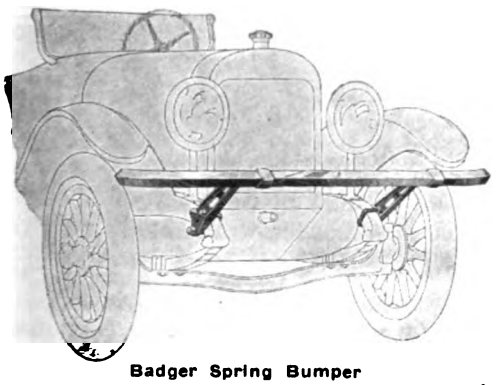
Combination Gasoline Lock



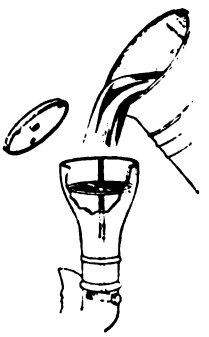
Hoyt's Axle Truss for Fords



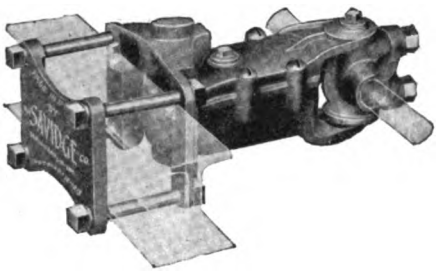
Sebring Efficiency Tires



Badger Spring Bumper



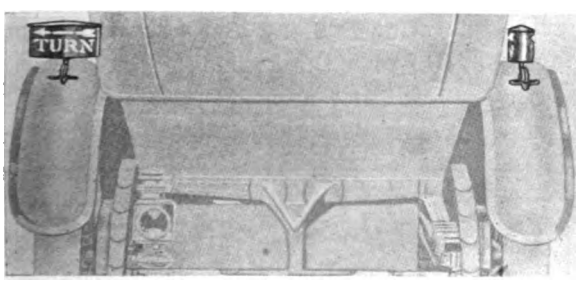
Breather Pipe for Fords



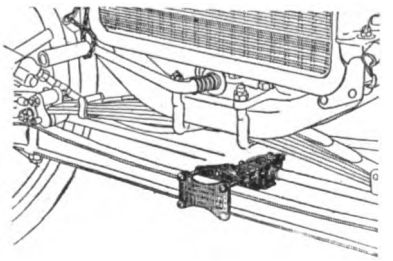
Savidge Steering Device



Gearset Band Clamp for Fords



Kennedy Automobile Signal



Savidge Steering Device installed on the Ford car

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Editorial Observation



More Speed

FROM time to time, the general public is moved to an outburst against the garageman, and while many of the reasons for such outbursts have been eliminated there are still some which are plainly apparent and which must be corrected.

A motorist drove up to a fairly large garage in a small city close to New York. He wanted a 6-volt, 2-candlepower double-contact lamp bulb and he described it in just that way to the garageman.

It took the garageman 12 minutes by the clock to locate the lamp bulb!

He had first to locate his stock of lamp bulbs. They were piled on a shelf behind a row of cans of metal polish.

Then he had to go over all the various boxes of bulbs to find the particular box with this size lamps in it. This took 10 minutes.

In the meantime, the motorist was becoming more and more impatient. It was evident that he was in a hurry. Yet, here he was waiting while the garageman wasted his time pawing over his stock to make a 25-cent sale.

The garageman made a 25-cent sale—eventually. But how many more 25-cent sales will he lose. It is certain this particular motorist will never go back for more lamp bulbs, or for anything else, if he can help it. And think how many motorists will NOT wait while the garageman goes over his stock.

This garageman will go over exactly the same procedure one hundred times again. The next motorist and the next will have to wait for their lamp bulbs.

In brief, the garageman has no sense of order and system. He cannot see the dollar signs in $y$tem. He is not sufficiently awake to see the profits that come from quick service.

If this same motorist went into a haberdasher's to get a collar, the clerk would turn around and reach directly for the particular size and style wanted. That's what the motorist expects when he goes to buy supplies for his car. The service in other stores has educated him to expect service as good from a garage.

And if the motorist cannot get service as good as this, and as quick, at one garage, he will go to the next one—and maybe he will go still further to the next one.

But he WILL get the service—somewhere.

Keep Them Posted

ASSOCIATION work is discouraging during the summer months. Some associations of dealers and garagemen manage to keep interest alive through the selling and touring seasons, to accomplish some definite results. But they are the exception rather than the rule.

The summertime is work time for the dealer and the garageman—and it is also vacation time for many of them. Those who fret under the inactivity of dealer bodies at this time should bear this in mind. They should not say "The association is dead; it is doing nothing." Very likely it is only resting, getting ready for the big fall and winter drive.

It is a time for secretaries and presiding officers to be patient. But it is also a time for them to plan.

If every secretary would PLAN now to make each coming meeting a real meeting, a gathering with a purpose, an object, there would be some real results this fall.

"If I were an association secretary," says a dealer who really should hold such a position though he does not, "I would begin now to send out a little advance publicity on coming meetings."

One reason why the National Association of Automobile Accessory Jobbers is so successful is that it has a live secretary, one who keeps all the members posted all the time on exactly what the association is doing and what it has in store for the future.

A little more work of this kind would be a good thing.

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Local Automobile Trade Association and the Association of Commerce

J. C. Thorpe—National Automobile Trade Association

Editor Motor World:

"Success through co-operative effort," is the slogan, either expressed or implied, of all modern business development. It suggests a principle for promoting and safeguarding the interests of every branch of industry of the day, and upon this principle is builded the substantial effort for bigger and better business; for increasingly higher efficiency—and greater service.

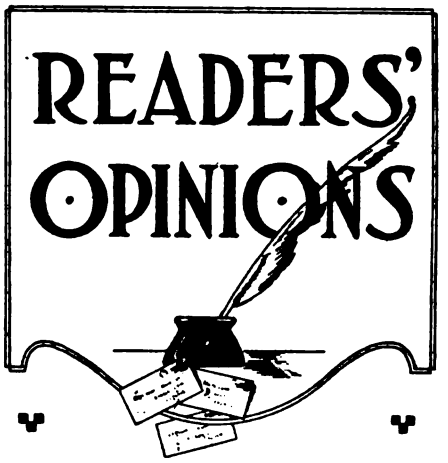
As this great principle has been applied in the consideration and solution of problems of local, State and national importance in other branches of industry, so it is being adopted and applied by trade organizations in the retail branch of the automobile industry.

The purposes of the local, State and National automobile trade association are so parallel to the purposes of general business organization that great good may result from the consideration of the points of contact of the Association of Commerce and the Automobile Trade Association.

Wave of Enthusiasm

During the past 5 years a wave of enthusiasm for municipal betterment has swept our country to such an extent that nearly every city of 10,000 population or more now prides itself on its Commercial Club or Association of Commerce, an organization of its merchants, professional men and artisans, banded together for the consideration and solution of civic problems affecting the life and welfare of the community. As a matter of fact, many centers of population, small towns that could hardly be dignified by the name city, have felt the call to bigger and better business methods; for cleaner and more attractive communities, for greater efficiency in administration, etc., to the extent that they, too, boast of commercial clubs, and in many respects have put neighboring cities to shame by their achievements.

This movement has become a tremendous constructive force in the development of civic interests and is marked by constant improvement in the financial and industrial life of the country. It is striving for business integrity, stability, efficiency, and understanding, and, by the co-operation of business men, is achieving what could never be thought of by individuals as such or by isolated groups of individuals without a common purpose and bond of helpfulness and unity. Without this unity, this common understanding of a great ideal, new work in the greatest hopefulness and sincerity, but with misdirected energy and at cross purposes, without attaining that for which they seek.



That the retail branch of the automobile business has a marked influence upon the life and welfare of any community is apparent. In its relation to mercantile interests, it provides means of economical transportation, that increases volume of business, the goal of every wideawake merchant; makes possible more intensified exploitation of the present market, and increases the radius of activity that was beyond consideration before the commercial motor vehicle became an established factor in business.

The automobile service station gives assurance of the continuous use of the investment. In its relation to the professional men of the community, physicians and surgeons, for example, it provides a means of prompt and increased service that is of vital import to the physical well being of the community and conserves time for personal study and investigation to a degree unthought of before the automobile became a necessity in the practice of medicine and surgery. As a means of increasing opportunities for recreation and social enjoyment, the automobile has universal approval.

A Material Asset

If the business of the retail automobile dealer, the garage operator and the retail automobile supply store touches the welfare of the community so intimately, is it not true that a business-like organization of these interests may be of a material asset in the consideration and solution of problems of civic improvement and business development? Who can be more concerned in a clean and orderly city than the enterprising automobile merchant? Who can appreciate the need of street and highway directories and markings more than he? Who is in better position to promote highway improvement, a recognized asset to the local merchant and industrial interests? Who can be of greater service in the entertainment of visitors, whether they be individuals as such, industrial committees or conventions? Who can be more interested in city ordinances affecting traffic and transportation problems?

With a unity of purpose, the group of men engaged in the retail automobile business, organized primarily for bigger and better business whereby they may extend more satisfying service, should constitute a bureau of the association of commerce in any community, whose influence would be a strong factor in municipal betterment. Their usefulness in this respect would be measured by their co-operative effort and would be much greater than would be possible were they associated as individuals in the Association of Commerce activities. The properly directed and crystallized sentiment of a group of business men engaged in the same industry develops greater power than the summation of the sentiment of the individuals.—J. C. Thorpe, National Automobile Trade Association.

Motor World Cartoons

Editor Motor World:

In reference to the subject of cartoons, I feel very sure that you are wielding a strong influence by this method of education. It is very clear that this is attracting a lot of attention, as I hear very frequent discussions of it as I go about from place to place in connection with our association work.

The cartoon subject, "Plan," appearing in your issue of July 5, made a more lasting impression upon my mind than others which you have shown. It seems to me that this is the most vital word relating to the business of the automobile dealer, garage operator or retail supply store. If I were writing to someone who had not given this subject the mature thought that you have, it is probable that this letter would be several pages long, but there is no need of discussing conditions that are familiar to both of us and applying the lesson taught by your "Plan" cartoon. I think that I will take a little time at the first opportunity and write an article for you on this subject.

In thinking over the future of the automobile industry to-day and trying to forecast the condition of the retail branch of the industry as it may be 5 years from now, when the saturation point of the market will have been reached, this cartoon which I have mentioned came again with great force to my mind. I am going to use it in my talks to associations from this time on.

National Automobile Trade Assn.,
Chicago. J. C. Thorpe.

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The RETAIL NEWS

MIDDLE WEST

The Laurence Motor Co. is the name of a new concern, organized at 165 North Fourth Street, Columbus, Ohio, to handle Republic and Vim trucks in nine counties in central Ohio. Y. B. Jones is general manager. It is the intention to operate a service department in connection with the sales departmet.

Caleb L. McKee, Columbus Ohio, plans the erection of a five-story fireproof garage at Fourth and Spring Streets to take care of cars during business hours. There is a strong agitation to prevent parking of automobiles on the downtown streets and the plan is to provide a place for cars which will be forced off the streets. In anticipation of the passage of an ordinance preventing parking of cars, many available sites are being optioned for the purpose of erecting garages.

The Craig Motor Co., Cleveland, headed by R. E. Craig, has taken large space in the new H. F. Neighbors Building at Chester Avenue and East Thirtieth Street, for a Ford retail agency.

The Central Illinois Motor Sales Co., Springfield, Ill., has taken over the business of the Chas. L. Bradley Motor Co. of that city. Samuel C. Hardin will be general manager of the consolidated firms.

G. J. Wallace, Decatur, Ill., manager of the Starr Garage on North Main Street for the past year, has resigned to become manager of the wholesale department of the Overland-Broadhead Co. of Springfield, Ill.

Frank and Joseph Kiep, Joliet, Ill., have let the contract for a garage at the corner of Chicago and Jackson Streets, to be 132 x 120, two stories in height and fireproof. There will be storage capacity for seventy-five cars. A display and salesroom will be 60 x 22. The repairshop will be 58 x 22. It is hoped to have the plant ready for occupancy Nov. 1.

R. B. Shaw, Decatur, Ill., has leased the garage at 242 North Franklin Street, that city, formerly occupied by the Decatur Taxicab Co., and will operate a service station and sales agency for the Paige.

Harry W. Brewster of Goshen will open a garage in that city. Livery stables on West Lincoln Avenue will be converted into a garage. He will handle the Studebaker.

The Lincoln Highway Garage Co., Ligonier, Ind., has been incorporated with capital stock of $20,000 to do a general garage business. Directors are James W. Smith, Frank P. Wood, Samuel J. Williams, Leo Kerner and George Bryan.

Westrate & Brouwer, Holland, Mich., have recently opened their new Overland salesrooms and service station.

The Holland Battery Shop has been opened in Holland, Mich., as a distributer for the Willard storage batteries.

Floyd Reynolds, Ithaca, Mich., has bought out the interest of Fred Bolyard in the Reynolds & Bolyard firm. Reynolds will continue to handle the Dodge and Hudson.

The Auto Garage Co., Manistee, Mich., has taken over the business of the National Garage & Sales Co. and will handle the Hudson and Dodge cars. New arrangements are being made for the selling of the Chevrolet, Buick and Overland, which were handled by the National company.

Clyde and Clarence Montague, Caro, Mich., have opened a garage in the Campbell Building.

Charles Tennant, Caro, Mich., has taken over the repair department of B. H. Smith's automobile business.

The Western Michigan Oakland Co., Grand Rapids, Mich., has taken over the distribution of the Maxwell. Headquarters are at the Bond Street garage of the company.

H. C. Hall and Earl Anderson, Clare, Mich., have opened a garage and are catering especially to Ford owners.

The John Ott & Co., Traverse City, Mich., has been purchased by the Grand Rapids Overland Co. and John Ott will be the resident manager of the company. From now on only the Overland will be handled. Through the deal, seventy-four service stations in western Michigan are now controlled by the Grand Rapids Overland Co.

The Chandler Motor Sales Co., Grand Rapids, Mich., is a new sales organization which will handle the Chandler in west Michigan. The members of the firm are Fred H. Peck, who until recently was in charge of the Peck Auto Sales Co., Studebaker distributer; George Van Every and Amos Gezon, the latter two also formerly connected with the Peck company and later with the Barkwell Buick Co. The new company has taken temporary quarters at Division Avenue and Pleasant Street, S.

William Noyes and Charles Harman, Wakefield, Mich., have opened a garage.

John H. Campbell, Manton, Mich., has sold his garage business to Earl Judd.

Clyde Montague, Caro, Mich., has disposed of his interest in the Ford Garage.

Webb & Stowell, Brighton, Mich., are the proprietors of a new garage located in the Henry Rohn Building.

The Spalding Garage, Menominee, Mich., has been completely remodeled and greatly enlarged. About $2,500 was spent for this purpose by Carl Grapel, the owner, it is said.

John Van Loon, who was manager of the Cadillac Motor Car Co., Kalamazoo, Mich., for several years, and who has been prominent in all matters relative to the growth of the automobile business in that city and vicinity, has resigned to become connected with the Cadillac Motor Car Co., Detroit, in the latter's sales division.

Will H. Peck and William Wooden, Kalamazoo, Mich., have formed a partnership and will sell the Elcar. Headquarters have been opened at 532 Portage Street.

The Auto Garage Co., Bear Lake, Mich., has bought out the National Garage & Sales Co.

Elmer Knapp, Lapeer, Mich., has bought out Arthur Harrison's business and will install a large repairshop. Eventually Knapp will erect a new garage.

John Renshler, Caro, Mich., has sold his garage to A. B. Huffman.

R. V. Allen and Harvey McCrum, Jackson, Mich., have become partners and will sell the Oakland and Reo.

A. Miller, Marquette, Mich., has sold his interest in the City Garage. The business of the latter will be continued under the firm name of Erickson & Bloom.

The Hubbell Auto Sales Co., Bay City, Mich., has broken ground for a new garage, 100 x 100 ft., which is being erected at Fourth Avenue and Saginaw Street

The Munkwitz Realty Co., 431 Milwaukee Street, Milwaukee, is preparing plans for the erection of a three-story garage and service station, 60 x 120 ft., on Broadway, Milwaukee. The exact location and name of lessee is withheld for the present. The investment in building will be about $27,500.

The Weyauwega Oil Co. has been organized at Weyauwega, Wis., by local business men to wholesale and retail gasoline and other petroleum products and kindred lines. Tanks will be installed at once. The supply will come from independent refiners. W. W. LaBudde is secretary.

John C. Heitman, Sparta, Wis., has taken the agency for the Pathfinder in a large territory in western Wisconsin, including LaCrosse, and has established headquarters in the M. Savage & Co. garage, 419 State Street, LaCrosse.

E. A. Glab has retired from the Enger Motor Sales Co., Milwaukee, and will devote his entire attention to the Pathfinder Sales Co., 163 Eleventh Street, Milwaukee, of which he is president.

The Hoppe-Hatter Motor Co., Milwaukee, the new State agent for the Paige, will move into its new two-story garage, 60 x 120 ft., at 486-490 Milwaukee Street, on Sept. 1. Adolph C. Hoppe, president, will continue as general manager; Roy P. Bond is the new sales manager; J. P. Meehan is retail sales manager; Edward V. Oehler, traveling representative, and Michael Muller, service manager. Mr. Bond comes from Minneapolis, where he was with the Oldsmobile for 4 years.

The Northwestern Motor Car Co., Milwaukee, has been incorporated with $5,000 capital. A Ford agency and garage has been established at Twenty-ninth Street and Fond du Lac Avenue. Fred Boddenhagen, Jr., Louis A. Smetcamp and Julius O. Roehl are the owners.

Paul L. and H. G. Wegner, Sparta, Wis., new agents for the Ford, have opened a garage and service station in the Roberts Building, Bangor, Wis. Paul Wegner will handle the sales department.

Ben Larson, machine shop and motor repairs, Rhinelander, Wis., has purchased the business and equipment of A. C. Velton and is consolidating the two shops.

The Ritter Automobile Co., Henry and State Streets, Madison, Wis., has purchased adjoining property and will extend its already large garage and service station to Dayton Street, which will provide a building 256 ft. long and 66 ft. wide, all two stories high. The elevators will be abolished and a system of ramps built into the old and new structures. The garage will accommodate 200 cars when enlarged. The Ritter company represents the Franklin, Hudson and Paterson.

The Zorn Auto Co., Osceola, Wis., moved into its new garage and repairshop Sept. 1.

The S. & S. Motor Car Co., Green Bay, Wis., has leased the Rahr Building, Walnut Street, and will make improvements at once. The floor space is 70 x 106, with room for sixty cars. The company handles the Paige and Oakland and the Detroit electric and will make special provision for the care of electric cars.

The Suburban Garage Co., 26 State Street, Wauwatosa, Wis., has broken ground for a two-story shop addition, 20 x 40 ft., and will also build a full second story, 55 x 144 ft., on the old garage.

T. F. Schmitz, Harrisville, Wis., is contemplating the erection of a fireproof garage and repairshop, which will include an implement warehouse.

The Rattunde Auto Co., Necedah, Wis., has taken possession of its new garage and repairshop.

Edward Kroll, Lake Geneva, Wis., has purchased the oil and grease business of Fern Batchelet at that point.

Carl Grapel, Spalding, Menominee county, Mich., has completed the work of installing $2,500 worth of equipment in his new garage and repairshop, erected last spring. All tools are operated by electricity from a private power plant.

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The Prothero-McGinnis Auto Co., Baraboo, Wis., has taken the district agency for the Cadillac, but will continue the Buick agency.

O. A. Jasperson, Burlington, Wis., district representative of the Ford, has placed Howard Newell in charge of the Burlington station as manager and will continue to reside at North Cape, Wis., handling the eastern end of his territory.

R. E. Gibbons, Elroy, Wis., has taken occupancy of his new garage and service station on Main Street. The garage accommodates 30 cars.

H. A. Ernst, Oconomowoc, Wis., broke ground Aug. 28 for his new garage and repairshop, to be 70 x 90 ft. in size, two stories and basement, of brick and mill construction.

The Green Bay Avenue Garage, 1459 Green Bay Avenue, Milwaukee, owned by Otto Ludwig & Sons, will build a fireproof shop addition, 30 x 30 ft., two stories and basement.

Charles H. Lohr, Hartford, Wis., Ford agent, will enlarge his service station and repairshop by a fireproof addition 25 x 72 ft.

George Brietbach, South Milwaukee, Wis., will build a fireproof garage, 48 x 48 ft., at Twelfth and Michigan Avenues.

PACIFIC COAST

George Laffaw, Bangdon, Ore., proprietor of the Bangdon Garage, has just moved his business into a new frame building on the main street.

L. G. Barker and **F. A. Auger**, Arcata, Cal., have opened a garage and repairshop on the International Highway, known as the P. M. G. Garage. They also have the Maxwell agency for the territory.

Harvey M. Harper, Arcata, Cal., has opened a garage.

J. C. Phelan, Fresno, Cal., has opened a tire store and has the agency for the Kelly-Springfield line.

Rabau & Baumgartner, San Jose, Cal., have opened headquarters as Santa Clara distributors of Diamond tires at First and Divine Streets.

Hermanson & Green, Eureka, Cal., have moved into a new building.

F. H. Lundblade, Eureka, Cal., has opened an accessory store at 520 Second Street and put in a $4,000 stock, specializing in Diamond tires.

The Ford Garage, Roseburg, Ore., is being completely remodeled.

Phil. Harth, Roseburg, Ore., has purchased Jack's Garage on Oak Street and changed the name to the Chevrolet Garage.

The Oakland Garage, Oakland, Ore., has just been completed and is now open for business.

Woodson Bros., Cottage Grove, Ore., have just completed remodelling their plant and painting the building.

J. L. Laird, Myrtle Point, Ore., has opened Myrtle Point's second automobile establishment.

E. A. Lindberg, Port Orford, Ore., has just completed a new frame building on the International Highway and is putting the machinery and stock for historic Port Orford's first garage.

American Taximeter Co., Seattle, Wash., has opened a branch station at 908 East Pike Street.

Paige Motor Sales Co., Seattle, Wash., has been incorporated by V. C. Foree and George M. Price and have opened permanent headquarters at 903 East Pike Street. This firm will handle the entire territory west of the Cascades.

Wood & Co., Starbuck, Wash., will soon erect a new building in that Junction city. Their garage is the only service station between La Crosse and Pomery, a distance of 80 miles, over which there is considerable automobile travel.

Winton Motor Car Co., Seattle, Wash., will move into their new home Oct. 1 at Eleventh Avenue and East Pine Streets. The building will be of brick, decorated with terra-cotta, and will cover an area of 120 x 120, representing a total value of land and buildings of $100,000.

The Endicott Drug Co., Endicott, Wash., Ford and Buick dealer, has taken possession of a new brick garage building costing $10,000.

Smith Bros. Garage, at Pine City, Wash., is one of the latest additions to the number of modern garage buildings recently erected in the Inland Empire. The Studebaker is handled.

Schuster Bros., Ford dealers at St. Johns, Wash., have erected a new brick garage, accommodating over 100 cars.

NORTHWEST

Millberg Bros., Dassel, Minn., are making extensive improvements to their garage.

Nicholas Theien, St. Martin, Minn., will erect a garage.

C. C. Kassabaum, Wabasha, Minn., has opened a vulcanizing shop.

N. J. Almeter & Sons, Mazeppa, Minn., have bought the Tuttle Bros. garage.

L. F. Nelson has bought the Ford agency from Neil Nelson.

Hoof Bros., Plato, Minn., have bought the Plato Garage from Albert Olson.

Anderson Bros. & Baker, Osakis, Minn., have taken the Saxon agency.

Popple & Cummings, Preston, Minn., are erecting an addition to their garage.

L. J. Holub, Preston, Minn., has rented the Munkel Garage.

I. S. Smith, Buffalo, N. D., is erecting a garage, 50 x 80 ft.

M. L. Jones and **Idris Jones**, Lake Crystal, Minn., will erect a garage, 50 x 100 ft.

W. W. Savage, Janesville, Minn., has moved into a new garage.

F. C. Paskie, Grand Forks, N. D., has opened an accessory business.

The Hillsboro Auto Co., Hillsboro, N. D., has begun work on a new garage.

A. H. Leet and **S. C. Leet**, Forbes, N. D., have bought the interest of their partner, F. F. Hixson, in the North Side Garage.

F. O. Kingery and **F. M. Weber**, Forbes, N. D., will erect a garage, 25 x 100 ft.

F. Ferguson, Smithwick, S. D., has opened a garage.

The Whitefish Auto Co., Whitefish, Mont., has passed to the management of E. G. Smart.

The Wright Garage, Mahnomen, Minn., has opened.

Henry Jensen, Red Lake Falls, Minn., has opened a garage and implement business.

William Richards, Morris, Minn., has bought the McCanney interest in the Ford agency.

The Bluff City Auto Co., Stillwater, Minn., has moved into its new garage.

Dondelinger & Seitzer, St. Peter, Minn., have finished an addition to their garage.

Butler & Johannsen, Echo, Minn., have opened a new shop.

Kurvinen & Vance, Duluth, Minn., have opened a garage. They are from Ely, Minn.

SOUTHWEST

R. W. Immasche, St. Louis, until recently State distributer, has taken the agency for the Jordan. He will open temporary showrooms at 4130 Olive Street until he can find suitable quarters on Locust Street.

James Perdue, Greensburg, Kan., has secured the agency for the Dodge Bros. and will build a garage.

L. E. Meyer, Rockville, Mo., has installed an oxy-acetylene welding plant in his garage.

The Dorris Motor Co., St. Louis, will open showrooms on Locust Street, for the first time taking a place on the Row. The former Chevrolet showrooms at the Locust-Lindell cutoff have been leased from the Chevrolet Co. of Missouri, Inc., which took over the distribution from the Triangle Motor Co. The building is a triangle with plate glass on two sides and consists of two floors and basement. Bernard A. Purcell will be in charge.

C. B. Hollister, St. Louis, has been promoted by the Efficiency Oil Co. and has charge of the company's plant at 2100 North Kings' Highway. C. C. Thurston becomes salesmanager at the branch at 3219 Locust.

Curtis Van Antwerp, St. Louis, has been placed in charge of the service department of the Supreme Motor Co. of that city. Tom Herbert, formerly salesman for Peerless distributers, has joined the force of the Supreme Motor Co.

Packard Missouri Motor Co., St. Louis, has opened used car showrooms in the recently leased building at Eighteenth and Pine Streets. Ralph E. Dillard is in charge.

The Broderick-Bolte Electric Co., East St. Louis, Ill., has opened an electric repairshop at 105 Collinsville Avenue and will sell supplies.

R. W. Kilburn, **J. Mallory** and **W. F. Stagg**, Carthage, Mo., have bought the Lanpher Brothers Automobile and Carriage Shop and will operate under the name of the Carthage Auto Carriage and Auto Repair Works.

Giles & Francis, South Haven, Kan., will move their Ford agency to Caldwell, Kan. Their territory has been extended 4 miles into Oklahoma, and this will be a more central location.

The Kansas City Oakland Automobile Co., Kansas City, has incorporated at $5,000 to deal in automobiles. Directors are E. W. Arrasmith, Alta M. Arrasmith and W. H. Meyers.

The New Era Mfg. Co., St. Louis, has increased its capital stock from $150,000 to $200,000.

G. W. Pope and **L. A. Pangle**, Oklahoma City, formerly salesmen for the Ford Motor Co., have secured the agency for the Ford and opened salesrooms at 204-206 West Second Street. The firm will be known as the Oklahoma City Auto Co.

Jesse F. Branham, Albany, Mo., has gone into business in the new Hardin & Branham garage.

W. T. Stevenson and **F. M. Becker**, Oklahoma City, have taken over the Auto Service & Storage Co. on West Second Street.

W. E. Magruder, Joplin, Mo., has just completed a new $15,000 garage on First and Webb Streets. In Joplin $30,000 has been spent on garages within the last 3 months. The Empire Auto Co., East Main and Tom Streets, and the Overland showrooms for W. R. Dunham make up the remaining $15,000. All the buildings are of brick with Carthage stone trimmings, and will total nearly 25,000 sq. ft. of floor space.

The Overland-Irwin Co., Hannibal, Mo., has incorporated at $20,000 to handle the Overland and Willys-Knight. Directors are Leaton Irwin, M. E. Lusk, Jr., F. R. Lusk, C. H. Wood, Albert Wilber and A. B. Grubb of Quincy, Mo., and L. G. Wilhelm, Ethel Wilhelm and Fenton B. Morris of Hannibal.

Jack Craig, Fayette, Mo., will open a new repairshop. Mr. Craig was formerly in the repair department of the Fayette Garage.

Mutti & Brown, Hopkins, Mo., have secured the agency for the Overland.

W. L. Shively, Eureka, Kan., has purchased an interest in the C. F. Grant Garage. The new firm will be known as Grant & Shively.

C. R. Guthrie, Wakita, Okla., traded his garage to J. H. Hamilton. Guthrie will retain the agency for the Overland.

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J. Case Van Scholack, Garden City, Kan., has opened a new garage at 321 Eighth Street. The new concern will be known as Case's Garage.

Charles Beaver, Hewins, Kan., will erect a garage there in the near future.

Ralph Bloom, Hutchinson, Kan., is erecting a brick garage which has steel beams instead of posts to support the roof.

The Glen J. Le Master Building, Ottawa, Kan., is being remodeled into a storeroom for automobile accessories and supplies.

Melvin and **Bert Breon**, Crystal Plains, Kan., have secured the Ford agency at Kensington, Kan.

Radcliff & Hunter, Barnett, Mo., have opened a new garage.

Coverty & Sansom, Powhattan, Kan., have bought the Powhattan Garage.

Hiram Mills, Drexel, Kan., has sold his garage to J. R. Myers.

Carl Konantz, Arcadia, Kan., has opened a new garage.

Everett Waller and **Emmett Dittemore**, St. Joseph, Mo., have purchased the O. K. Garage from Edward Esser and Tony Komer.

A. Bradbridge, Hutchinson, Kan., has opened a new garage.

Ed Errickson, Ridgeway, Mo., has purchased his father's garage.

Eugene Canton, Hutchinson, Kan., has opened a repairshop.

Hardin & Branham, Albany, Mo., have opened a garage.

William Koelzer, Seneca, Kan., has purchased the garage business of the Buser Auto Co.

Frank Joyce, Altamont, Kan., has moved to Little River, where he will open a garage.

EAST

The Kent Motors Corp. has removed its executive offices for wholesale and export to the suite formerly occupied by the Sterling Motor Car Co. in the United States Rubber Building, 1790 Broadway, New York.

The Henshaw Motor Co., Boston, has opened a salesroom on Exchange Street, Lynn, for a new agency under its control.

The Cadillac Motor Car Co., Boston, has made C. E. Grimes manager of its used-car department.

The Philadelphia Gear Works, 1120 Vine Street, Philadelphia, is erecting a two-story tool house adjoining the plant.

The Chester County Motor Co., Coatesville, Pa., has leased the two-story building at 5740 Cherry Street, Philadelphia, which will be used as a garage and service station.

D. A. Thrall, Ollie Thrall, E. H. Richardson and **C. M. Colton**, Hartford, Conn., have formed the Thrall-Colton Motor Car Co. and have taken quarters at 1283 Main Street. The firm will represent the Kissel Kar. C. M. Colton until recently was associated with the Colonial Auto Co., at 1279 Main Street.

Earl C. Boardman, Hartford, Conn., has taken over the repair business of the Kenney Garage, 120 Allyn Street.

The Overland-Hartford Co., Hartford, Conn., has removed the parts department from the downtown salesroom to the temporary service building on Lawrence Street, formerly the Billings & Spencer machine shop.

FORD CHANGES

Nashville, Tenn., Sept. 1.—The new Ford plan of retail agencies promises to be a success in Nashville, as one of the concerns already established has sold thirty-six cars in the first 5 days of its existence. This is the Blackwood Automobile Co., and H. O. Blackwood, the proprietor of the agency, states that he expects to dispose of 500 Fords during his first year as a dealer. The local Ford branch sold about 400 cars in the city in the past 12 months. Another agency, the Hippodrome Automobile Co., will remodel the Hippodrome, which is 32 x 325 ft. The Wilson-Lawrence Co. will operate an agency in East Nashville, concentrating its sales efforts in this territory, which is cut off from the city proper by the Cumberland River.

Denver, Col.—The Denver branch has established seven limited agencies in this city and intends to contract with two, or possibly three, more agents here within the next few days. The firms so far under contract are located in the central, southern, eastern, western and Capitol Hill districts, and two of those to be added will have headquarters in North Denver and the Five Points district. Every one of these sales agencies will maintain a well-equipped service station in the same building with the salesroom. Some of the agencies are already in new buildings with plenty of space, and at least two of them intend to put up large buildings right away. The agencies established are: O'Meara-Green Motor Co., 1439 Cleveland Place; United Motor Sales Co., 153-155 Broadway; Scully-Norris Motor Co., Griffith Building, Fourteenth and Lawrence Streets; Clark-Gibson Motor Co., Colfax Avenue and York Street; Kempter Motor Co., 1811 Glenarm Place; Turner-Deigle Motor Co., Broadway and Fifth Avenue; McCarty-Sherman Motor Co., West Eighth Avenue and Santa Fe Drive.

Boston—Ford agencies are being placed, with employees being given the preference by the New England branch. At cambridge, Richard B. Horne, William T. Gill and George M. Cushman, all from the factory forces, have formed the Cambridge Ford Co., with headquarters in Lafayette Square. In Boston, Herbert M. Snow, who was manager of the retail branch; Arthur Coombs and J. R. C. McBeth, salesmen, formed the company, to handle the car as an agency, with salesrooms on Boylston Street.

Winnipeg, Canada—No arrangements have been bade by the Ford Motor Co. of Canada to change its selling organization at the present time, but all managers of Ford branches throughout Canada are seriously considering the advisability of adopting the same scheme of service stations as are coming into effect in the larger towns and cities of the United States. Should the scheme be finally adopted, it would mean the opening of service stations at different points in the larger cities, such service stations being under the control of the local Ford executive, and their service work inspected and their establishments reported on from time to time by a service superintendent sent out from the Ford headquarters. Any man taking up a Ford service station would be required to sign a contract, undertaking to maintain the service station up to the standard as set out by the Ford company, and he would have the privilege of also acting as a selling agent for the Ford car, but would have no restrictions as to number of cars handled. The Ford Motor Co. of Canada has already completed its 1917 contracts covering Manitoba, Saskatchewan and Alberta, so there is very little possibility of a change being made before Aug. 31, 1917.

St. Louis, Mo.—W. C. Anderson, manager of the Ford assembly plant here, has revised somewhat the agency plans. After a thorough canvass of the city he has decided to admit a total of thirteen agencies and has assigned the locations. H. L. Bagley, recently announced as sub-branch manager in East St. Louis, Ill., will conduct an agency in that city. A supervisor of agencies will be named within a few days and he will keep close watch on all selling stores to see that the Ford plan is strictly enforced. All agents must attend weekly meetings at the assembly plant. Samuel Breadon, president of the Western Automobile Co., was interested in two of the new agencies with former Ford salesmen, but was compelled to withdraw from one. He retains interest in the Ayres Automobile Co. Breadon's company is distributor of the Pierce-Arrow cars. He was formerly a Ford distributor before the assembly plant was built here.

Tacoma, Wash.—The Ford Motor Co. will maintain its wholesale department in Tacoma at Seventh and Broadway, and will also take good care of the two Ford retail agencies, namely, the Universal Motor Car Co. and the Manley-Thompson Bros. Co. President Walter Baldwin of the Universal Motor Car Co., has contracted for 500 Fords for Tacoma. He will continue to operate his five subagencies in Pierce County. R. A. Mueller will supervise the mechanical end of the business, while George Davis and L. W. Harkins will manage the sales department. The exclusive Ford agencies under the supervision of the Universal Motor Car Co. are located at Puyallup, Sumner, Eastonville, Buckley and Dupont. Manley-Thompson Bros. Co. has also been named Ford dealer in Tacoma, at 906-908 Tacoma Avenue.

Grand Rapids, Mich.—Ford cars are now sold in Grand Rapids, Mich., by the following dealers: C. D. Miller, Ottawa Avenue and Louis Street; the Standard Auto Co., 648 Bridge Street; the Madison Square Garage and the Burton Heights Garage.

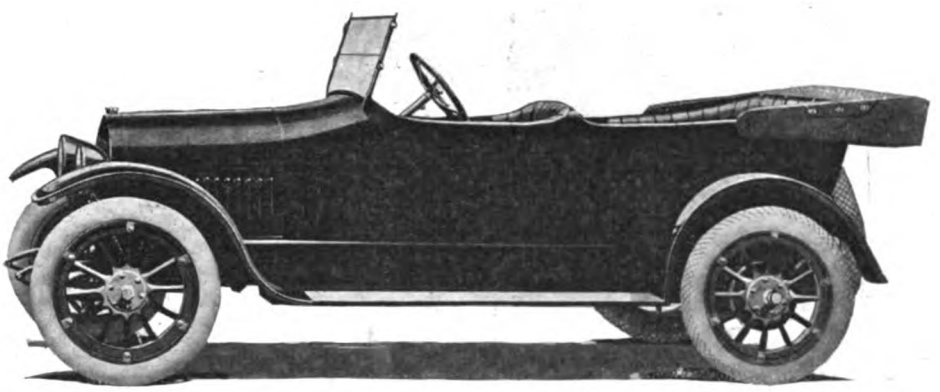
Omaha—Ford agencies are springing up over night in Omaha since the new order of sales methods went into effect. Already there are five such, where there was but the central office. W. C. Sample and B. W. Hart, both former salesmen, have organized the Sample-Hart Motor Co. and secured temporary quarters. F. E. Hughes, former manager of the Council Bluffs branch, with G. M. Irons, a retail salesman, have formed the Hughes-Irons Motor Co. of Council Bluffs, having purchased this branch of the Ford company outright and set up shop in its former quarters. V. D. Benedict, former retail sales manager for the Ford Motor Co.'s branch house here, is now manager for the Universal Motor Co., Twenty-seventh and Leavenworth Streets, which will handle Ford cars. In addition to these firms, there are the Holmes-Atkins Co. of South Omaha, and the Coad-Marsh Co., temporarily located in the Industrial Garage Building at Twentieth and Harney Streets. Insistence of the Ford Motor Co. that dealers shall be provided with suitable quarters, not only for stock, but for service as well, is the reason temporary quarters are being occupied by some firms, because they must make arrangements for these before their contracts are signed. All present firms will probably be in permanent quarters within a month. It is required of each agent that a two-story building not less than 60 x 120 be occupied, that individual service stations be provided, and no central station counted upon, that yearly contracts and monthly shipping or delivery instructions be agreed upon, and that ample part stocks be carried.

Indianapolis—Six retail Ford agencies have been established in Indianapolis and Marion County to take the place of the retail sales and service recently discontinued by the Ford Motor Co. Perhaps two or three more will follow. For the most part, men formerly connected with the Indianapolis branch of the Ford Motor Co. will be at the head of the agencies. John Burke, head of the John Burke Co., was assistant manager of the Indianapolis branch; Walter Olin was formerly superintendent, while H. L. Holcomb, Harry Stone, A. W. Bower and A. Herbert Smith, all at the head of sales agencies, were formerly connected with the sales department.

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Two Jackson Eights and Two Fours

lew Eight Has Ferro Motor —Four Open Bodies



The tilted windshield, double cowl and rolled body rim combined with maroon body finish and black running gear make the new Jackson very attractive

A NEW EIGHT, with 48-hp. valve-in-head Ferro motor, and supplied in four attractive open body tyles, will lead the Jackson line for next ear. Other than the change in power lant the car is characteristic and has ne well-known full-elliptic springs. The hree present models, two eights and a our, will be continued without change.

The price of the new model is $1,295 s a two- or five-passenger. The four-assenger is $1,395, and the seven $1,370.

The bodies for the new chassis are de-idedly modern and are attractively ainted, the color combination being light naroon with black running gear and enders.

All have tilted windshields; five- and even-passenger cars have a double cowl nd the body rim is rolled in. Divided ront seats and a sloping deck character-ze the four-passenger, which has wire wheels as standard equipment.

The chassis is built of standard parts and the design is mainly conventional. The motor is combined with a Borg & Beck plate clutch and a three-speed Co-vert gearbox. The clutch is a departure in Jackson construction in that the other models have leather-faced cones.

The motor is a 3 x 3½ in. and develops its maximum of 48 hp. at 2400 r.p.m. Both blocks of cylinders and the upper half of the crankcase are cast in one piece, and the cylinder-heads are detachable. Intake manifold and water outlet header are combined, the latter forming a jacket around the former. The manifold is arched and the carbureter is suspended from the center. Condensation cannot settle in the manifold, but must run to one cylinder block or the other, thus loading is prevented. The generator is placed at the front of the V and the ignition distributor at the rear. The exhaust pipes are on the outside.

A feature of the design is that although the valve-in-head construction is used, the valves are completely inclosed, yet they may be adjusted or the rockers may be oiled without removing the covers. This is due to the peculiar valve construction. The rocker is a steel-pressed and has a cup at its center which fits over a ball-ended stud mounted in the head, which is adjustable from the outside, and by moving it in or out, the proper clearance between the rocker and the valve may be obtained. The ball-joint is oiled by a wick, which is placed in a hole drilled in the center of the stud.

The carbureter is a Zenith duplex, to which gasoline is delivered by a Stewart vacuum system. Starting and lighting are supplied by Auto-Lite units and ignition by a Remy distributor. The generator is driven by a 2-in. flat belt from a pulley on the crankshaft and adjustment is obtained by raising the hinged platform which carries the generator.

A two-blade fan is mounted on the front end of the generator shaft and cooling is by thermo-syphon in conjunction with a vertical tubular radiator.

The crankshaft has three main bearings of 1 9/16 in. diameter, the lengths varying from 2¼ to 3 in. The connecting-rod bearings are 1 9/16 in. diameter.

The forked type of connecting-rod is used. The wristpins are bronze bushed.

Pistons are cast-iron and have three Wasson rings. The pistons are slightly relieved on the wristpin sides. The wristpins are held in place by a set-screw and cotter pin. The clearance between piston and cylinder is 0.003 in.

The camshaft carries an independent cam for each valve and is mounted on three bronze bearings. It is driven by helical gear and roller valve-lifters are used. Valves have a mean diameter of 1⅝ in., with a total lift of 0.326 in.

Lubrication is combined pressure and splash feed. The crankshaft and connecting-rod bearings are pressure fed. The gear oil-pump, mounted on the front of the motor, pumps the oil through a regulator and thence through the hollow crankshaft to all the bearings. The suction line of the pump is on the right side of the motor and feeds the oil through a screen in the bottom of the pan directly to the pump. In case it is desired to wash out the pan this screen may be readily removed.

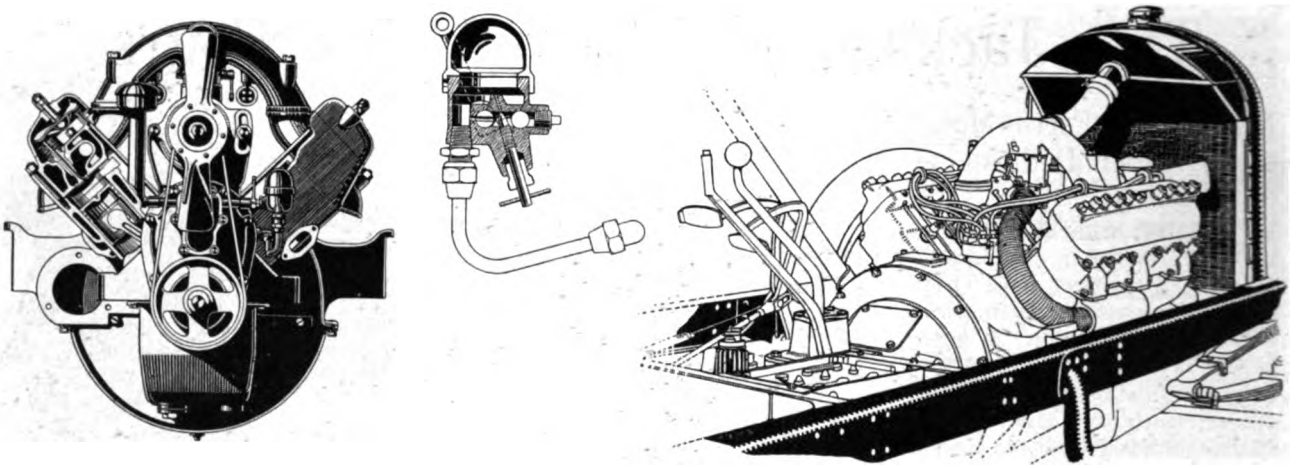
The pipe line on the left side of the front engine gear cover leading to the oil regulator is the main oil pressure line. In order to prevent excessive pressure in the system, a relief valve is interconnected with this line, which starts to open at a comparatively low pressure and throws the oil on the engine gears. This valve is on the top of the gear cover, and in case the oil gage does not register it may be found that dirt is interfering with its operation.

The clutch may be reached for inspection or adjustment through a handhole in the flywheel housing.

FOUR JACKSON MODELS
Jackson Automobile Co. of Jackson, Mich.

Model	Wolverine 349	34-A	348-A	68-A
Seven-passenger	$1,370	....	....	$1,685
Five-passenger	1,295	$985	$1,195	....
Four-passenger roadster	1,370	....	....	....
Two-passenger	1,295	985	1,195	....
Color	Maroon and black	Green & black	Green & black	Blue & black
Motor	Ferro	....	Northway	Northway
Number of cylinders	Eight	Four	Eight	Eight
Shape	Valve-in-head	L-head	L-head	L-head
How cast	Block	Block	Block	Block
Bore	3	3½	2⅞	3½
Stroke	3½	5	4¾	4½
N. A. C. C. rating	28.8	19.6	26.4	39.2
Ignition	Remy	Conn.	Conn.	Conn.
Carbureter	Zenith	Schebler	Schebler	Schebler
Starting and lighting	Auto-Lite	Auto-Lite	Auto-Lite	Auto-Lite
Clutch	Disk	Cone	Cone	Cone
Gearset	3-speed	3-speed	3-speed	3-speed
Wheelbase	118	112	112	124
Tires, non-skid rear	34 x 4	32 x 4	32 x 4	34 x 4½
Rims	Straightside	Straightside	Straightside	Straightside
Rear axle	Floating Salisbury	Floating Salisbury	Floating Salisbury	Floating Salisbury

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Left—Section showing the enclosed valve-in-head construction that permits tappet adjustment without removing cover. Right—The intake manifold and the water outlet header are combined. Upper left—Enlarged view of the oil regulator

Hyatt roller bearings are used throughout the gearbox. The shifting lever is a ball and socket type, mounted in the gearbox cover. Carried on one side of the gearbox is a single-cylinder Stewart air-pump, thrown in action by a lever in a pocket in the floor boards. This pocket also carries the air-hose.

The driveshaft has two universals and both torque and driving strains are transmitted through the springs.

The axle is a Salisbury floating design, with spiral-bevel drive, giving a 4¾ to 1 ratio. Brakes are internal and external, 12 x 2 in. Bearings are Hyatt, New Departure and Gurney. The front axle is an I-beam type, made by the same concern.

The steering gear is a full worm and gear type, made by the Foster Gear Co.

A new support for the spare rim and gasoline tank has been devised. It consists of two horizontal channel members overhanging the rear cross-member. The tank is suspended from these and the rim carrier is bolted to their ends. They are solidly anchored in the frame, extending forward to form diagonal reinforcing or gusset members for the frame.

A new door-lock has been designed which is extremely easy to operate under all conditions and yet is simple in construction. It is operated by a button, which is flush with the upholstery and consequently cannot catch the clothing of passengers getting in or out. An advantage is that pushing the button and opening the door is one movement, and it takes very little pressure to operate the button.

The catch on the lock rotates instead of sliding, as is usually the case. It is pinned to a short rod and the position of these two members is such that they are just over dead center and the catch cannot be moved. When the button is pressed, these two members are thrown off dead center and the catch opens. The door must be locked by a different action, inasmuch as there is no give to the catch except when the button is pushed. Consequently the give has been provided by designing a spring keeper.

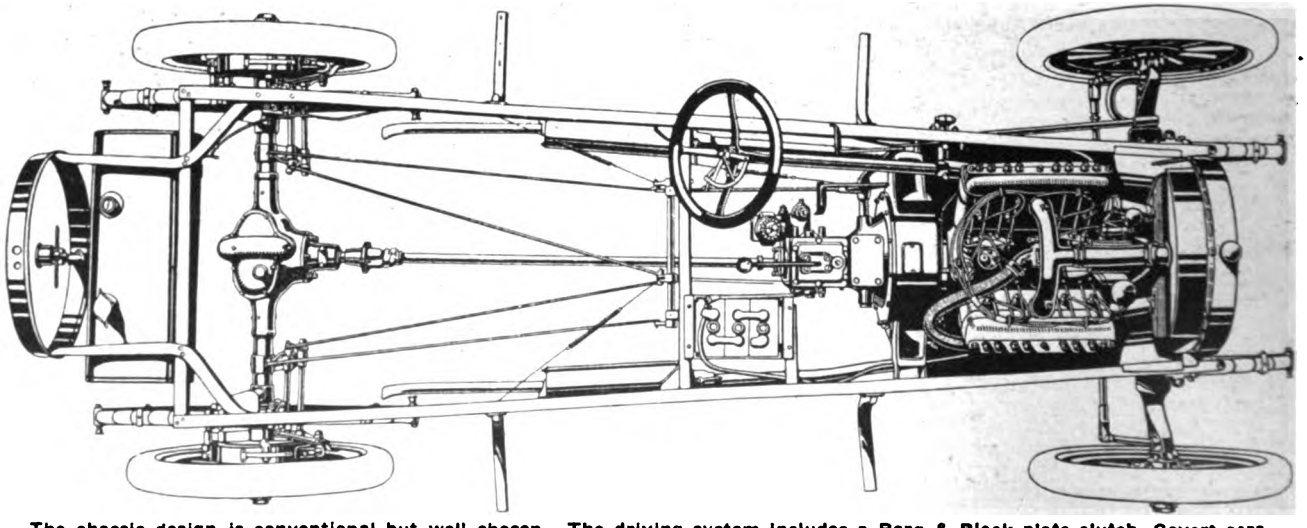
The four-cylinder car, known as Model 34A, is made as a five-passenger touring or two-passenger roadster. It has a unit power plant, consisting of a 3½ x 5-in. L-head motor, cone clutch and three-speed gearbox.

Schebler carbureter and Stewart vacuum system are used, ignition is supplied by a Connecticut distributor, and starting and lighting are Auto-Lite units. A centrifugal pump is used for circulating the cooling water. The wheelbase is 112 in. and tires are 32 x 4, with the non-skids in the rear. Steering gear is a worm and gear and the rear axle is full-floating.

The smallest eight is also made with a two- or five-passenger body and the largest eight with a seven-passenger body. The former has a 2⅞ x 4½-in. motor and the latter 3½ x 4½-in. The specifications are the same as for the four, except that the largest eight has 124-in. wheelbase and 34 x 4½ tires.

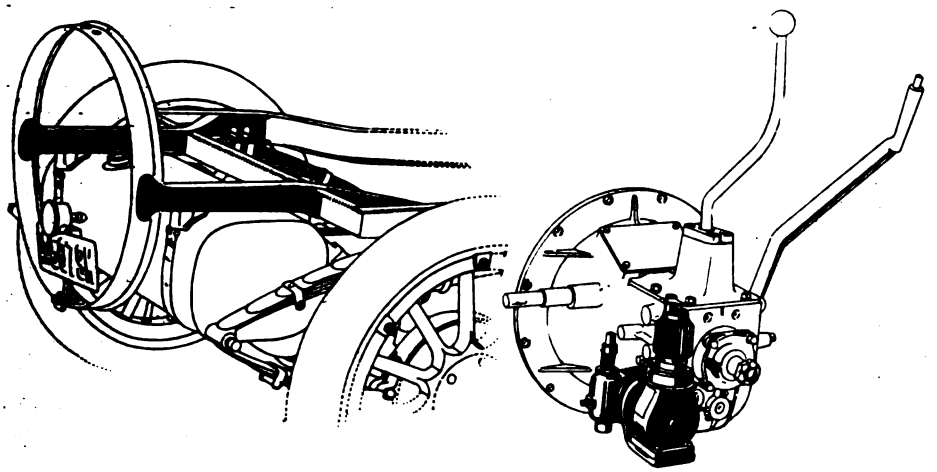
The stock color for the four is Brewster green with black enamelled hood and fenders. The smallest eight is dark green and the largest eight dark blue, both with black enameled hood and fenders.

The equipment is complete, consisting of one-man top, Collins curtains, with curtain openers on the doors; rain-vision windshield, Stewart speedometer, driven from the transmission shaft, etc. All three eights are equipped with a tire pump and the four is designed so that a pump may readily be attached.



The chassis design is conventional but well chosen. The driving system includes a Borg & Black plate clutch, Covert gearbox, two universal drive shaft and a spiral bevel drive axle

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Right—The Stewart air pump is mounted on the side of the gearbox and thrown into action by a lever projecting through the floor boards. Left—The new support for the tank and the spare rim on the Jackson

How I Get My Prospects

I FIND that the daily newspapers can be used to very good advantage in getting the names of prospects. This is a source of information which I know that dealers are not using to full advantage, and for this reason I believe are not cashing in on all the opportunities at hand.

From every newspaper that you pick up you see the names of at least a half-dozen prospects.

For instance, in the news columns there is a story of So-and-So who has just been promoted in the big department store downtown. Along with his new position he will probably get an automobile, and why not a Hupmobile? Then there is the hotel list of people from out in the territory who come to the city on business—why not see them and show them the Hupmobile? There is also the news items of prominent people who have come to the city—some doctor who gets a new appointment. An article on politics, stories of social organization appointments; there are the letters which men write to editors of the papers giving their ideas on certain public issues, and above all, the "Want" columns, listing the "For Sale" automobiles. Many of these I have been able to interest in the Hupmobile.

Also, there is the society columns in the papers. One of the debutantes has a birthday party next week. Why not a Hupmobile for a present?

A list for mailing purposes can also be made up from the advertising columns, although great care has to be exercised here in not getting any names on the list which would not be interested.

From our experience of over a year and a half of using the newspapers to get prospects, we have found the idea very profitable.—C. R. Constant, of Constant & Groves, Springfield, Ill., in Hupmobile Sales Bulletin.

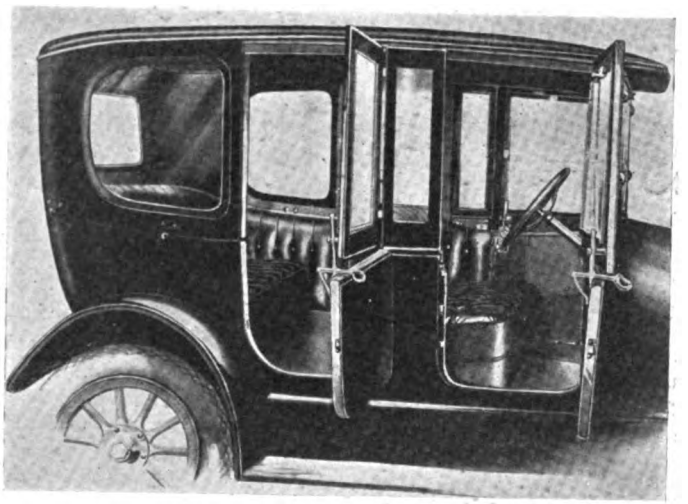
Studebaker Garage for South Bend

SOUTH BEND, IND., Aug. 28—The Studebaker Corp. will erect a large service garage, which will handle the product of the concern's factories, according to plans now being considered. The structure will be approximately 100 x 165 ft.; plans and specifications will be prepared soon.

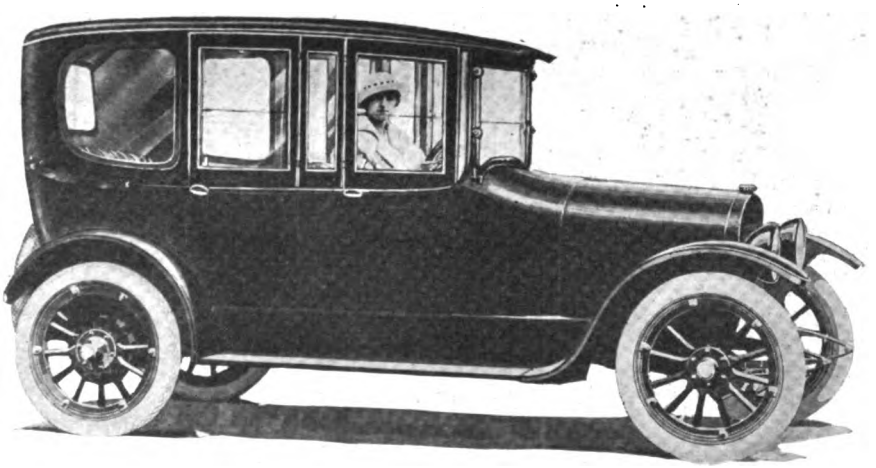
Boston Labor Rate Now 85 Cents

BOSTON, Sept. 1—Following a meeting of the Board of Directors of the Boston Automobile Dealers Association, held this week, a uniform rate of 85 cents an hour for repair work will be charged in practically all of the service stations of the members beginning today.

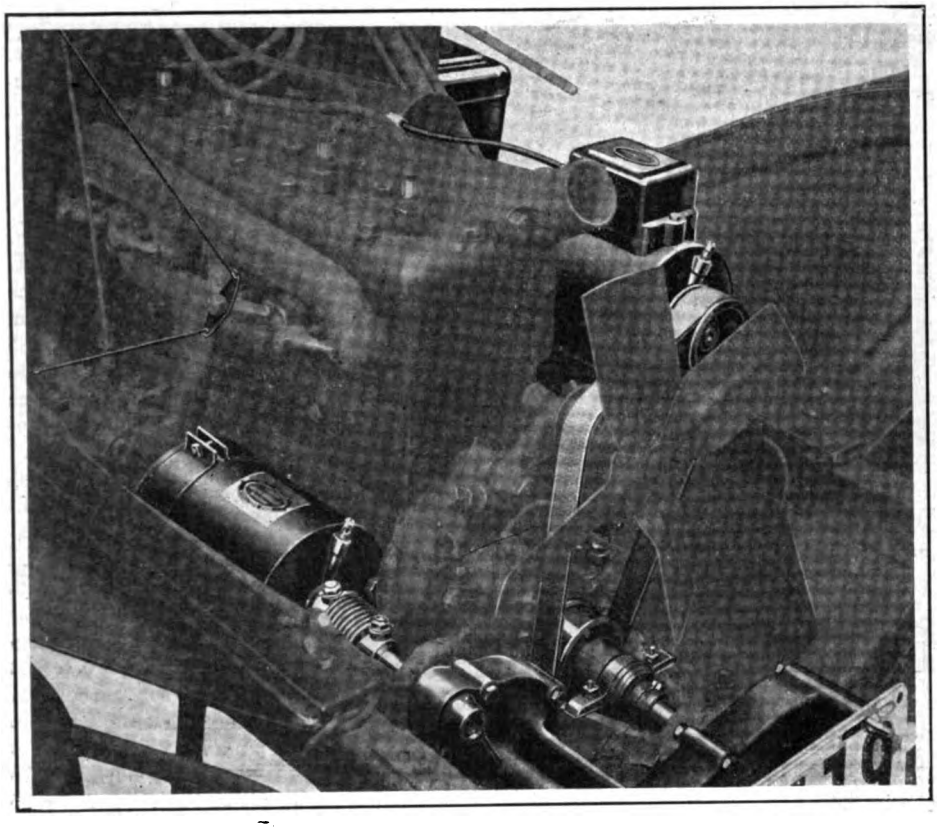
Several months ago, when the question of increased rates came up, the directors did not care to place the association on record in the matter. At that time, the Henshaw Motor Co. raised its price to 85 cents, and other dealers later followed suit. President MacAlman said that wages were going up so much and good men were getting so scarce that he thought $1 an hour would have to come eventually, and he was willing to quote such a price. Now, however, so many of the dealers have gone to 85 cents an hour that the association feels it is possible to make the suggestion that such a rate be made uniform.



The touring body of the eight-cylinder Jackson may be fitted with a detachable top, making it suitable for either summer or winter driving



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Appearance of the A. B. C. electric lighting and starting system as applied to a Ford

A. B. C. Electric Lighting and Starting System Easily and Quickly Attached to Fords.

SEVERAL marked advantages are claimed for the two-unit, six-volt starting and lighting system for Fords made by the A-B-C Starter Co., Detroit, and selling for $85, installed. It is the design of Alexander Churchward, well-known starting and lighting expert, who is vice-president and engineer. Special importance is attached to the fact that the system does not interfere with the accessibility of the engine and is itself accessible. It takes only a small amount of the engine power, as the generator is only ⅛ hp. The supporting brackets are so designed that they do not put an undue strain on any of the motor parts. Another important feature is that no changes in the Ford construction are made; the motor and all its accessories remain exactly as they are.

The generator is at the left front of the motor on a bracket supported from the crankcase, longer crankcase bolts being used. It is driven by a broad, flat belt from the regular crankshaft fan driving pulley. The fan pulley itself acts as an idler and the spring keeps the belt taut. A Ward Leonard current regulator is mounted on the top of the machine.

The starting motor, on the right side forward of the carbureter, is carried on a cradle which is bolted to the crankcase flange on one side and which is supported on the other side by a lip which goes around the edge of the frame.

A double reduction is used, the first being through spur gears and thence through a roller chain which drives through a shaft which connects with the front of the crankshaft.

This whole mechanism is carried in a rigid casting which is anchored to the front spring clips.

There are two innovations in the design of the starting apparatus; one is the use of a cushioning spring interposed between the ends of the armature shaft and the starter reducing gear, so that the actual inertia of the armature may be used to give the high initial pull requisite to overcoming the high starting friction. The result is that the initial draw on the battery is much less than if the armature were solidly connected.

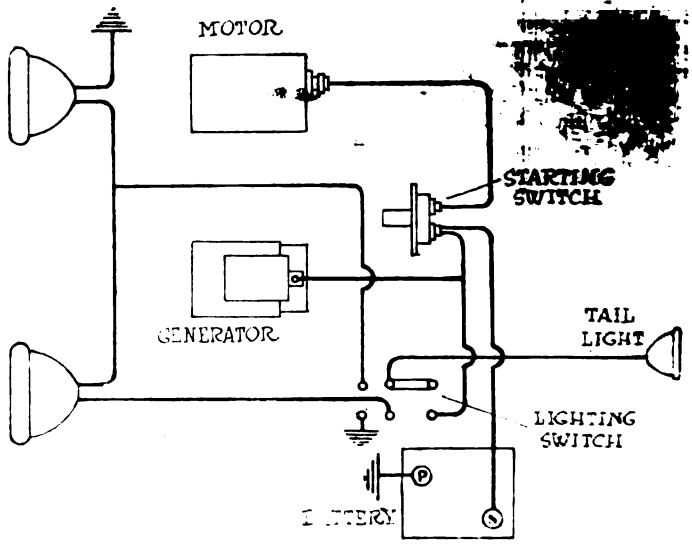
The second point of interest is the method of engaging and disengaging the starter clutch, which, by the way, occupies about the same position as the starting crank does in the ordinary car. The principle is somewhat similar to the Bendix drive. When the starter begins to rotate the driving member of this clutch slides forward and engages the crankshaft.

This sliding motion is obtained by cutting a spiral thread on the outside of the sleeve and having meshed with it another sleeve or nut which is held from sliding by a loose-fitting collar. This sleeve is free to rotate, yet the collar produces sufficient friction so that when the starter begins to operate the inner sleeve is held back enough so that the outer one is screwed forward into engagement.

The vise is disengaged automatically, the motor running away from the starter and thus drawing it out of engagement.

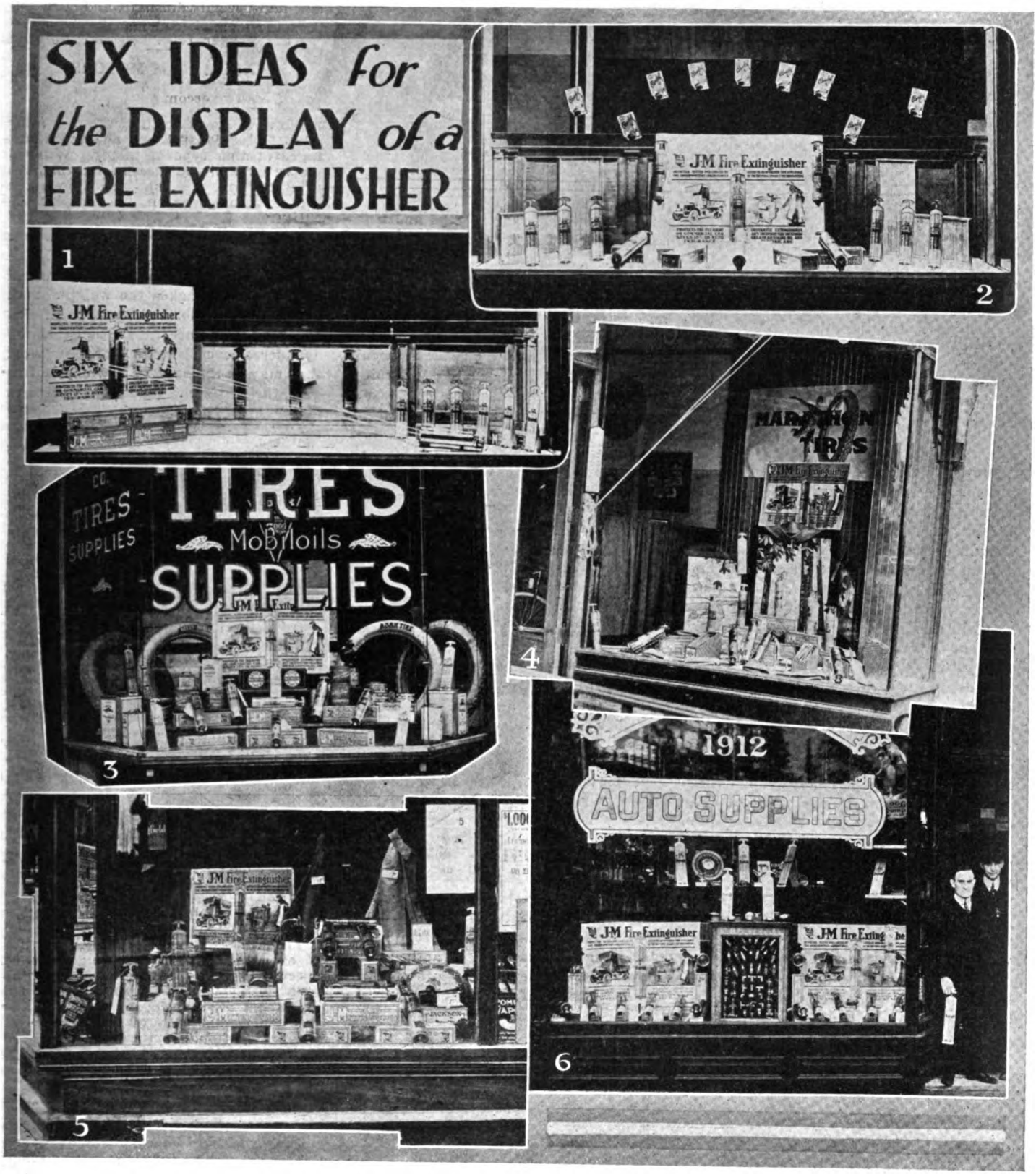
The installation is extremely simple; it usually does not require over 3 to 5 hours and is included in the price. To attach the generator, three short bolts are removed from the crankcase flange and longer ones are substituted. The motor requires the removal and replacement of only two bolts and the gear housing is attached to the front spring clip after removing the radiator. Except for the wiring, this is all there is to the installation. The lighting switch is placed on a panel at the left of the dash and the starting motor is thrown into operation by a small pedal in the floor board.

The complete equipment includes ammeter, starting switch, lighting switch with dimmer attachments, and all necessary parts for installing the system.



This is the wiring diagram for the A. B. C. electric lighting and starting system for Fords

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Practically all of the material needed in these displays is furnished to dealers by the H. W. Johns-Manville Co., New York.

1 *and* 2—*Dummy set-ups of the Johns-Manville window department.*

3—*George Leveene Co., 125 West 68th street, New York.*

4—*Weaver-Ebling Co., 2230 Broadway, New York.*

5—*General Automobile Supply Co., Broadway and West 52d street, New York.*

6—*Crane & Stendicke, 1912 Broadway, New York.*

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Do It This Way—

···QUERIES ANSWERED···

REGRINDING CAMSHAFT FOR SPEED

Figs. 1, 2 and 3

Editor Motor World:

In the Aug. 2 Motor World there was an article giving the address of a company making a racing type of camshaft for Ford motors.

We have a Maxwell camshaft that we would like to have reground so as to give the valves more lift, also so the valves would open and close quicker.—Rogers Garage & Light Co., Jackson Center, Ohio.

Motor World knows of no practical method by which a standard camshaft may be reground to give the valves more lift and a quicker opening and closing. Grinding down the lower part of the cam and adjusting the tappet length to again bring it to a seat on the cam will, of course, cause the valve to be lifted higher and will give a quicker opening and closing, but is very harmful to the performance of the motor.

Exactly what this regrinding will do is best explained by diagrams. Fig. 1 shows the standard cam as furnished by the makers, having a normal lift and a shape that permits easy action and a minimum side thrust on the cam. Fig. 2 shows the cam ground away at the low part only, and while giving the greater lift desired, has made the angle of cam so great that in operation there would be an excessive side thrust, with its attendant wear and tear on the parts. At high speeds this cam would be very noisy and it is doubtful if the motor would show any great increase in power.

Fig. 3 shows the same cam still further ground away on the sides, thus increasing the angle of the cam and making it again the same as that of the standard cam shape. This requires that the top of the cam, or the "dwell" point, be made smaller, and while easy acting and quiet, the valve would be held open for too short a period. Hence all that might be gained by the greater lift would be lost by the short period of opening.

Although these diagrams are exaggerated to illustrate the point, and it might appear that there was a middle point between the two extremes shown in Figs. 2 and 3, it will be found that regrinding will have no great beneficial effect. Any change in the rate of opening and closing of the valves requires a new and special camshaft, and such may be made in any good machine shop.

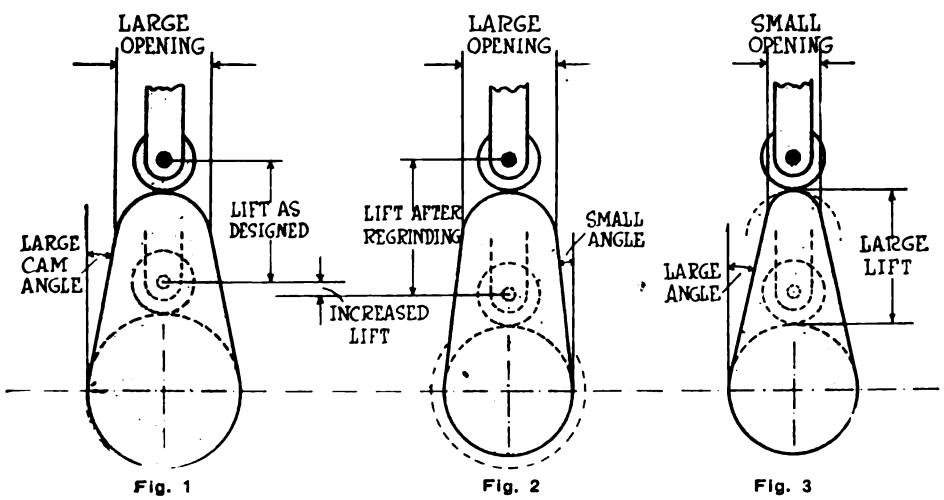


Fig. 1 Fig. 2 Fig. 3

Showing on an exaggerated scale the fallacy of attempting to regrind a cam to a shape suitable for speed work

ALUMINUM MOTORS

Fig. 4

Editor Motor World:

We have heard much of the new aluminum motor construction and the advantages of this type of motor. Will you please explain the manner in which the cylinders are cast, and tell us whether the cast-iron liners may be replaced.—Reader.

The illustration shows the aluminum casting of the new Premier motor. The chief advantage of this type of construction is that it makes the weight of the car about 250 lb. lighter than if iron castings were used. If the cast-iron cylinder sleeves become scored or worn, they may be replaced by new ones. However, the job is one that requires a service station to do the work.

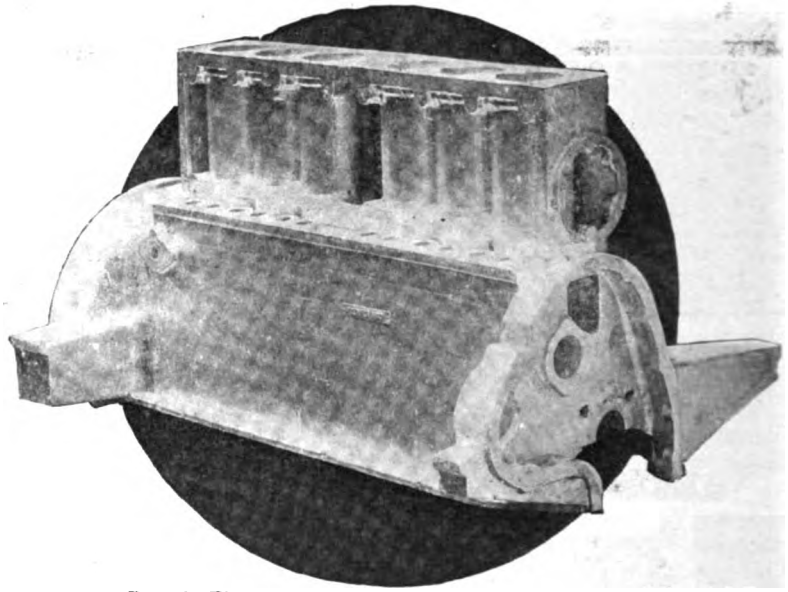


Fig. 4—The aluminum cylinder and top crank case casting of the new Premier motor

BOOK OF CAR SPECIFICATIONS

Editor Motor World:

There is a handbook published which gives data as to price, weight, motor specifications of automobiles manufactured in the United States and some few prominent foreign makes.

When a 1917 copy of this book is off the press, should you publish this, mail us one and charge it to us, or mail it C. O. D., parcel post.—Valley Motor Car Co., Memphis, Tenn.

The National Automobile Chamber of Commerce, New York, N. Y., publishes a book which gives complete details on all machines which are produced by its members. All the principal specifications are given and the cars are illustrated. The price of the book is 25 cents, but the supply is at present exhausted and no more will be published until next year.

The Autocar Year Book, published by Illiffe & Sons, Ltd., 20 Tudor Street. London, E. C., gives complete specifications of practically all the cars manufactured in the world.

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Enger is Convertible From Twelve to a Six

Intake Valves on One Block Held Open and Manifold Cut Off —One Model at $1295

WHAT amounts to an innovation in standard motor car construction is found in the Enger, Twin-Unit Twelve for 1917, made by the Enger Motor Car Co., Cincinnati. Through the shifting of a lever the Enger may be changed from a twelve to a six. This is the first time that this has been found possible in a stock car. The Schebler, one of the early twelve-cylinder experiments, used some such similar device, but none of these cars ever were marketed, only one having been built.

But one chassis is being built and this, a five-passenger touring type with streamline body and hood and double cowl, sells for $1,295. This is an increase of $200 over the previous twelve of last year, but the 1917 model is greatly improved in appearance over its predecessor. With a wheelbase of 116 in. and cantilever springs in the rear the car rides easy. The rear axle is of the floating type with double row ball bearings throughout and the drive is taken through spiral bevel gears.

The principle involved in changing the motor from a twelve to a six is extremely simple. A rod having six cams is placed over the push rods of the intake valves on the left block of the V and by throwing a lever placed on the steering post and under the wheel, this shaft with the cams is turned sufficiently to act upon the pushrods and open the intake valves and hold them in an open position until the lever on the steering wheel is thrown back. At the same time the cams open the intake valves the turning action of the shaft carrying the cam closes a butterfly valve in the intake manifold to the left block. Thus the six cylinders are cut out, but they act as a compensator for the other six, which of course are off center.

The motor, which is of Enger's own construction, has a very small bore and stroke, being 2 11/16 x 3½ in. This gives it a N. A. C. C. horsepower rating of 36.77, and a displacement of 245.75 cu. in. Enger's claim for great economy when the car is used as a six seems well taken since it stands to reason that with six cylinders having a total displacement of 122.9 cu. in. the motor must be more economical as to fuel than the car with a much larger displacement. The Enger has the smallest piston displacement of any twelve on the market to-day and from a flexibility standpoint it may be said that all speeds from a point where the speedometer rests at zero up to 60 miles per hour are possible in high with the twelve cylinders in action.

A representative of MOTOR WORLD rode in the car over hills and on level stretches and found 40 miles per hour possible with the use of six cylinders and up to 60 with the twelve cylinders in action. On level ground starting was easy with the gearshift lever in high and under the same conditions, with the clutch in and the gears in high, a touch of the starter pedal was sufficient to start the motor and accelerate to 40 miles within a city block. There was no bucking to the motor when starting in high.

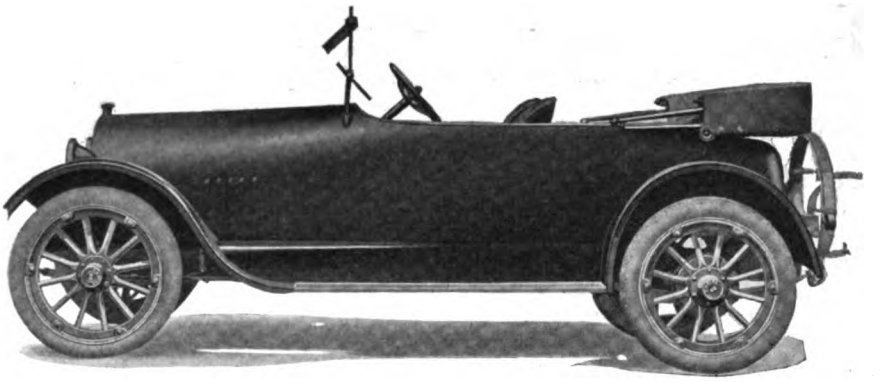
The motor is of the valve-in-the-head type and the cylinders are of semi-steel. The main crankshaft bearings, of which there are three, have bronze backed bushings and unusually large bearing surfaces. Enger has seen fit to line the valve machanism covers with felt to give greater quietness. Adjustable pushrods operating on ball bearings in ball socketed rocker arms with felt oil retainers also make for quietness. Three thousand revolutions a minute is the maximum motor speed, and at this point it is said to develop 55 horsepower.

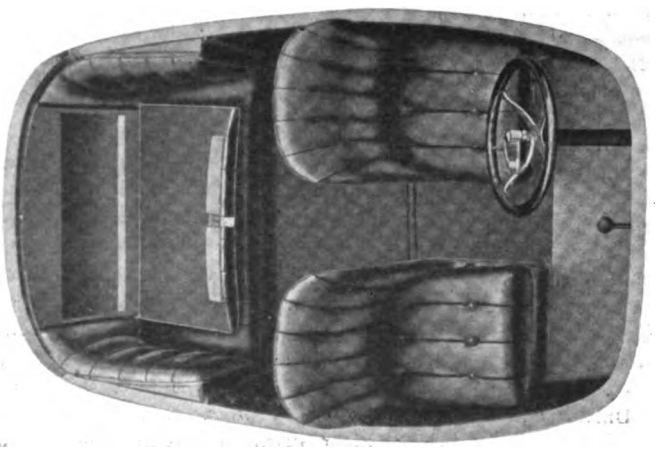
A Stromberg carbureter placed in the V takes the fuel by gravity feed from the tank in the cowl, while the ignition is Remy and the electrical equipment two-unit Westinghouse. Lubrication is by pump, the oil being forced through the hollow crankshaft to the connecting rod bearings. This pump is located at the bottom of the oil pan and it is in this pan that another departure from regular practice is found. Longitudinal tubes are cast in the lower half of the crankcase, which is the oil reservoir, and the air rushing through these tubes helps to keep the temperature of the oil lower. It also is contended that the oil passing into the cylinders not working is further cooled, since these cylinders are doubly cooled through the absence of explosion and the fact that the water from the radiator is not siphoned to that block as it becomes cold.

The clutch is a multiple disk, Raybestos lined, and the housing is partially open to keep it cool. The clutch and gearset run on double annular ball bearings with the exception of the counter gears, which have bronze bearings. Two universals are used in the final drive.

Brakes are of the internal expanding and external contracting type. Tires are 32 x 4, non-skid in rear and plain in front.

Empire Adds Four-Passenger Model





DETROIT, Sept. 5—The latest of the four - passenger body designs is the new Empire touring about which is fitted on the six-cylinder chassis. The front seats are individual, with a wide aisleway. A roomy rear compartment for luggage is accessible by dropping down the back of the rear seat. The color scheme consists of green for the body proper, with black hood, fenders and running gear.

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Two colors are offered in the 1917 Enger, a light cream and a black and green combination, the latter having the hood, fenders and chassis black and the body and wheels dark green. Other colors can be had at small additional cost. The upholstery is genuine leather over curled hair and coil springs. The running boards and floor boards are linoleum covered and aluminum bound.

There is a remarkable absence of square corners in the Enger. The body rolls in a little at the top and the doors have a new design of fastener. When they are opened and the small lever pulled up sufficiently to allow the door to open, a spring-operated stud projects from the door toward the jam and holds the catch up. As the door is closed the jam strikes this stud, which releases the catch and it springs into place. The catches are set inside the door so as not to catch the clothing.

Equipment includes motor-driven horn, speedometer, robe rail, foot rest, one demountable rim and carrier, mohair one-man top and Jiffy curtains, rain vision ventilating windshield set on a slant, tools, etc. There is ample leg room both in the front and rear compartments, and the cushions are lower in the back than in the front to give better riding qualities. At present the production is about ten cars a day, but several lots adjoining the present factory have been purchased, and it is hoped that production on a basis of fifty a day will be realized within a year.

WESTON, OUT OF U. S. TIRE, MADE MITCHELL VICE-PRES.

NEW YORK, Sept. 2—J. C. Weston, general sales manager of the United States Tire Co. since 1914 and connected with that company since its inception, has resigned to become vice-president in charge of the sales of the Mitchell Motors Co., Racine. He thus takes up the duties of O. C. Friend, former sales manager of the Mitchell-Lewis company, who resigned last July to become vice-president and general manager of the United Motors Co.

Weston has been in the tire business since 1896, when he became a salesman for Morgan & Wright. In 1906 he became secretary of the company and stayed with it when it became a member of the United States Tire Co. At that time his duties were confined to the Pacific Coast district, which he organized. From there he took charge of the central district in Chicago, and in 1913 came to New York as head of the contracting department, handling all of the automobile makers' business. The next year saw him in the position he has just vacated. No successor to Weston has as yet been named by the United States Tire Co.

Million A Week Profit Made by Ford Company

And the Total Assets Top $132,000,000 All on a Capitalization of $2,000,000

Total output 13 years, 1,406,997 cars.
Employed 311 men first year.
Total of employees at home plant now 34,489.
Total of employees all plants 49,870.
Total of employees getting $5 a day or more, 36,626.
Largest 1-day output, 2430 cars, Feb. 29, 1916.
Sales value of 1916 output, $206,867,347.47.
Sales value of 1903-1904 output, less than $2,500,000.

Year	Cars Sold	Increase	Daily Average
1916	533,921	225,708	1816
1915	308,213	59,906	1027
1914	248,307	83,855	827
1913	164,452	95,908	545
1912	68,544	30,078	228
1911	34,466	15,802	115
1910	18,664	8,057	62
1909	10,607	3,209	35
1908	6,398	2,025*	21
1907	8,423	6,284	28
1906	1,599	96*	5
1905	1,695	13*	5
1903-1904	1,708	..	5

*Decrease.

DETROIT, MICH., Sept. 5—The annual statement of the Ford Motor Co., just issued, shows a net profit for the fiscal year ending July 31 of $59,994,118, indicating that more than a million a week was made during the past 12 months.

The total number of cars produced was 508,000, and the total business done reached the stupendous figure of $206,867,347. The total assets amounted to $132,088,219, made up principally of cash on hand of over $52,000,000, merchandise and supplies totaling over $31,000,000, buildings and fixtures valued at $17,000,000, machinery and power plant worth $8,000,000, and other lesser items.

The liabilities are insignificant in comparison, totaling only $18,000,000, leaving a surplus of $111,960,907. This business was all done on a capitalization of $2,000,000. The report shows further that 34,489 are employed at the home plant and of this number 27,000 get $5 a day or more; the total employees in all plants reach 49,870.

Since 1912 the cash balance has grown from $6,400,000 to $52,000,000. Last year's cash item, amounting to $43,788,000, is an indication of the wonderful strides made in a single year. At the time the statement was dated there was 35,650 cars in transit and at branch plants, leaving 472,230 actually sold during the year, the number on hand representing about 2½ weeks' output.

One very significant statement was made by Henry Ford in giving out the figures. He said: "If you expect a man to give you his time and energy you must fix his wages so he will have no financial worries—it pays. Our profits this year, after giving our employees all a big share in them, show that to pay good wages is the most profitable way to do business."

He also announced that work on the new blast furnaces to be located on the newly acquired property at River Rouge, on the west side of Detroit along the river, will commence at once. Julian Kennedy, foremost blast-furnace designer, has been retained to design and superintend the work. One hundred and thirty-four acres of land will be needed to accommodate the furnaces, docks, coke ovens and buildings of the plant, which will furnish all the iron used in the Ford car.

Hinchcliffe a Jordan Dealer

CLEVELAND, OHIO, Sept. 4—The Jordan car, manufactured in this city, has secured a Boston agent, which is rather unusual in that those back of the new agency handle other makes of cars. These include J. H. MacAlman, Stearns dealer and president of the dealers' association in Boston; J. W. McGuire, Pierce-Arrow dealer and treasurer of the association, and J. H. Johnson, Buick, who is a director. F. Arthur Hinchcliffe, who has been manager of the Winton branch in Boston since 1909, has resigned to take the management of the Jordan agency.

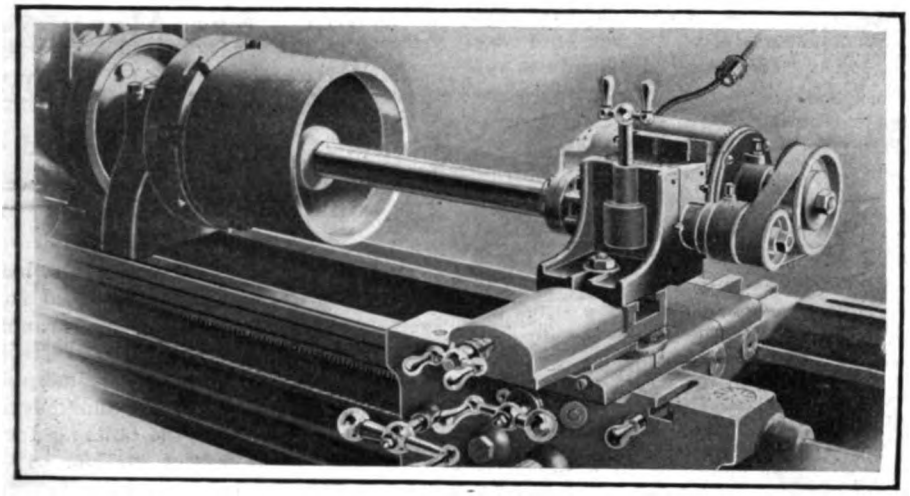
Victor Cars from Wilmington

WILMINGTON, DEL., Sept. 4—The Gooden Realty Co. has sold to the Victor Motor Co., chartered under the laws of Delaware, Aug. 16, 1916, with a capital of $2,000,000, 12 acres of land on the Delaware River at Grubb's Landing, 4 miles north of Wilmington, on which a plant is to be erected for the manufacture of automobiles. It is said the plant will have a capacity of 50,000 cars a year. The Victor Motor Co., according to the Gooden company, has acquired the business of the Victor Car Co. of Philadelphia and has located its executive offices at 1530 Chestnut Street, that city. The officers of the Victor Motor Co. are: Charles P. Grandfield, president; C. Victor Stahl, vice-president; H. H. Skerrett, treasurer; Regnault Johnson, secretary; William H. Dischoff, director. The company has a new model car which it expects to manufacture at moderate price, according to the announcement.

Sell Advertised Goods

Read Motor World Next Week

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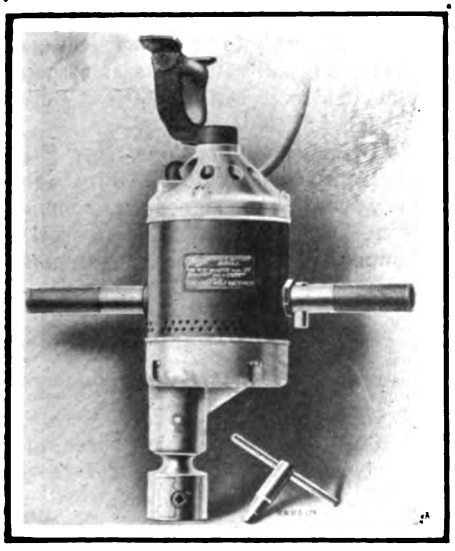
Hisey-Wolf grinding attachment and driving motor mounted by means of angle plate on the tool carriage of an ordinary lathe. It is shown on an internal job but will do external grinding equally well

Making a Grinding Machine of a Lathe

Hisey-Wolf Electrically-driven Attachment Enables Any Lathe to Do Accurate Grinding on Either Internal or External Work

The grinder illustrated in position on a lathe is made by the Hisey-Wolf Machine Co., Cincinnati, and is suitable for both internal and external work. The motor is mounted on an angle plate which is bolted to the tool-post slot of the carriage. The wheel spindle is carried in long bearings and is driven by a belt from the motor. A vertical slide permits the raising of the motor with relation to the spindle carrier for tightening the belt, and a second slide permits the vertical movement of the whole grinder to adjust the position of the wheel.

For external grinding the extension carrying the wheel spindle is removed and the motor placed in the slide in the angle plate. The grinding wheel is attached directly to the motor spindle and it of larger diameter than the wheel for internal work, so that the peripheral speed is correct.



Type of portable electric drill made in sizes from 3/16 to ½-inch

Taper Bearing Adjustment

The bearings at the wheel end of the motor shaft and of the extension spindle are of bronze of large size and have a taper adjustment which permits wear to be taken up with the utmost nicety. The adjustment is made from the outside without removing any part—not even the wheel. By removing the wheel and one protector cap the bearing can be removed, leaving the shaft in position. At the commutator end of the motor and at the pulley end of the extension spindle imported ball bearings are used; these are combination thrust and annular radial of the self-aligning type.

Direct and alternating current motors are designed to run equally well in either direction; the direction of rotation can be changed by transposing the lead wires, which are held by spring snap binders, no soldering being required. A quick-acting switch is placed in the cable about 6 inches from the motor. The machine can be operated in any position.

The tool-post grinder, which is made in 10 sizes and models, carries its grinding wheel directly on the motor shaft and has a shank which is clamped in the tool-post in the place of the lathe tool. A slide parallel with the shaft provides traverse movement and is operated by a small crank.

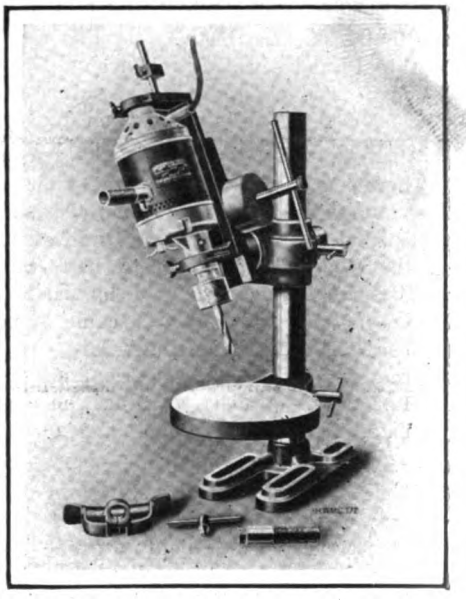
For internal grinding a shaft extension is fitted to the motor shaft and carries a small wheel suitable for the work. The external wheel is 4 inches in diameter and ⅜ inch thick; the internal wheel is of the same thickness and 1½ inches in diameter. Motors are made in ¼ and ½ horsepower, for operation on direct or single-phase alternating current, 110 or 220 volts. The smaller size is suitable for grinding work up to about 2 inches in diameter and the larger sizes for work up to about 4 inches in diameter.

Drill of Many Uses

Portable drills are made in sizes from 3/16 to ½ inch. The ⅜- and ½-inch sizes can be used in a drill stand, which is a particularly convenient device which permits the portable to be used as a sensitive drill for drilling at any angle. A vertical column, with feet slotted for bolts, carries a table and a head to which the motor is attached. A slide operated by a double-armed lever gives the motor the necessary traverse and, with the motor, it can be swung so as to present the drill to the work at any angle.

Both table and drill-carrying head can be swung around in a complete circle on the column. Work which cannot be placed on the table because of height, for example, can be placed on the bench and the drill swung over it.

The motor is held in place by thumb nuts and so can be attached and removed in a short time and without the use of tools. An adjustable depth gauge is fitted at the top of the motor. The vertical travel of the slide is 9 inches; the range of adjustment on the column 16 inches; the range of adjustment of the table on the column is 16 inches; the diameter of the table 9 inches; the height to the top of the column 26 inches, and the net weight of the stand alone is 91 pounds.



Portable electric drill in stand, showing adjustment for angle drilling

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Dallas, The Southwest's Detroit, Is Prospering

There is Money for Buying Cars and the Farmer of Texas is Opening His Purse

DALLAS, TEX., Sept. 4—Visitors to Dallas from the North and East usually are pleased to call this city the Chicago of the South. Recently, however, a capitalist from the East, after seeing Dallas' automobile activity, dubbed the town the Detroit of the South. Had this visitor just gone a little further and investigated the amount of automobiles distributed through Dallas, he would have unquestionably seen that his assertion was not paying too much tribute to Dallas; for it is truly the Detroit of the Southwest, and destined yet to be a greater automobile distributing point.

Last year it is estimated that Dallas did $25,000,000 worth of automobile business. In the city there are 178 buildings which are exclusively occupied by the automobile industry. There are 108 wholesale and retail motor vehicle and accessory concerns located here. There are also seventy top, body and repair concerns doing business. More than 2600 employees are directly dependent upon this industry. It is estimated that these employees draw annually in salaries the amount of $28,000,000.

But, of course, such a business could not be produced if Dallas and the surrounding territory did not justify it. The State of Texas produces about one-fourth of the world's cotton crop, and 60 per cent of this crop is financed at Dallas. That is the principal inducement that secured for Dallas the Federal Reserve bank and which has caused the automobile concerns of the United States to center their Southern business at this city. Within a hundred-mile circle around Dallas farm products annually are valued at $450,000,000, which is based upon figures recently obtained through census work.

There are 2500 financially rated business houses in Dallas, more than 400 factories and 275 wholesalers. One-fourth of the $400,000,000 worth of bank resources of Texas are held by Dallas banks.

The average per capita wealth of the farmers within the charmed hundred-mile radius is $7,500. The construction of good roads in Texas has perhaps received the greatest stimulus in this circle. Many of these farmers have already taken advantage of the auspicious conditions and own motor vehicles. This, to a great degree, is the result of the well-versed and efficient automobile distributing agencies at Dallas.

But new farmers are daily moving into this charmed circle; young ones are growing up, and those who have not yet been converted to the wisdom of investing in automobiles are becoming converted. It is one of these inviting fields that the astute sales directors in Detroit like to talk about. It is one of those fields which has been so responsive that during the last year it has in many cases shown an increase of more than 500 per cent, but which some of these sales directors believe is susceptible of absorbing twice or thrice that amount of motor cars. It is a field that they believe will buy its full share of the 1,200,000 automobiles they propose turning out during the new fiscal year. With a potential buying power of $450,000,000 from its farm products alone, it is not likely to prove disappointing.

Business Efficiency

IN a large jobber's place of business in a Texas city, a stenographer each morning delivers lead pencils to clerks who need them. The pencils are unsharpened. The clerks must then mount a flight of stairs to a mezzanine gallery, where the pencil sharpener is located in order to point their pencils.

How much better it would be if the stenographer were instructed to sharpen all the pencils before handing them out.

Packard Demonstrators Going Out

DETROIT, Sept. 5—The motoring public will have opportunity within the next few days to see in operation the first cars of the new series of Packard Twin Six cars. Demonstrating cars are being shipped in increasing numbers to dealers. Some of the dealers already have their first cars on exhibition. Fifty more cars are in transit. By Sept. 10, provided factory expectations are realized, all the dealers will have the new model before the public.

Dealers to Exhibit at Maine Fairs

AUGUSTA, ME., Sept. 2.—Dealers in Maine are planning to take advantage of the country fairs throughout the State by placing motor exhibitions at some of the larger ones. Some idea of the great vogue of the country fairs in Maine is shown by the publication of the list of those planned for this fall. There are fifty-four. They all run for 3 and 4 days.

Daniels Price Raised $200

NEW YORK, Aug. 31—The price of the Daniels Eight will be increased on Sept. 1 $200, to $2,800. This increase will affect all models.

Changes Are Many in Boston's Motor Row

Growth of Business Makes Added Room Necessary for New England Distributors

BOSTON, Aug. 31—The Metz Co. has made some changes, due to a need for better service facilities. The sales branch on Boylston Street and the factory branch in Waltham have been merged into one sales organization and moved over to Cambridge, to the building formerly used as a service station. The service department has been moved to the factory at Waltham, as all the space in the service building was needed for the sales department. As Waltham is but a few miles from Boston, the service work can be handled there as well as Boston.

The Velie company has reorganized its wholesale organization and has moved from Cambridge to Boston, taking a room temporarily in the building occupied by J. W. Bowman, the Boston dealer. Later the company will move to new quarters on Commonwealth Avenue that is being built for it. W. F. Aldrich of Providence, R. I., has been elected president of the new company, and Amos R. Shorey, for a long time with the company, is now sales manager.

The General Vehicle Co. also moved over from Cambridge this week and the company has a general opening at its quarters on Commonwealth Avenue, presided over by Manager George M. Hudson. Some of the officials came over from New York to attend the housewarming.

The Coburn-Draper company, that had the agency for the Maxwell for about 6 months, has been dissolved and Draper has returned to Providence. The Maxwell is now handled as a factory branch, with Ralph E. Coburn, who has been with the Maxwell for a dozen years, as manager. It still retains its salesrooms on Beacon Street in the Peerless Building.

The Chandler Motors Co. of New England recently celebrated its third anniversary and has signed a contract for space in a new building being erected on Commonwealth Avenue. The company has placed 1100 Chandlers here in 3 years.

McQuay-Norris Gets Sales Engineers

ST. LOUIS, Sept. 1—The McQuay-Norris Mfg. Co. has added three mechanical engineers to its sales force in the field. Herbert H. Cummings will be located in Chicago, Russell B. Pratt in Milwaukee, and Fred L. Stevenson in Detroit.

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Aitken Gets Cincinnati Race at Better Than 97

Peugeot Pilot Leads D'Alene (Duesenberg) Home—Gil Anderson in a Bad Wreck

Driver	Car	Time	M.P.H.
Aitken	Peugeot	3:05:27.22	97.06
D'Alene	Duesenberg	3:09:56.00	95.05
Galvin	Sunbeam	3:18:35.58	90.06

CINCINNATI, Sept. 4—Driving at more than 97 m.p.h., J. D. Aitken won the 300-mile Labor Day race on the new $750,000 Cincinnati Speedway before 27,000 spectators. D'Alene was second and Galvin third. Gil Anderson, in a Stutz, drove too close to the inner wall, crashed into it, and both he and his mechanician were badly hurt, Anderson sustaining injuries to his spine and a broken leg and arm.

It was confidently expected that Resta would win the race, in view of his previous victories on speedways all over the country, but he was forced out.

At the end of the first hundred miles Resta was averaging 100.55 m.p.h. and he did not stop until the end of the 168th mile, when he had a lead of 1:22 over Aitken, who was second.

George Buzane, in a Duesenberg, was fourth in 3:23:19; Art Klein, in a Crawford, was fifth, time 3:34:15; Devlin finished sixth in a Duesenberg in 3:46:06. Haibe's Kleinart was flagged at 270 miles and given seventh money, being the only car running at that time, although there were ten prizes to compete for.

Resta took the lead in the first lap, closely followed by De Palma, and while the Mercedes lasted these two rivals fought for position. Resta was headed by De Palma at the end of 8 miles and held his position two laps, then gave way to Resta for one lap, taking the lead again for three laps, Resta taking the lead at 10 miles and De Palma going out with a broken connecting-rod at the end of 22 miles, Aitken moving up to second place. Mulford's Peugeot was third and Wilcox's Premier fourth at the end of the 28th mile.

Resta and Aitken ran one-two until 165 miles were reached; then Aitken took the lead and held it until the finish, although there were times when his margin was very narrow. By the time 200 miles were covered Resta had taken third place, D'Alene holding second. There was a constant fight between Resta and D'Alene for second place, reversing once or twice every 20 miles until Resta went out at 288 miles with an overheated motor due to a balky radiator. Resta made four stops, but only changed one tire, which shows how his car was going.

With a field of twenty-eight cars it is surprising that so few finished. The speed during the early part of the race was around 105 miles per hour, but the terrific pace told on motors and tires. One by one cars dropped out, the majority of them with broken rods or burned bearings, which seems to indicate that the track is faster than the cars could stand. Nine cars had not made any stops until they went out.

As to tires, the track seemed fairly easy, only thirty casings having been changed, or an average of a little over one to each car starting.

Buzane, who took fourth money, was a surprise. He was a last-minute qualifier. His car was wrecked at Kalamazoo a week ago, and it was only by night and day work that he got it rebuilt. He reached the track at noon Sunday, fitted a new block on his motor and qualified late in the afternoon.

It is felt that Anderson's accident might not have happened had he had sufficient rest. He burned out a center crankshaft bearing in practice Saturday and had to go to Indianapolis to get another. He practically tore his car down last night and worked on it nearly all night. D'Alene asked for and was given No. 13, and it seemed to have a charm, his winnings for to-day being $6,000.

Aitken won $12,000 and an extra $1,000 for leading at 200 and 250 miles. Resta got the Gibson trophy given by the Hotel Gibson for being first at 50 miles and $500 for being first at 100 miles. Galvin won $3,000, Buzane $1,500, Klein $1,300, Devlin $1,200 and Haibe $1,100.

Nichols New York Ford Dealer

NEW YORK, Sept. 5—J. C. Nichols, who operates one of the largest accessory businesses in New York, has taken a Ford dealership. With William H. Webster, a former Ford salesman, he has opened a salesroom at Amsterdam Avenue and Seventy-third Street under the firm name of Nichols & Webster.

Editor Motor World:

The Dean and Faculty of the Graduate School of Business Administration desire me to thank you for the complete System of Accounting for Automobile Dealers and Garagemen, together with the Instructions, which came to hand a few days ago. I am referring your inquiry relating to the gathering of statistics to Professor Melvin T. Copeland, Director of our Bureau for Business Research and in charge of our statistical courses.—Walter M. Stone, E.M., Special Librarian, Graduate School of Business Administration, Harvard University. Cambridge, Mass.

Tenth National Used Car Report Is Issued

Contains Names of Several New Cars—139 Gasoline and 14 Electric Cars Listed

CHICAGO, Sept. 2—The tenth edition of the "National Used Car Market Report" has been issued by the Chicago Automobile Trade Association. The book is much the same as the ninth edition; zone 11, centering in Dallas, is still missing, the co-operation of dealers in that section not having yet been arranged.

The H. A. L. and Liberty are new names. The Marion-Handley supplants the Marion. The Crow has been dropped, but the Crow-Elkhart remains. There are 139 gasoline cars and 14 electrics listed.

The Liberty, Madison and Saxon factories are now co-operating in the distribution of the report to dealers, making twenty-one co-operating car manufacturers.

The pocket edition accompanies the larger edition, containing in abbreviated form the data in the larger book.

Owen Magnetic Tour Sept. 9

NEW YORK, Sept. 2—The second annual Owen Magnetic tour will start from this city Sept. 9 and will embrace a 4-day trip through the Berkshires and the White Mountains. A dozen or fifteen cars, provided by the company, will carry over fifty invited guests. The route will include Pittsfield, over the Mohawk Trail to Greenfield, first night; thence along the Connecticut Valley to Hanover, N. H., for lunch, and to the Profile House, White Mountains, for the night. The third day will be to Boston and the fourth home.

Prominent Tradesmen in New Positions

Ward Foote has succeeded H. A. Lozier as president of the H. A. Lozier Co. Lozier resigned last week because of ill health.

P. L. McKinney, for several years in charge of sales for the Peerless line under Manager John L. Snow of the New England district, Boston, has taken the Maine and New Hampshire territory for that line, with headquarters at Manchester, N. H.

Lon R. Smith, for seven years Western manager for the Eiseman Magneto Co., has gone to Chicago to become sales manager for the Buda Motor Co.

W. L. Landreth, Indianapolis, has been appointed manager of the Hoosier Haynes Co., Kokomo, Ind. He assumes his duties this week as manager of Howard county territory.

C. B. Rice has been appointed retail sales manager of the King Motor Corp., New York. He assumed his new duties Sept. 1.

J. E. De Mar has been made sales manager of the Chas. E. Reiss Co., Hupmobile distributer in New York.

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Sterns Tubes Guaranteed 20,000 Miles

ST. LOUIS, MO., Aug. 31—Ground will be broken Sept. 10 for a four-story plant for the Sterns Tire & Tube Co., a subsidiary of the Efficiency Oil Corp. The structure, which will have a capacity of 1600 casings and 3200 inner tubes daily, will be 120 x 200. The product will be known as Sternwear and the tubes will be sold under a guarantee of 20,000 miles without puncture, blowout or rim cutting.

Haynes May Have "Haynes Junior"

INDIANAPOLIS, Aug. 29—By a deal made last week the stock of the Haynes Automobile Co. of Indiana will be taken up by the Haynes Automobile Co. of New York, a holding corporation, a consideration of $4,500,000 being paid to the stockholders of the Indiana corporation in addition to receiving half of the stock of the holding company. Plans already are under discussion for placing a cheaper car on the market, to be known as the Junior Haynes.

Horace C. Stilwell, a promoter of Anderson, Ind., who represents New York financiers, signed an agreement with the stockholders of the Haynes company on Aug. 23. The agreement provides that 90 days shall be given the New York group to consummate the deal. The holding company is to have 600,000 shares of stock. Each stockholder in the present Haynes company is to receive six shares of the holding company's stock for each share of the present stock. It is proposed to place the other half of the holding company's stock on the market. The agreement provides that the present stockholders are to elect half of the board of directors.

According to announcements coming from Kokomo, A. G. Sieberling, who has been manager of the company for the last 3 years, and his assistants will remain in charge should the deal be consummated.

White Leaves N. Y. Motor Row

NEW YORK CITY, Aug. 28—Another break is about to occur in Motor Row. The White Co., for 10 years located at Sixty-second Street and Broadway, has leased a large plot at the northwest corner of Park Avenue and Fifty-seventh Street, where it will construct a five-story building to house all the branches of its passenger car and truck departments. The plot has been leased for 21 years.

The impending removal of this company will mark the second important deflection from that district, the first having been that of the Simplex at the beginning of this month, when it located at Fifth Avenue and Fifty-eighth Street.

Motor World Artist Dead

NEW YORK, Aug. 31—Leonard Lowson, of the editorial art department of Motor World, died at the French Hospital yesterday of intestinal trouble. He was 30 years old.

Torbenson Axle Co. Now

CLEVELAND, Sept. 1—The Torbenson Axle Co. is the new name of the Torbenson Gear & Axle Co., commencing to-day.

New U. S. Light & Heat Directors

NIAGARA FALLS, Sept. 1—At the recent annual meeting of the stockholders of the U. S. Light & Heat Corp., the following Board of Directors was elected:

Egbert H. Gold, J. Allan Smith, Ralph C. Caples, Henry W. Farnum, A. Henry Ackermann, Chauncey L. Lane, Keene H. Addington, James A. Roberts, Conrad Hubert, George G. Shepard, Edwin K. Gordon.

Coming Events

General Events

Sept. 25.....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association, Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12.....Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Oct. 16-17.....Rockford, Ill., Semi-annual Convention Garage Owners' Assn. of Ill.

Feb. .....Convention Minnesota Retail Automobile Dealers Association.

Races, Contests and Tours

Sept. 9.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway

Sept. 16.....Providence, R. I., speedway racemeet, Narragansett Park Speedway.

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 14.....Chicago; speedway races. Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

*Indicates sanction by A. A. A.

Shows

Sept. 2-9.....Cleveland, Ohio, Show, Industrial Exposition and Fair, Edgewater Park.

Sept. 2-9.....Columbus, Ohio; Fall show Ohio State Fair; Columbus Automobile Show Co.

Sept. 4-8.....Hartford, Conn., annual automobile and truck show, under the auspices of the Connecticut Fair Assn.

Sept. 4-11.....Indianapolis, Ind., show, Indiana State Fair, Indianapolis Automobile Trade Assn.

Sept. 11-16.....Milwaukee, Wis., Second Annual Fall Show, State Fair, Machinery Hall, Milwaukee Automobile Dealers, Inc.

Sept. 25-30.....Salem, Ore., Show, State Fair.

Oct. 11-21.....New York, Electrical Exposition, Grand Central Palace.

Oct. 14-21.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 9-10.....Fort Dodge, Iowa, Iowa Automobile Dealers Association.

Jan. 20-27.....Montreal, Can. Montreal Automobile Trade Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb .....St. Louis, Mo. Show, Automobile Manufacturers & Dealers Assn.

Feb. 3-10.....Minneapolis, Minn., Annual Show, Minneapolis Automobile Trade Assn.

Feb. 19-24.....Des Moines, Iowa, Eighth Annual Show, Des Moines Auto. Dealers' Assn. C. G. Van Vliet, manager.

Feb. 26-Mar. 3....Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn., Clarke G. Powell, manager.

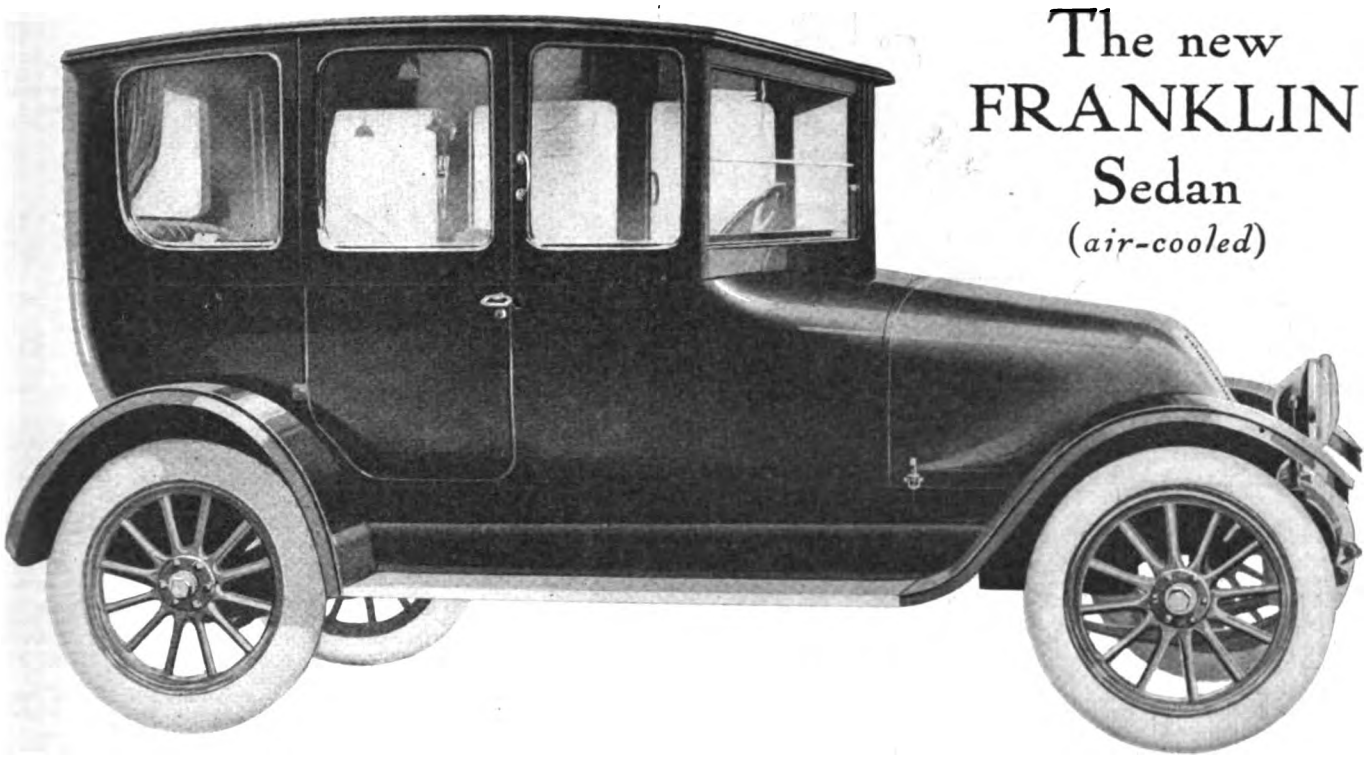
Mar. 3-10.....Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers Assn., C. I. Campbell, Gen. Mgr.

Motor Car Securities Quotations

	Bid Sept. 2, 1915	Asked Sept. 2, 1915	Bid Sept. 2, 1916	Asked Sept. 2, 1916
Ajax Rubber Co. (new)	..	..	64	65
J. I. Case T. M. Co., pfd.	72	79	80	84½
Chalmers Motor Co., com.	95	97	150	170
Chalmers Motor Co., pfd.	95	97	95	100
*Chandler Motor Car Co.	..	..	162½	165½
Chevrolet Motor Co.	..	..	188	191
Fisk Rubber Co., com.	..	..	110	140
Fisk Rubber Co., 1st pfd.	..	..	..	..
Fisk Rubber Co., 2d pfd.	..	..	..	..
Firestone Tire & Rubber Co., com.	530	535	1020	..
Firestone Tire & Rubber Co., pfd.	111	..	112	114
*General Motors Co., com.	241	243	530	530
*General Motors Co., pfd.	112	113	125	126
*B. F. Goodrich Co., com.	61¼	62¾	71½	71⅝
*B. F. Goodrich Co., pfd.	107	108¾	113⅛	113⅝
Goodyear Tire & Rubber Co., com.	270	274	340	345
Goodyear Tire & Rubber Co., pfd.	108	109½	107	108
Grant Motor Car Co.	..	..	7	8
Hupp Motor Co., com.	..	..	6	6¼
Hupp Motor Co., pfd.	..	..	80	100
International Motor Co., com.	30	31	6	10
International Motor Co., pfd.	60	65	15	20
*Kelly-Spgfld. Tire & Rubber, com.	195	205	80⅞	81
*Kelly-Spgfld. Tire & Rubber, 1st pfd.	86	87	95	95⅝
*Lee Rubber & Tire Corp.	..	..	45⅜	46
*Maxwell Motor Co., com.	42	44½	82	83⅝
*Maxwell Motor Co., 1st pfd.	90	91½	85	86⅛
*Maxwell Motor Co., 2d pfd.	36⅝	38	54½	55
Miller Rubber Co., com.	190	194	220	225
Miller Rubber Co., pfd.	107½	..	105	106
Packard Motor Car Co., com.	130	..	160	170
Packard Motor Car Co., pfd.	101½	..	100	103
Paige-Detroit Motor Car	..	..	46	51
Peerless Truck & Motor Corp.	..	..	23	30
Perlman Rim Corp.	..	..	..	..
Portage Rubber Co., com.	46	48	150	152
Portage Rubber Co., pfd.	93	94	150	152
Regal Motor Car Co., pfd.	..	..	17	22
†Reo Motor Truck Co.	17	18	36¾	37
†Reo Motor Car Co.	32½	34	40⅝	42
Saxon Motor Car Co.	..	..	70¼	73½
Standard Motor Co.	..	..	6¾	7½
Stewart-Warner Speed. Corp., com.	64	65	111	113
Stewart-Warner Speed. Corp., pfd.	105	107	..	..
*Studebaker Corp., com.	111	112	122⅝	123⅝
*Studebaker Corp., pfd.	104	105	107⅛	111
Swinehart Tire & Rubber Co.	88	90	95	100
United Motor Corp.	..	..	77	79
*U. S. Rubber Co., com.	49	50	57	57¼
*U. S. Rubber Co., pfd.	104	104⅝	110⅝	111⅛
White Motor Co. (new)	..	..	85¾	87⅛
*Willys-Overland Co., com.	122	124	47¾	48⅛
*Willys-Overland Co., pfd.	106	108	103¾	104⅝

*At close Sept. 2, 1916—Listed N. Y. Stock Exchange.
†Par value $10.

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The new
FRANKLIN
Sedan
(*air-cooled*)



The Waltham Automobile Clock is standard equipment on the following cars:

Brewster	Haynes	Pierce-Arrow
Cadillac	Locomobile	Rauch & Lang
Cole	Lozier	Rolls-Royce
Crane	Mercer	Simplex
Detroit-Electric	Marmon	Stearns
Franklin	Owen Magnetic	Winton
	Packard	

This car is a model of efficient equipment—and it equips with the

Waltham Automobile Clock

It is not necessary for us to dwell upon the remarkable success and popularity of the Franklin. The car itself and its hosts of loyal owners speak louder than any mere words of ours.

We are, however, entitled to no small measure of pride when a car of the Franklin's class adds its name to the list of those using the Waltham Automobile Clock as a regular part of their standard equipment.

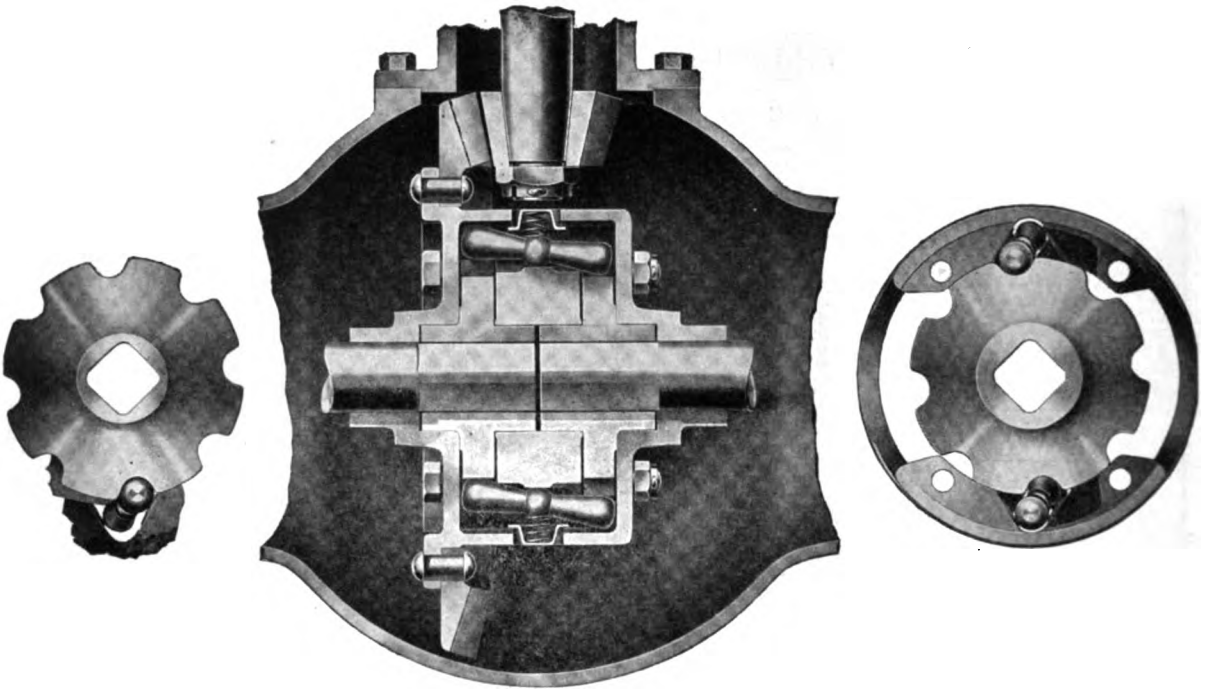
The Franklin Company has just placed with us an order of flattering proportions. Henceforth all Franklin Cars will be Waltham equipped.

This is another indication of the fact that manufacturers of cars of the better grade—and their owners also—consider a car incomplete without a clock.

Read the list of makers equipping with Walthams and determine whether you would not like to be associated with them in the matter of equipment.

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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THE NEW PROCESS DIFFERENTIAL

CAR AND AXLE BUILDERS:

How much longer can you afford to close your eyes to the benefits of the New Process Gearless Differential?—the correct operating principle that lessens noise, wear, swerving, skidding, useless grind and side thrust on the tires.

Careful investigation of the New Process Gearless Differential would convince you that it offers decided improvement over the gear differential and has a simplicity and strength that assure constant and continued satisfaction.

You can make the change without altering your present axle housing and bearing layout, and we will back you with any reasonable service guarantee.

Licensed under patents of the
Gearless Differential Company of Detroit, Mich.

N.P.R.H. NEW PROCESS GEAR CORPORATION N.P.R.H.

SYRACUSE, N.Y.

125a

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CHEVROLET

CHEVROLET MAKES GOOD ITS PROMISE

When the Chevrolet Motor Company first offered its Model "FOUR-NINETY" Touring Car to automobile dealers and the public at the New York Show in January, 1915, with electric lights and starter, at the then sensational price of $550, the management stated frankly that the name "FOUR-NINETY" really meant something and that, whenever the company's manufacturing facilities and production justified it, the price on this car, electrically equipped, should be $490.

Since the above date, the Chevrolet Company has completed the best motor plant in this country; has built and equipped an up-to-the minute axle plant; has acquired a complete transmission plant, and has in operation seven large assembling plants. The Chevrolet Company has now reached a volume of production which enables it to make good its original promise.

We are pleased to advise that the 1917 contracts, which are now going out to Chevrolet dealers, present the Model "FOUR-NINETY" to the public at $490, fully equipped, with a standard, two-unit electric lighting and starting system built into the car.

THIS MAKES THE MODEL "FOUR-NINETY" THE LOWEST PRICED ELECTRICALLY LIGHTED AND STARTED AUTOMOBILE IN THE MARKET TODAY.

CHEVROLET MOTOR COMPANY

Factories NEW YORK CITY·TARRYTOWN ON HUDSON
FLINT·MICH·ST·LOUIS·MO·OAKLAND·CAL·
OSHAWA·CANADA·FORT WORTH·TEXAS·

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LIBERTY SIX
Makes Good in New York

New York Dealer Gets Interesting Testimony From Discriminating Car Owners

JOHN F. PLUMMER is placing a remarkable number of Liberty cars in New York among the most discriminating buyers—car experts—men whose 6, 8 and 10 car garages see only the best.

Libertys are going out from the New York showrooms on tours all over the country—through the White Mountains, the Catskills, Bar Harbor—and not a complaint comes back.

The box of parts shipped by the factory for the purpose of making any adjustments that might be necessary has not been opened. Mr. Plummer has telephoned his customers asking them to bring the cars back and let him look them over. They won't do it.

This phenomenal performance on the part of the Liberty car is due simply to the fact that it is manufactured by men whose experience dates back to the beginning of the automobile industry. Before they started to build the Liberty they knew all the troubles which were to be avoided and added many exclusive features for the owner's comfort and convenience not found in any other car on the market.

Mr. Plummer reports that his most enthusiastic endorsements come from men who know most about motor cars—men who have owned from 2 to 28 cars during the past 15 years. They say the Liberty is a revelation in dependability and performance.

Liberty's success is based upon absolute dependability and a detailed and careful regard for owners' requirements. This combination of performance and comfort together with the sterling reputation of the company behind the car is making it one of the most rapidly selling cars which has ever been placed on the market. Dealers say the Liberty sells itself. John Plummer's experience is being duplicated by prominent representatives all over the country.

Territory is fast being closed. Dealers who have a regard for the character of the car they sell and the company they represent should communicate with us quickly. We are giving our representatives a square deal and we propose to stand by them to the limit.



Dominant Liberty Features:

1—Ease of steering.
2—Light operating balanced clutch.
3—Powerful brakes—but easy operating.
4—Silent and smooth gear shift.
5—Cradled comfort of spring suspension.
6—Wide doors.
7—Comfortable, wide and deep seats—genuine leather.
8—Plenty of room.
9—A windshield weather tight all around.
10—Simplicity of chassis design.
11—Beautiful body lines, long and low.

Continental - Liberty motor, 3⅛ x 4½; Timken axles and bearings; Delco equipment; wheelbase, 115 inches; 32 x 4 tires.

Five-passenger touring car and four passenger close coupled car, $1,095. Distinctive types of enclosed cars.

Liberty Motor Car Company
DETROIT

PERCY OWEN, President

LIBERTY SIX $1095

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Announcing Allen

Closed Cars 1917



Read Particulars Within

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Seats Three Comfortably

Allen Coupe $1075

ALLEN CLOSED CARS

Make a Good Dealer Proposition a Still Better One

The Allen dealership has always been a money-maker.

This can be proved and there are sound reasons why it is so.

The Allen Touring Cars and Roadsters are among the very biggest values in cars selling under $1000—$795 for Model 37 and $850 for the Classic model.

And now come two closed cars, bigger values than ever before offered—a convertible Sedan at $1095, and a Coupe at $1075. These are 112 inch wheelbase cars with 33″x4″ tires.

Look over what the market offers and you'll find no closed cars that sell for so little additional charge for closed models, in proportion to the price of open models.

We are talking now of full fledged closed cars, not about cars with the semi-rigid closed tops offered by some makers.

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Distinguished in Appearance

And these Allen Closed Cars are beauties. Their lines have dignified grace and charm.

In appointments, in upholstery, in finish they measure up to a high standard. They are, in fact, much finer than you would expect in cars of so moderate price.

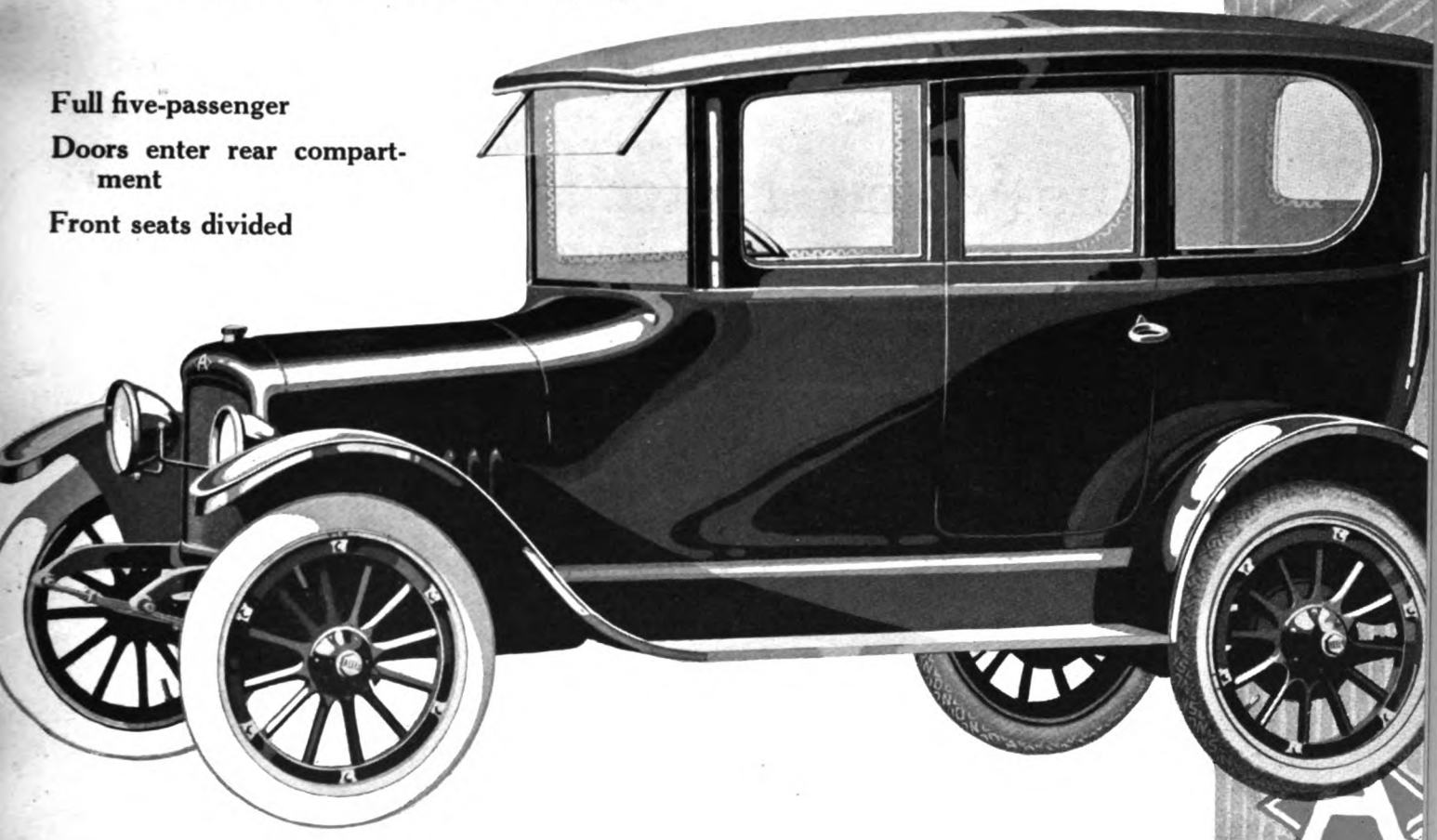
Both Coupe and Sedan satisfy the open car requirements for occasions when freedom of view and greater air circulation is desired.

In the Coupe all side windows lower out of sight. In the Sedan the side windows lower and upper door frame and pillars are quickly removable, making an open car as shown in the illustration on the next page.

Full five-passenger

Doors enter rear compartment

Front seats divided



Allen Sedan $1095

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Chassis Briefs

37 H.P. 4 cylinder 3¾x5″ motor

Electric starting and lighting—two unit system

112 inch wheelbase

55 inch rear springs

Full floating rear axle

Large easy-acting brakes

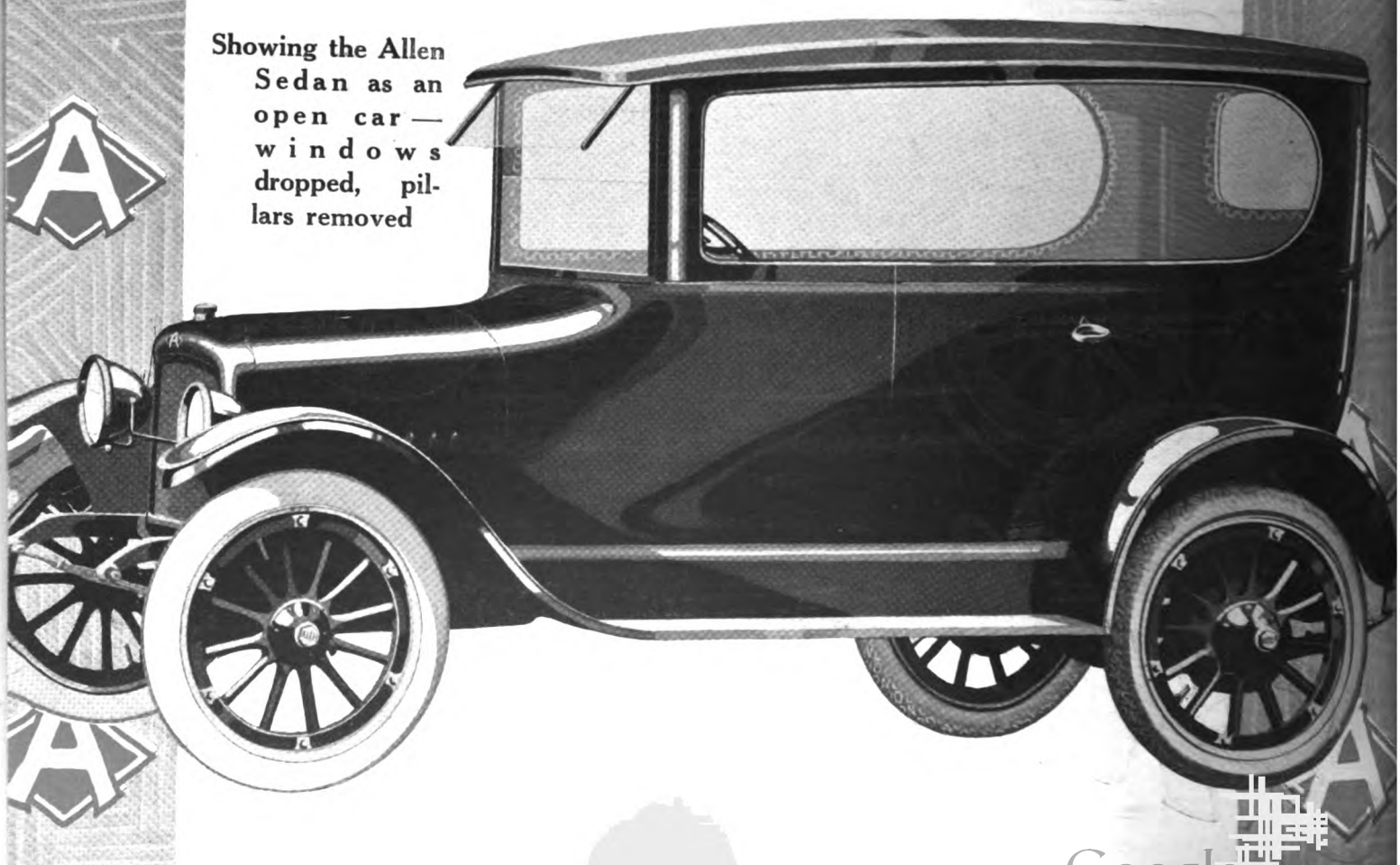
Stewart Warner vacuum feed—gas-tank in rear

Tires 33x4″, non skid rear

Write today for the Allen Dealer Proposition. Gain time and profit by applying at once if the Allen is not represented in your territory. The Allen is one of those big values—attractive to the car owner and as such a winner for the dealer. A liberal advertising campaign is behind it—also a factory that co-operates with the dealer from every department.

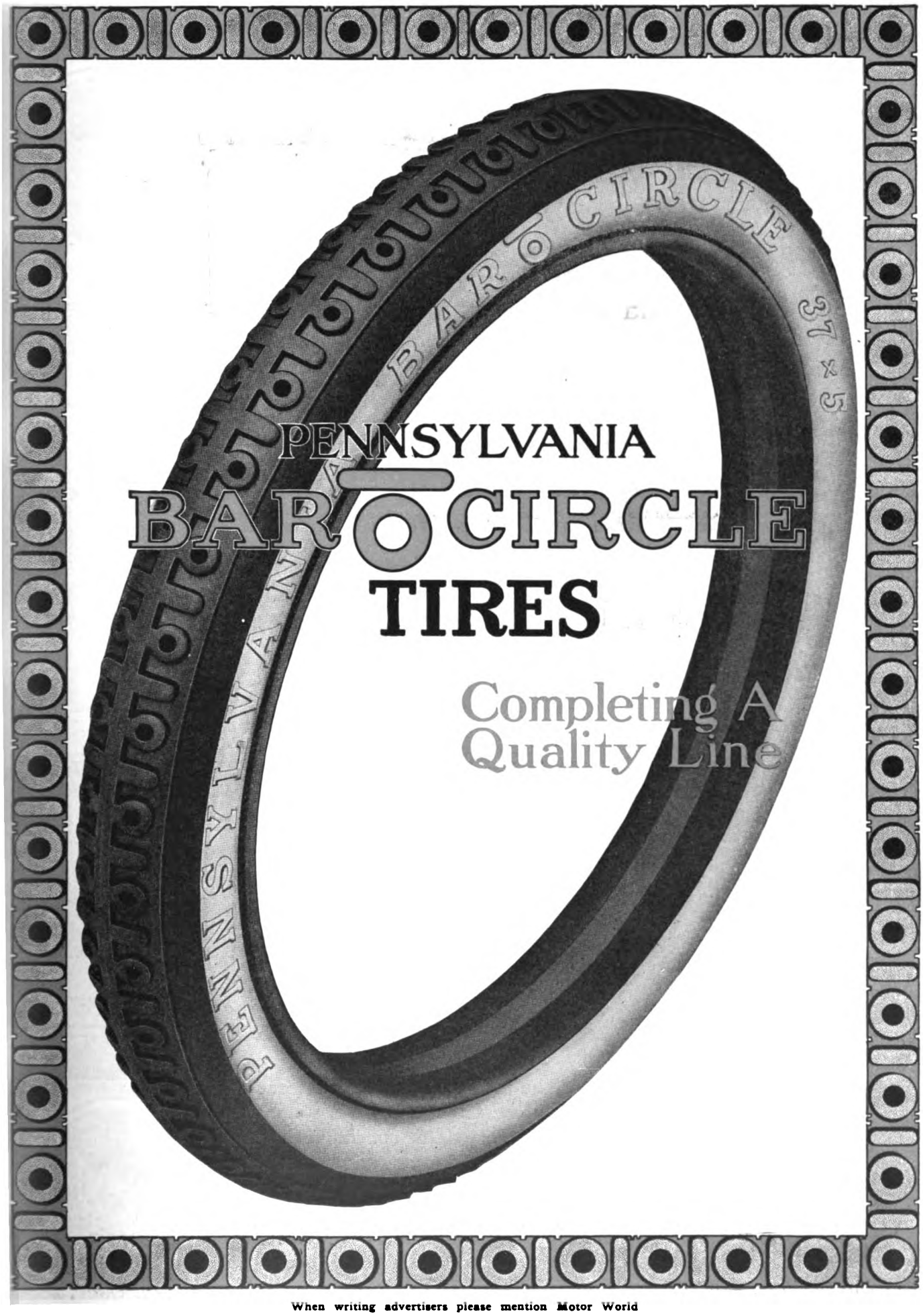
The Allen Motor Company

209 Allen Building FOSTORIA, OHIO



Showing the Allen Sedan as an open car—windows dropped, pillars removed

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A Brand New Pennsylvania Product—



BAR CIRCLE TIRES

A *QUALITY* tire at the price asked for ordinary grade makes and a fair profit to the trade.

The *high quality* which determines the standard of real tire value—established by Vacuum Cup and Ebony Tread Tires—is extended to include BAR CIRCLE TIRES

This rounds out the Pennsylvania Line with a really serviceable but low-priced tire backed to the limit by a manufacturer best known for strict adherence to *quality*.

The BAR CIRCLE Tread

The design of the tough black rubber tread is indicated by the name—BAR CIRCLE—a combination of bars and circles. This special construction puts the *thickness* and *wear-resistance* where most needed. It enables these new tires—like Vacuum Cup and Ebony Tread Tires—to far exceed, under normal conditions of service, the mileage basis on which they are sold.

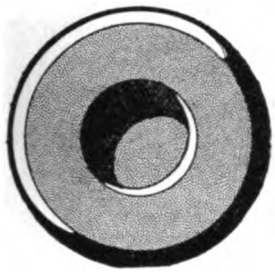
Backed by a Guarantee which Insures Protection to both Dealer and User.

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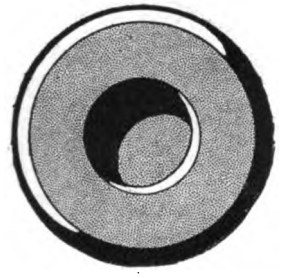


Complete Dealer's Line





With BAR-O CIRCLE TIRES we have completed the dealer's line of quick-selling tires, cover the whole demand situation, and enable our dealers to successfully compete for the popular as well as the higer priced classes of business.



Trade Prices

The price of BAR-O CIRCLE TIRES to the trade has been figured on a basis of cost of production with a very modest margin of profit, with the idea that we will look to volume for our ultimate return, as we now are prepared to produce in our new factory approximately 3,000 tires a day. The schedule of prices on BAR-O CIRCLE TIRES will at all times be in keeping with the market.

Most Important Selling Policy

Like Vacuum Cup and Ebony Tread Tires, BAR-O CIRCLE TIRES will be marketed under a policy that will absolutely insure

A Fair Profit for Both Dealer and Distributor

Exclusive territorial arrangements—inaugurated with such wonderful success for 1916 season—will be continued as one of the fundamental features of our selling policy. Under this arrangement, absolute protection will be granted the trade handling BAR-O CIRCLE TIRES.

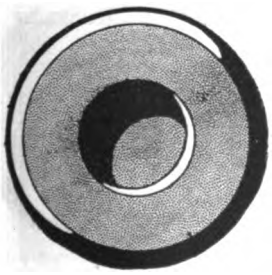
Immediate Action Necessary

If you are looking to the future and wish to put effort behind a line of tires on which you will be thoroughly protected in securing fair profit and on which you can build a substantial business, investigate the Pennsylvania proposition; it is most liberal and offers real opportunity.



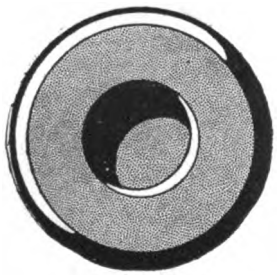
Act Quickly—





Fill out and mail
the attached coupon

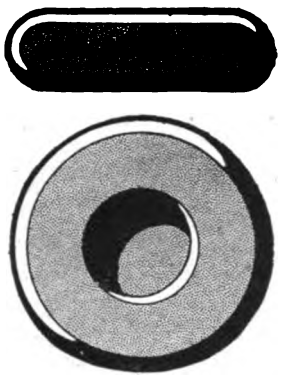
—At Once.



(See User Prices and Coupon on Following Page.)

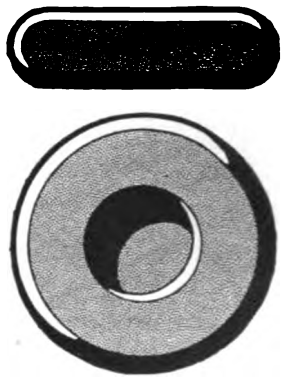
Backed by a Guarantee which Insures Protection to both Dealer and User.

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User Prices on

BAR CIRCLE TIRES

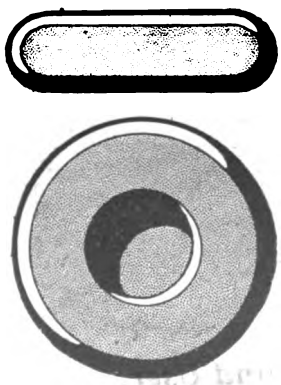


Size	Price
30 x 3	$10.35
30 x 3½	13.45
31 x 3½	14.15
32 x 3½	15.45
31 x 4	20.60
33 x 4	22.05
34 x 4	22.50
35 x 4	23.60
35 x 4½	31.35
36 x 4½	31.80
37 x 5	37.05
37 x 5½	49.00

A Liberal Differential to the Trade on the Above User Prices

PENNSYLVANIA RUBBER COMPANY
Jeannette, Pa.

Direct factory branches and service agencies throughout the United States and Canada



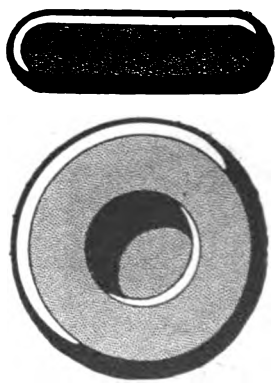
Pennsylvania Rubber Co., Dept. D-3 Jeannette, Pa.

Gentlemen: Without obligation on my part, please forward at once complete information in regard to your special proposition on BAR CIRCLE TIRES

Name.....

City.....

State.....



See Thre ages.

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Mitchell

MID-YEAR MODEL

26 Extra Features
73 New Conceptions

7 New-Type Bodies
127-in. Wheelbase
48 Horsepower

$1325 f. o. b. Racine
For Touring Car

Today—The Experts' Car Tomorrow—The Layman's

After 13 years of careful preparation, the Mitchell has come into its own.

This year the demand has trebled.

But our sales are largely to men wise in mechanics. Or to men who get expert advice. A very large number of famous engineers are now owners of Mitchell cars. Our Chicago dealer, in one week, sold to five bank officials.

The knowing, careful people are buying Mitchells now. But next season, as you all know, the multitude will follow.

Our Advantages

We have here now the model factory of America for building high-grade cars. It was built and equipped by John W. Bate, the great efficiency engineer.

It covers 45 acres—represents an investment of $5,000,000. But it has cut our factory cost in two. It gives us, we figure, at least a 20 per cent advantage.

We have the only car in which 440 parts are either drop-forged or steel-stamped.

We have the only car which embodies more than three or four of our 26 extra features.

We have the only car which has been developed under John W. Bate's efficiency methods.

We have the only car of which seven have averaged 175,000 miles apiece.

We have the most complete car on exhibit. And we have at least 20 per cent extra value over other cars in this class.

All Men Will Know It

These cars, in owners' hands, are bringing home to tens of thousands a new conception of motor car value.

We are spending this season over $500,000 to advertise the facts. Next season we shall spend about $800,000.

We are equipping these cars with seven styles of bodies, each of which will add to Mitchell prestige.

The sort of customers you want will more and more come to Mitchell cars.

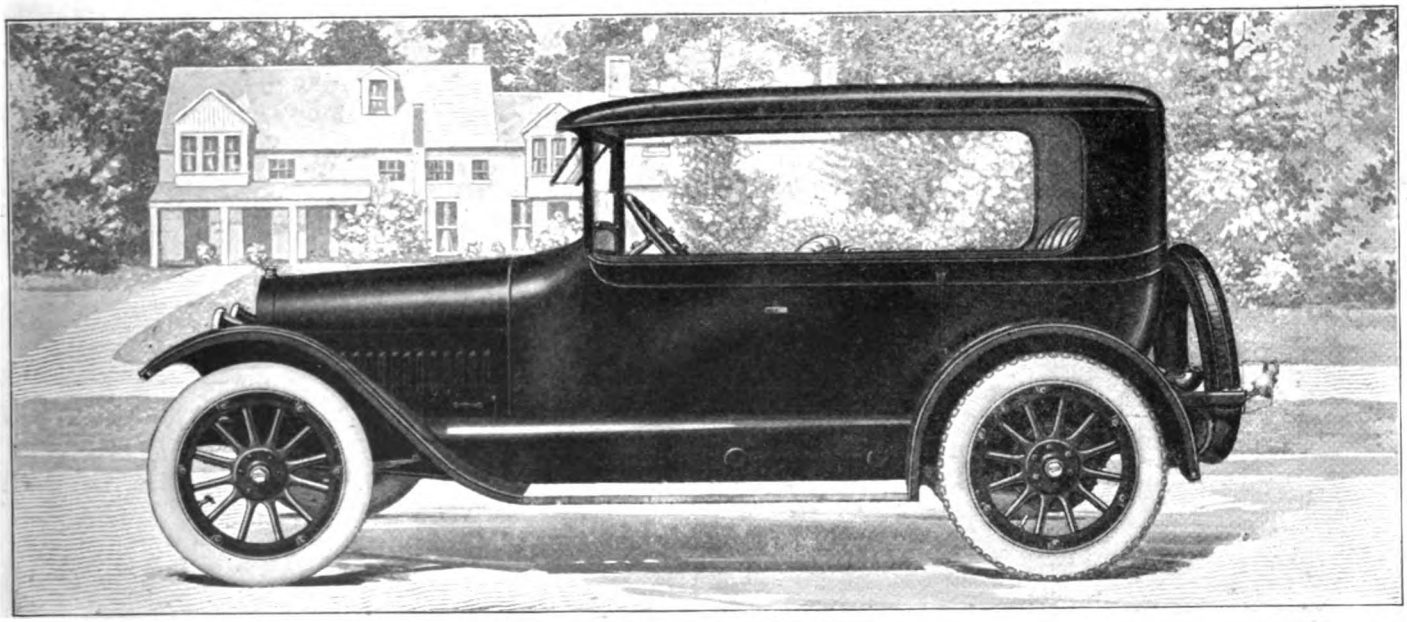
The right sort of dealers, in unoccupied territories, are invited to write for facts.

MITCHELL MOTORS COMPANY, Inc.
Racine, Wis., U. S. A.

Mitchell Models

3-passenger Roadster,	$1325
5-passenger Touring Car,	$1325
7-passenger Touring Car,	$1360
Equipped with Demountable Top Only, $200 Extra	
3-passenger Cabriolet,	$1775
4-passenger Coupe,	$1850
7-pass. Springfield Sedan,	$1985
7-passenger Limousine,	$2650

All prices f. o. b. Racine



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This Bronze Bearing

Between the Leaves of Your Springs



Gives You Easy Riding or Your Money Back

This is our guarantee — you are the judge and you have 30 days in which to prove to yourself that Dann Insert makes your car the easiest you ever rode in—and in addition, gives perfect spring lubrication, increased tire mileage, reduced car depreciation, no spring squeaks and practical freedom from spring breakages.

DANN INSERT

The Lubricated Spring Bearing

What It Is

Dann Insert is a SELF-LUBRICATING BRONZE BEARING that fits between the leaves of the springs in your car. It is packed with a special graphite compound which will not flow liquid and which insures maximum efficiency at all times. This BRONZE BEARING allows spring leaves to slide freely over each other—to do the work they are expected to do. It keeps the springs continuously, permanently lubricated—eliminates rust—makes springs act freely, flexibly, easily. Your car will ride as easily as though it were floating on air. We guarantee easy riding—or, your money back after 30 days use.

Results Proved by Owner—Engineer—Manufacturer

Dann Insert is a time-tried, road tested, owner-proved product. It has had three years of big success. It has been standard equipment on every Winton car that has left the factory in the last two and one-half years. Thousands of users, including every make of car on the market, are getting greater efficiency, greater pleasure, greater economy from their Dann Insert equipped cars every day.

Dann Insert users are practically through with spring trouble—they have eliminated spring squeaks from their cars—they have obtained a riding ease they have never had before — they have secured the perfect spring that every manufacturer wants to supply, but cannot until he uses Dann Insert as regular equipment.

Put Your Name on the Coupon

WANTED EXCLUSIVE DISTRIBUTORS AND DEALERS — Dann Insert is selling like wildfire to every car owner. Exclusive contracts for distributors and dealers. Everything is ready for you to go ahead—ready for you to start sales. We will back you with one of the largest accessory campaigns in the industry. We will produce big business right in your territory. Prove to us that you are the best equipped distributor to handle Dann Insert. Write, wire, phone or jump the first train for Chicago. Get this rapid selling accessory—a comfort builder and money saver for any car owner and a money maker for you.

Put DANN INSERT in your old car— Demand it in your new car

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$425,000 in Sales Past 60 Days

Avalanche of Orders from All Parts of the Country—Quick, Easy, Profitable Sales

The remarkably low prices for this NEW BRONZE LUBRICATED BEARING for springs set a record for business. Every make of car represented in thousands of orders coming in. It proves that the universal demand for easy riding has found its solution in Dann Insert. Everybody wants it NOW. YOU cannot afford to do without it another day. NOW is the time to put it on YOUR car. If you want to know what real, solid riding comfort is, with no squeaks, no driving fatigue, get this wonderful lubricated bronze bearing TODAY for YOUR car. Remember, you take no risk — you get easy riding or money back.

Here's What This Bronze Bearing Does

Bearings between the leaves of the springs are just as essential as bearings for the working parts of your motor. Dann Insert brings your springs up to highest efficiency — gives them flexibility—cuts down frictional resistance.

When we tell you what Dann Insert does — how it keeps springs continuously lubricated — stops springs from drying out, rusting, squeaking — breaks up and smothers road shocks — reduces vibration — makes cars ride wonderfully smooth — cuts down tire and upkeep expense — retards depreciation — it sounds almost too good to be true. But we BACK our claims with this straight out-and-out guarantee — proved comfort or your money back.

Get the Price of Dann Insert for YOUR Car TODAY

You Know from Experience You Need Dann Insert — Send Coupon TODAY

We don't have to devote any space to prove to you that you want this wonderful comfort builder and money saver for you car — especially when we offer it to you at our risk. Accept our money-back-if-not-satisfied offer here and now—you simply can't afford to pass it by. At the remarkably low prices, you no longer have any excuse for not enjoying the greatest comfort an automobile can produce. Put Dann Insert in your car — drive it over the roughest roads — if, after a 30-day trial you decide you can do without Dann Insert, simply send it back and we will refund every penny of your purchase price. Without Dann Insert, you are losing pleasure, comfort and money every day. It comes ready packed for every make of car — get the price for your car today. It can be attached very readily—full instructions will be sent you—so why delay? Fill out and mail coupon NOW — TODAY, for the price of Dann Insert for your car.

Mail It Today

ANN PRODUCTS CO.
(Formerly Dann Spring Insert Co.)
65 Indiana Ave., Chicago. Ill.

akers of Dann Insert, the Inter- af Shock Absorber and Dannite, the Oilless Bearing

Dann Products Company
2265 Indiana Ave., CHICAGO

Send me full information and cost of Dann Insert for my car, with the understanding that you guarantee it for life and will refund every penny of the purchase price upon my return of Insert if I find I can do without it after 30 days use.

.....

Year.....

Name.....

Street.....

City.....State.....

I am a dealer and am vitally interested in your proposition. You may send me details.

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EISEMANN
MAGNETOS

The intensely hot spark and full-throated explosions at all speeds—even the lowest—prove clearly the superiority of the Eisemann Magneto.

This means easy starting, quick pick-up, prompt power when you need it most.

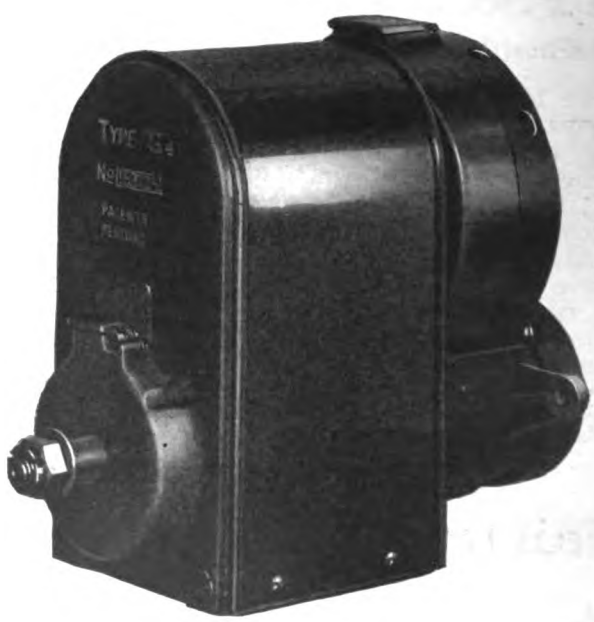
And durable—no magneto is made simpler or stronger.

THE EISEMANN MAGNETO CO.

Sales and General Offices
32d-33d Sts., Brooklyn, N. Y.

Indianapolis, Ind.
415-417 N. Capitol Ave.

Detroit, Mich.
802 Woodward Ave.



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BUILD YOUR TIRE BUSINESS ON A FIRM, ***LASTING*** FOUNDATION—ONE THAT WILL NOT CRUMPLE UNDER YOU LATER ON

A "CARSPRING" TIRE AGENCY OFFERS YOU THE BIGGEST OPPORTUNITY TO CASH IN TO THE FULL EXTENT OF YOUR OWN INDIVIDUAL EFFORTS



¶ "CARSPRING" dealers are doing wonders right now. They have already sold us out to our full manufacturing capacity, forcing us to enormously increase that capacity.

¶ But their biggest asset is in the **future** business this means to them.

¶ "CARSPRING" Tires will be bringing them in larger and larger profits every year. And "CARSPRING" methods absolutely insure those profits to the man who builds them up.

¶ We give our dealers the widest possible latitude in making adjustments, and we give them their territory with no strings tied to it, either now or in the future.

¶ As our representative, you appoint your own sub-dealers and organize your territory to suit yourself. We help you in every way, but we do not **interfere** with you.

¶ We want real live **men** to represent us, and we treat them as such.

IT IS IMPOSSIBLE TO SAY WHETHER OR NOT YOUR TERRITORY IS STILL OPEN, BUT IF YOU ARE THE MAN FOR THE PLACE, THE SOONER YOU WRITE US THE BETTER. APPLICATIONS ARE COMING IN MIGHTY FAST.

NEW JERSEY CARSPRING & RUBBER CO.

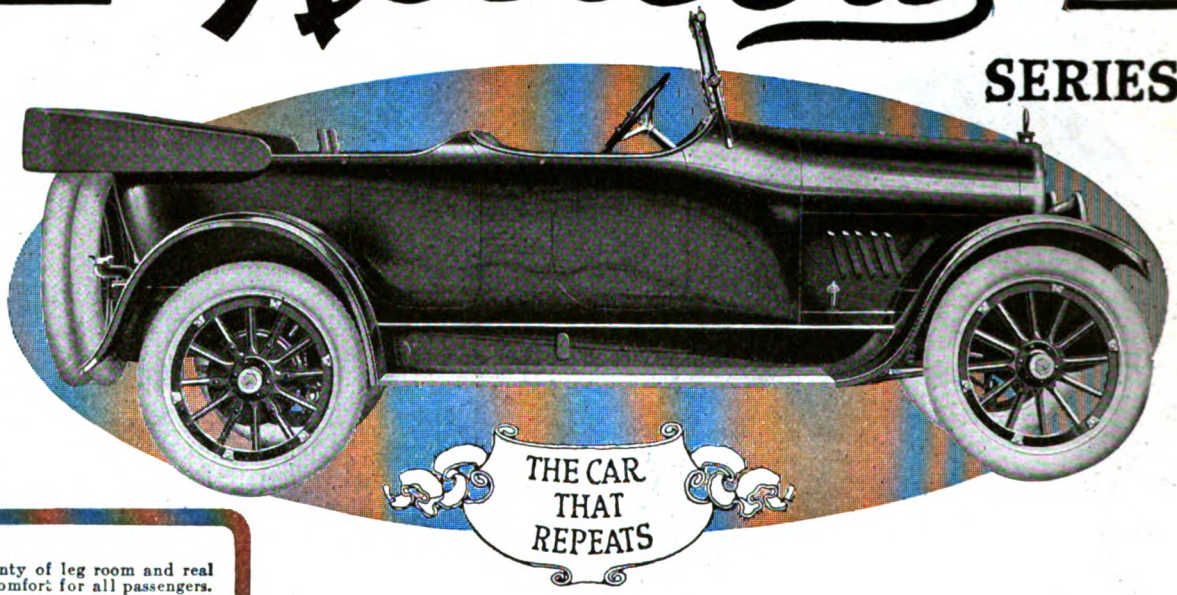
JERSEY CITY, N. J.

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THE WESTCOTT MOTOR CAR CO. SPRINGFIELD, O. U.S.A.

The Westcott Six

SERIES 17



Plenty of leg room and real comfort for all passengers.
Adjustable Gemmer steering gear and foot pedals.
Unusual steadiness on road.
Cool even ventilation in front and rear compartments.
Large Stewart-Warner Vacuum Gasoline system with fuel supply on rear of car.
Upholstery of best grade No. 1 long grain dull leather without buttons. Very comfortable, clean, sanitary.
Unusual attention to finish of both painting and trimming.
Very short turning radius.
Jiffy curtains on all open cars.
Water-tight wind-shield. Top glass overlaps lower 1¼". Sides water-tight with rubber strippings. Lower glass ventilates, upper glass rain visioned.
Antique mahogany instrument board, with large compartment under lock and key for small personal effects. Handsome instruments and within easy reach.
Warner electric clock and speedometer.
Automatic Thermostatic control of engine temperature.
Westcott Continental Motor, 3⅛" x 5¼".
Delco two unit lighting, starting and ignition system.
Timken axles with Timken bearings throughout.
Worm bevel differentials.
Heavy Brown-Lipe transmission with Timken bearings.
Vanadium Springs. Dry Plate Multiple Disc Clutch.
Tubular Drive Shaft with two Spicer Universal Joints.
Pantasote one-man top. Flush Tonneau Lamps, Boyce Motometer, Power Driven Tire Pump. 125" Wheel Base, Rayfield Carburetor, Single or Double Tire carrier. Improved Auxiliary seats.

For the Man who Wants a Better Car

IN YOUR search for a better car you will find nothing more worthy of your serious consideration than the Westcott Six, Series 17—an automobile that establishes new standards for sixes of the light-weight tendency.

Intelligent scrutiny of the Westcott Specifications will satisfy you that here is one case in which the benefits resulting from increased output have been utilized for the improvement of the best that has gone before, rather than for reduction of the price. This fact alone is significant.

Power, speed, luxury, beauty—all the essentials of motor car satisfaction are here to a degree that you had not thought possible in any but the very heavy cars. The acceleration is instantaneous; the range of speed is elastic from one mile upward to the limit of sane driving; the control is instinctive; the element of safety is predominant.

If you aspire to a car of these characteristics write for our catalog containing complete specifications in detail and for the address of the Westcott Dealer in your locality.

Four Passenger Cloverleaf Roadster, $1590
Five Passenger Touring Car $1590
Seven Passenger Touring Car $1690
Complete line of closed bodies to be announced.

THE WESTCOTT MOTOR CAR COMPANY
SPRINGFIELD, OHIO, U. S. A.

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MOON
REG. U.S. PAT. OFF.
MOON MOTOR CAR CO.
ST. LOUIS, MO. U.S.A.

Individuality

The fact that the thoroughfares are alive with cars whose coming and going conveys little or nothing beyond an impression of passing automobiles, makes *individuality* a trait well worth the seeking.

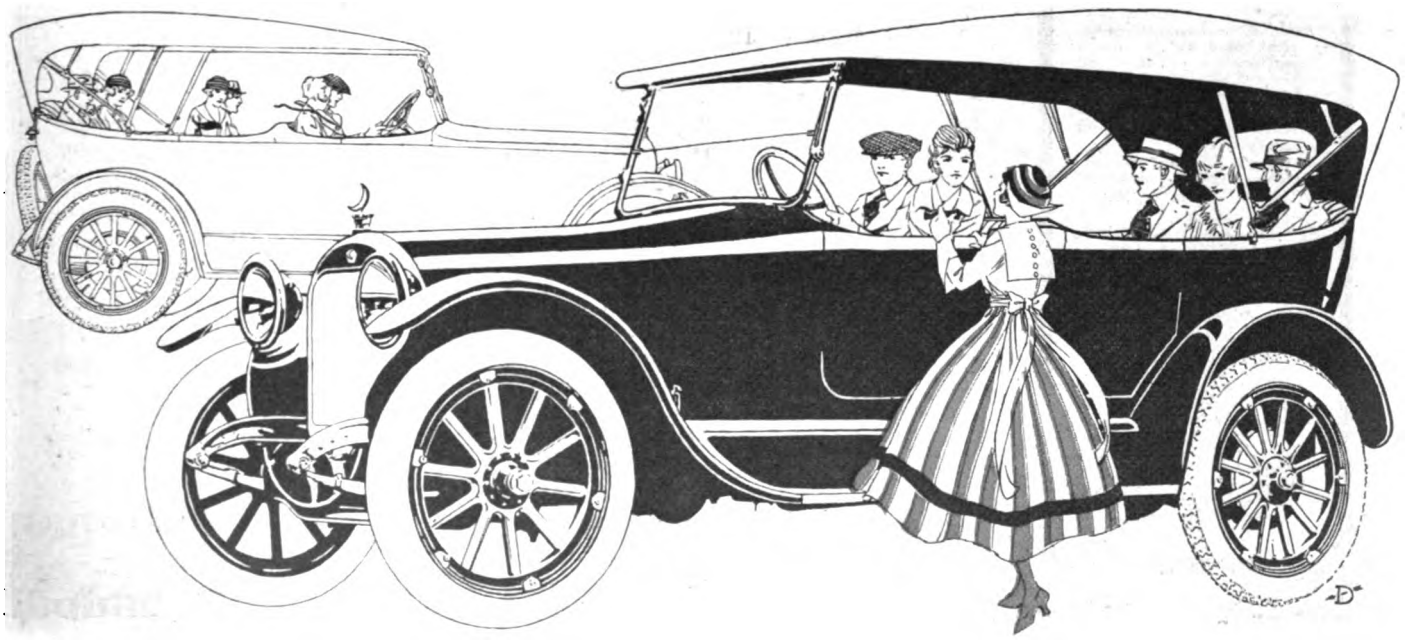
Look for it — from the viewpoint of good taste, see if you don't find its emphasis most thoroughly expressed in the new 1917 Moon.

The Moon characteristic — its smart, racy appearance — has been heightened — notably by the adoption of the Delaunay-Belleville type of body — long, double-cowled, with the trim lines of a cruiser and a rakish slant to the windshield. Both models are upholstered in genuine tan Spanish leather.

The Moon for sheer beauty; and, beneath, is an ensemble of such substance, power, comfort and responsiveness as can only be attained as a result of designing and workmanship of the highest order, backed by a policy that tolerates no skimping.

Six-66 (66 Horsepower Actual Brake Test)	***Six-43*** (43 Horsepower Actual Brake Test)
Seven passenger fully equipped **$1650**	*Five passenger fully equipped* **$1295**

MOON MOTOR CAR CO., ST. LOUIS, U. S. A.



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Prest-O-Lite Storage Battery

The two important factors in storage battery value are: *the battery itself and the service back of it.* Science makes storage batteries quite similar in basic principles of construction, but—

Only one make of battery is backed by *Prest-O-Lite Service.* Thousands of motorists are now realizing what this universal, expert battery service means to them in increased efficiency and satisfaction in their electric starting and lighting systems.

The Prest-O-Lite Co., Inc., maintains more Direct Factory Branches than all other battery makers combined. They form the nucleus for the largest amount of actual service obtainable in the storage battery field.

There is a Prest-O-Lite Battery of correct shape, size, voltage and capacity for every make and model of car, and for every starting and lighting system which is or ever has been in general use.

Every automobile dealer—whether he can repair and charge batteries or not—should know the details of the Prest-O-Lite Storage Battery proposition. Write for it.

The Prest-O-Lite Co., Inc. 902 Speedway Indianapolis, Ind.





ATLANTA
BALTIMORE
BOSTON
BUFFALO
CHICAGO
CINCINNATI
CLEVELAND
DALLAS
DAVENPORT
DENVER
DES MOINES
DETROIT
INDIANAPOLIS
JACKSONVILLE
KANSAS CITY
LOS ANGELES
MEMPHIS
MILWAUKEE
MINNEAPOLIS
NEW YORK
OMAHA
PHILADELPHIA
PITTSBURGH
ST. LOUIS
ST. PAUL
SAN ANTONIO
SAN FRANCISCO
SEATTLE
SYRACUSE

Each of these Factory Branches is fully equipped for Battery Repairs and Service.

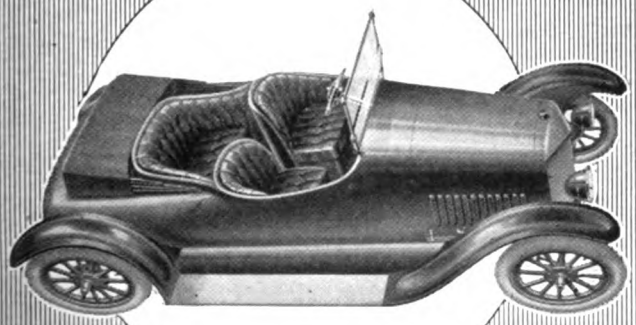
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The Ames Creed

TO make every transaction satisfactory to our dealers and their customers.

To take such good care of customers that they will go out of their way to help find new ones.

The Ames aim is, and always will be, to obtain quantity business of quality products at a price that is right.





The F. A. Ames Co. INC. Ames Motor Car Co. INC.
Owensboro, Ky.

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Judge Investigates Headlight Device

Makes First Bonafide Decision in Mass., Stating Warner Lenz Complies with Law

BOSTON, MASS., Aug. 19—The first judicial decision on the headlight law where a judge went out for himself and made an inspection of a device was rendered in the Boston courts yesterday when Judge John Perrins, Jr., stated that the Warner lenz complied with the Massachusetts law.

The importance of the decision lies in the fact that a judge has really passed upon the matter after a demonstration. Heretofore the judges sat in court and heard policemen say a light dazzled even if it had a device on it, and the officer's word was accepted, and the motorist fined or his case filed. But no judge would take the trouble to investigate the claims of the motorists. They seemed to hedge on the question when attorneys tried to fight the cases.

The Highway Commission refused to approve any device because the devices were so made that improper focusing defeated the purposes of the inventor. When the case of the Warner Lenz came before Judge Perrins the attorneys laid much stress upon the fact that the judge should investigate the facts rather than rely upon the policeman's word. Judge Perrins said it seemed fair, and a trial was made one evening. The judge was convinced the Warner was not a lawbreaker.

In his decision he said: "The fact is that a certain space must be illuminated, according to the law, and a certain strength of light must be used for this purpose. When space 150 ft. away must be made light, the illuminating source must be accordingly brilliant. But I find this light not to be dazzling."

From the Automobile

and Warner Lenz Wins!

look at this



This page pictures only one of many indorsements of Warner-Lenz. Here a Judge gives his O.K.

Police officials in one city after another are issuing certificates of approval.

WARNER-LENZ

Automobile engineers and illumination experts claim Warner-Lenz solve night driving problems forever.

And thousands of owners driving by Warner-Lenz under all conditions—send unsolicited approval.

and this

This universal approval helps dealers. It means all the above influences are working on car owners and making them your prospects.

Already 200,000 pairs of Warner-Lenz have been sold. But there are 3,000,000 prospects. For Warner-Lenz are bound to become universal.

We need more good dealers throughout the country. Write today for our **very** liberal terms. Will co-operate with you to the limit.

The Warner-Lenz Co.
Dept. C-913 S. Michigan Avenue
Chicago

THE WARNER-LENZ CO. (M.W.)
Dept. C-913 S. Michigan Ave., Chicago

Please let me have particulars concerning your Dealer Proposition.

Name .....

Address .....

.....

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The Dixie Flyer

DIXIE MOTOR CAR CO. INCORPORATED — DIXIE FLYER — LOUISVILLE, KY.

Takes Its Place in the Sun

Since the day it was first placed on the market the Dixie Flyer has made an enviable sales record.

Setting a new standard for fuel economy, power availability and motor car performance in its price class, it instantly flashed into the light of public approval.

Today the 1917 Models, including a four passenger Cloverleaf Roadster and a five passenger Touring Car, present practically the same mechanical structure plus touches which make for added refinement and individuality.

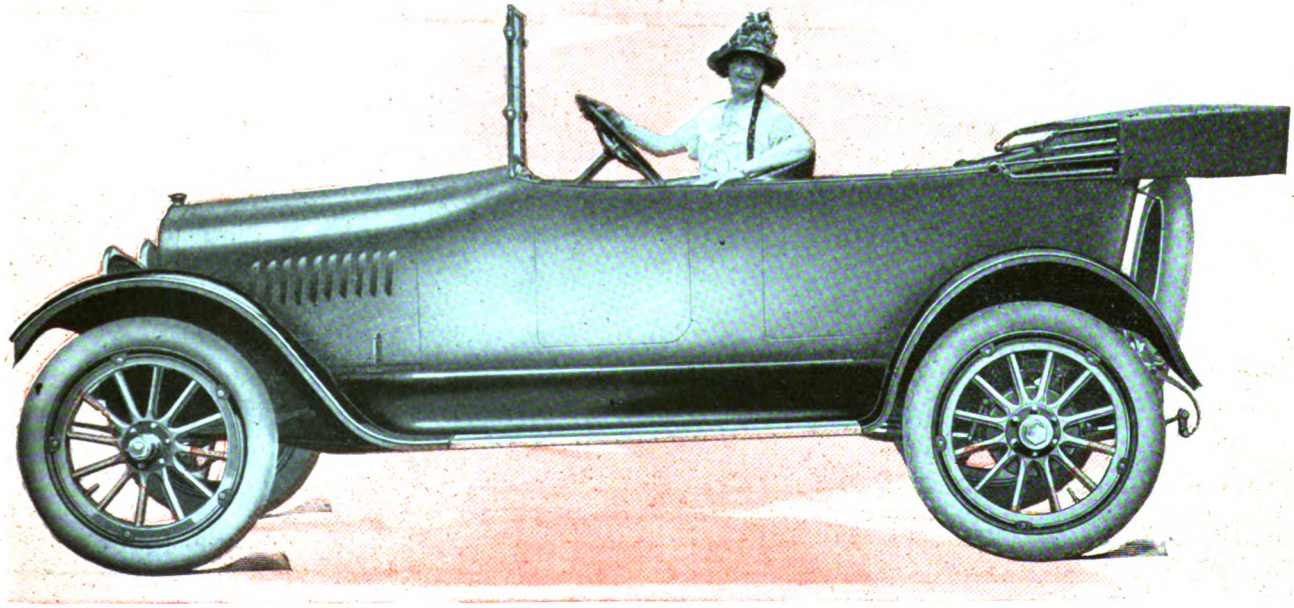
Some territory is still open to substantial dealers prepared to handle the cream of the "less than Thousand Dollar class" trade. Write, wire or phone.

CONDENSED SPECIFICATIONS

4 cylinder enbloc motor, 30 H. P., Grant Lees transmission, Dyneto 2-unit Electric starting and lighting, Connecticut ignition, Williard Storage Battery. Single, flexible universal, Stewart vacuum feed, self-lubricating springs, full floating rear axle, Bower roller and S. K. F. ball bearings throughout. Spiral bevel drive. Tires 32x3½. Wheelbase 112 inches.

With Modern Equipment $795 f.o.b. Louisville

DIXIE MOTOR CAR COMPANY
INCORPORATED.
LOUISVILLE, KY.



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Model H, 1500 pounds capacity
$1225 (chassis) cash, f. o. b. factory



Model F, 2000 pounds capacity
$1500 (chassis) cash, f. o. b. factory

The new line of International Motor Trucks, two models of which are illustrated on this page, is seeking live distributors and wide-awake dealers in all unoccupied territory.

Can we do business with you on this basis?

International Motor Trucks are strictly modern, up-to-date in every respect, the best built motor trucks in America, regardless of price.

This new line is built in sizes that meet the requirements of over 80 per cent of motor truck buyers.

No truck gives the buyer more value for his money, or is easier to sell.

The Company that makes them is responsible and dependable to the highest degree.

International Motor Trucks are extensively advertised, both generally and locally, in the dealer's territory. No company could possibly co-operate more fully with the dealer than we do to make his work successful and profitable.

Our dealer arrangements are extremely liberal.

This year we have sold every truck the factory could turn out, without taking a single war order. Next year the factory output is to be more than doubled. By coming in with us now, you will share in the profits of our best year so far.

The best territory is being taken rapidly. Later on the opportunities will be limited. Now is the time to come in and grow with us. Please wire or write us so that we can lay our whole selling plan before you.

Motor Truck Department

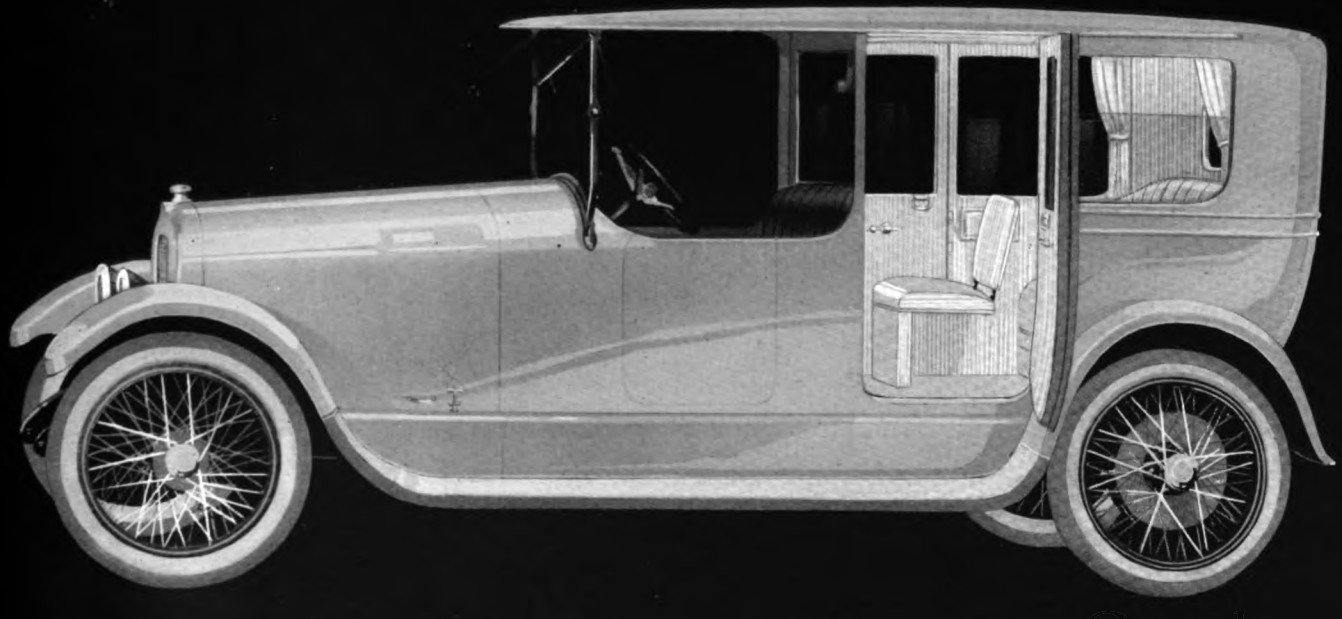
International Harvester Company of America
(Incorporated)
155 Harvester Building **Chicago U S A**

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MARMON 34

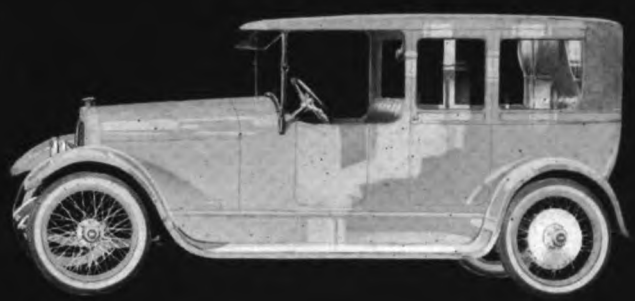
Light in weight, low, easy riding, luxuriously finished, there are many points of advantage that are found *only* in Marmon 34 closed cars. Scientific design and the extensive use of Lynite Aluminum make these cars lighter by 1100 pounds than other closed cars of equal size and power. The over-all height is several inches under the average, yet there is the usual head room inside. A low hung body, with low center of gravity and a new rear spring suspension, provides easy riding without side-sway.

NORDYKE & MARMON COMPANY
INDIANAPOLIS, IND.



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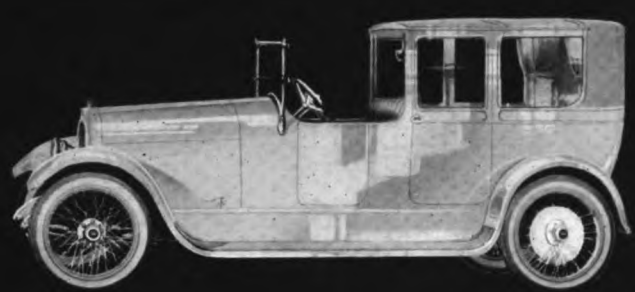
Marmon 34 Closed Bodies



Unlike the usual car of this type, the Marmon 34 Limousine is not heavy nor is it high. It weighs only about 4000 pounds and the over-all height is only six feet nine inches, yet there is the usual head room and abundant passenger space.



With floor boards several inches lower than in the usual car, weight perfectly balanced, extra wide doors, abundant room inside, and deep upholstery, the Marmon 34 Landaulet is a car which gives "easy chair" comfort on the road.



Style and distinctiveness feature the Marmon 34 Town Car. Rapid acceleration, extraordinary power, quick acting brakes, and a short turning radius, make this Town Car ideal not only for crowded traffic but for the open boulevards as well.



The Convertible Sedan is a fine family car. All the seats are enclosed, entrance is by a rear door on either side and front seats are separate. It can be used as a closed car or easily changed to an open car with only windshield, top, and rear portion in place.

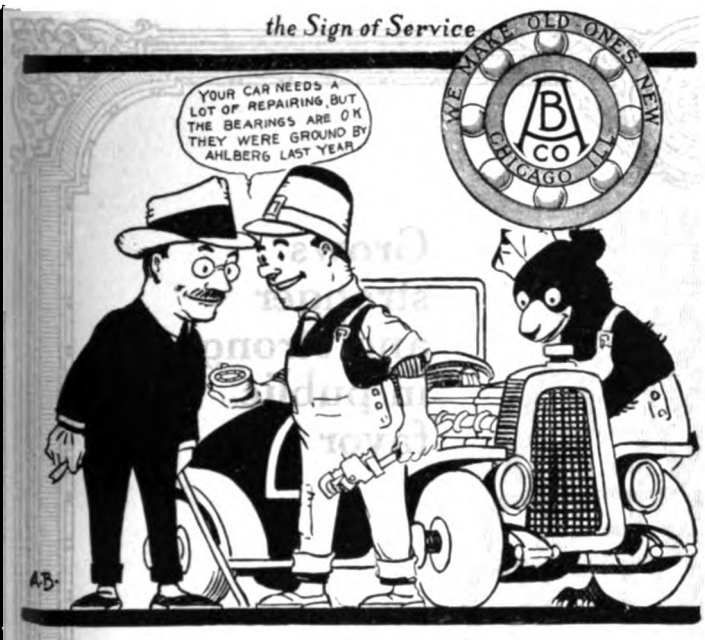
"Holbrook," New York; "Kimball," Chicago; "Thompson," Pittsburgh; and "New Haven Carriage Co." are "Closed Body" names that need no emphasis. Experienced buyers of closed cars know them, and the class of work they represent. It is interesting and important to note, therefore, that each of these houses has produced exclusive designs for the Marmon 34 chassis, which will be furnished this season as regular Marmon closed car models.

The demand for the Marmon 34 chassis so equipped undoubtedly will equal that of the open car, for the closed models equal the now famous open Marmon in distinctive features and highly advanced design.

Nordyke & Marmon Co. *Indianapolis, Ind.*

ESTABLISHED 1851

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Ahlberg users all have found Ahlberg bearings rightly ground

The Super-Efficiency of Ahlberg Reground Bearings

MOST satisfactory to you is definite assurance of efficiency in reground bearings. To know that Ahlberg reground bearings give equal or better service and carry the same guarantee as new bearings.

No one else can give you these perfectly ground outer and inner rings, with the smooth, flawless raceways. For we are the owners, inventors, and sole users of Ahlberg grinding machines, completely covered by United States Letters Patent.

No one else can give you equal assurance of accurate balls. We use only new oversize balls, made especially for us, the largest users. Every ball in each bearing is measured by experts to 1-10000 of an inch and for that specific bearing. The utmost in ball bearing accuracy.

No one else can give you the Ahlberg retainer. We invented it to overcome the imperfections we saw in thousands of retainers sent to us. This retainer is the final element—together with the smooth, flawless and time tested raceways, and micrometer tested balls—that makes Ahlberg Bearings super-efficient.

No one else can give you the instantaneous exchange service. In each of the following cities, in our own direct factory branches, we carry all makes, types and sizes of reground bearings to exchange for your worn ones. The only charge is a small one for regrinding. Yet we make our guarantee on Ahlberg Reground Bearings equal to a manufacturer's guarantee on New Bearings.

The cost to you for Ahlberg Reground Bearings is about one-fifth.

In the following cities you will find this sign.



So write or call for any information and assistance you desire.

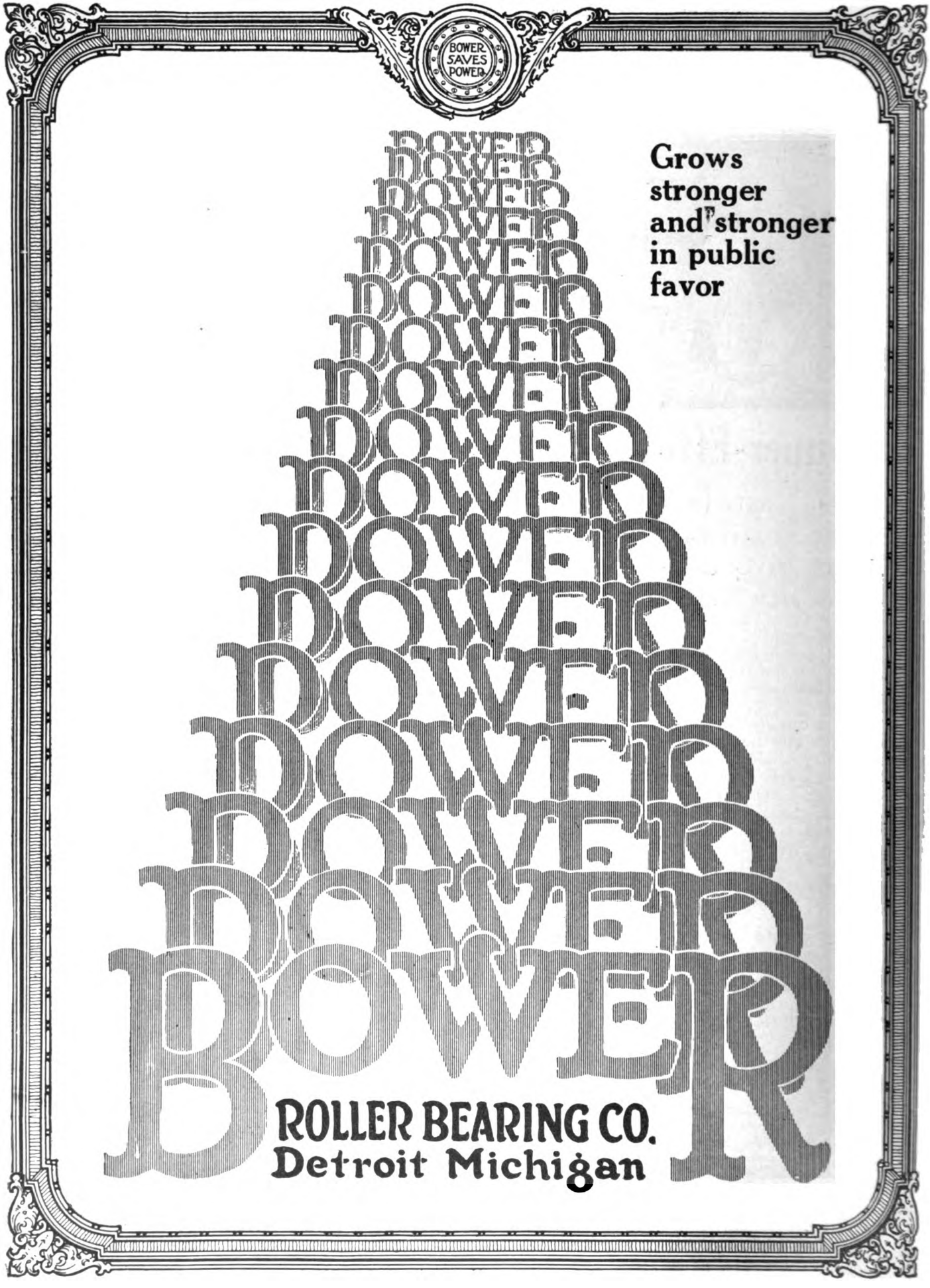
The Sign of Service

AHLBERG BEARING COMPANY

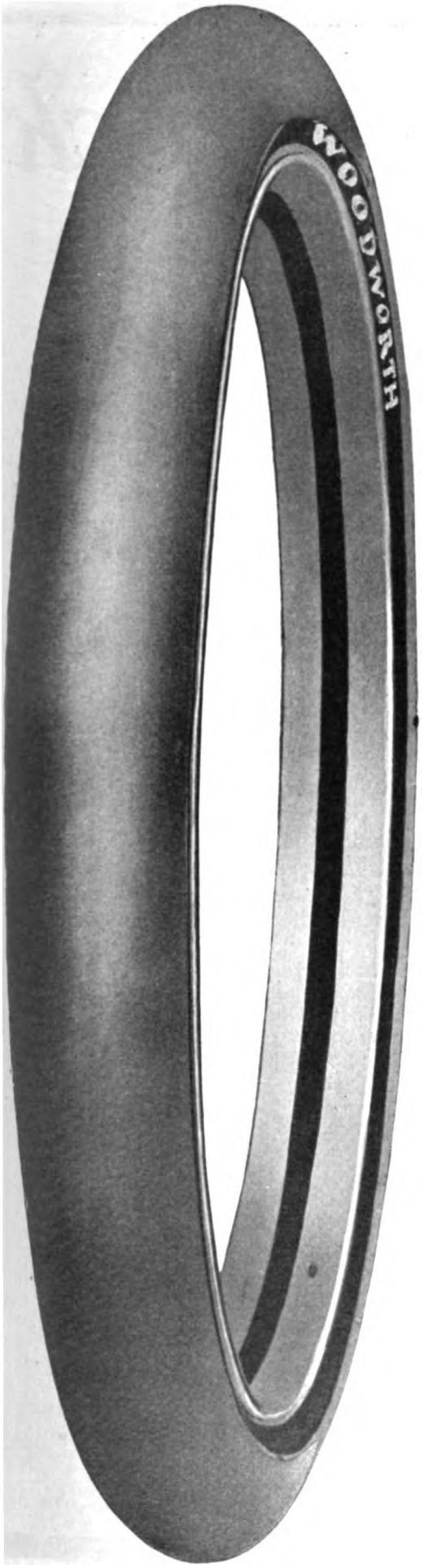
2636 Michigan Avenue - - - - - - - - - CHICAGO, ILLINOIS

BRANCHES { Los Angeles: 325 W. Pico St. New York: 1790 Broadway Boston: 93 Massachusetts Ave. Cleveland: 1836 Euclid Ave.
Detroit: 700 Woodward Ave. St. Louis: 2831 Locust St. Minneapolis: 926 Marquette Ave. Atlanta: 323 Peachtree St.
San Francisco: 715 Turk St. Portland: 325 Davis Street

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"The Goods"

You dealers who are selling tires have got to promise pretty good service to get your share of the business.

The tire buyer of today knows what he should get out of his tires and is past the stage where he will be fooled by flowery talk about "unequalled manufacturing facilities," "large output" and "highest grade materials."

To get your share of the business you must deliver "the goods"!

WOODWORTH TROUBLE-PROOF // TIRES //

will back you up in every claim you make for them. Look at this cross-section, and see why.



These tires must make good. They are built to make good. They do make good. You want the agency for a tire like this. It means a fine big business that will increase each season. If you are a live dealer in an open territory we want to talk to you. It will mean good business, a profitable business and an established business for you.

The Leather Tire Goods Company

NIAGARA FALLS, NEW YORK

CANADIAN FACTORY, Niagara Falls, Ontario

When writing advertisers please mention Motor World

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A Thief-proof Lock for Fords



Price $3.50

AN Ignition Lock that can be attached permanently to any Ford Car in two minutes time and with no special tools—that requires no change whatever in the standard wiring arrangement—that eliminates forever the bother of carrying a switch key and can be opened in one-half the time required by any combination or key lock—such is the **Thiefoil Ignition Lock.**

Thousands of automobiles were stolen in this country last year. It is probably easier to steal a Ford than any other car and ninety-five per cent. of the Ford owners in your territory will buy a **Thiefoil Ignition Lock** on sight. The opportunity is yours. There's a good profit on every one and sales come faster than on any accessory you have ever handled.

Thiefoil Ignition Locks are sold through all jobbers, but write us direct for details of our plan to co-operate with our dealers to the limit. Don't delay—some one is going to sell the Ford owners in your community and it might as well be you. Write us now.

CASKEY-DUPREE
REG. U. S. PAT. OFF.
Thiefoil
IGNITION LOCK
"THE NATIONAL GUARDSMAN"
PAT. DEC. 24, 1912 – NOV. 11, 1913

THE CASKEY-DUPREE MFG. CO.

MARIETTA, OHIO

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NO MORE CARBURETORS AT $10., $20., $30. and $40.

THE TIME OF FANCY PRICES IS OVER

Sunderman's Remarkable Vacuum Carburetor

$5.00

$6.50 with Elbow for Attachment to Engines where Manifold is not Cast in Head. (Ford Cars do NOT need an Elbow.) Prices f. o. b. Newburgh, N. Y.

DEMAND a SUNDERMAN on your New car—INSTALL a SUNDERMAN on your Old car. SAVE Money and Troubles.

ULTIMATELY all cars will be Equipped with a VACUUM CARBURETOR. THOUSANDS OF CAR OWNERS have already replaced the Carburetors furnished by the Car Manufacturers with a SUNDERMAN VACUUM CARBURETOR (Patented).

WHY?

1st: BECAUSE IT IS MORE EFFICIENT:
It produces a pure dry gas (no vapor or spray), therefore leaving no carbon deposit, eliminating valve grinding, gas pound and foul spark plugs.
Gives uniform mixture and unvarying results at all times.
Works automatically under changing climatic conditions.

2nd: BECAUSE IT IS MORE ECONOMICAL:
Costs only $5.00.
Has no wearing part, thereby saving all troubles of replacements.
Is composed of 25 parts only, while all other Carburetors have from 100 to 150 parts—necessarily costing 4, 5 and 6 times more to produce.
Will decrease your gasoline bill from one-third to one-half.
Increases the mileage of any car, of any make, of any number of cylinders.
Can be installed within an hour.
"FORD" installation can be made within 30 minutes.

Private car owners have installed the SUNDERMAN VACUUM CARBURETOR on the following make of cars:

Alco (Truck)	Empire	Little	Paige
Allen	Everitt	Locomobile	Pierce Arrow
Abbott	Flanders	Marathon	Premier
Beaver	Franklin	Marion	Pilot
Briscoe	Ford	Marmon	Peerless
Buick	Garford	Maxwell	Rambler
Cadillac	Haynes	Mercer	R. C. H.
Cartercar	Hudson	Metz	Regal
Chevrolet	Hupmobile	Michigan	Reo
Cole	Jackson	Mitchell	Saxon
Chalmers	International	Moline-Knight	Speedwell
Chandler	Interstate	Mora	Studebaker
Dodge	Pope-Hartford	National	Scripps-Booth
DeLuxe	Kroxton-Keeton	Oakland	Stoddard-Dayton
Detroiter	Koehler Truck	Oldsmobile	Warren
E. M. F.	Kissel	Overland	Welch
			Winton

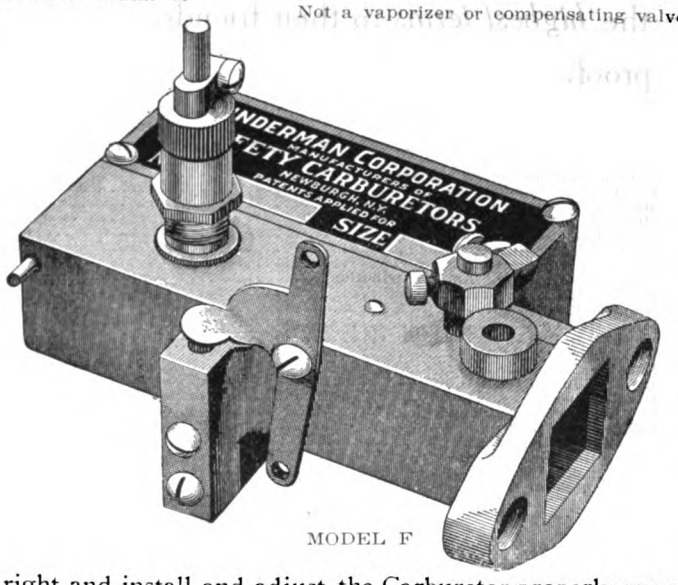
Send for "Expressions" of recent date from Satisfied Users of

Sunderman's Vacuum Carburetor

Not a vaporizer or compensating valve, but a CARBURETOR

FEATURES

Enormous gasoline saving
Greatly increased mileage
More power
Great flexibility
Fast get-away
Quick pick-up
Easy starting
Positively no back-firing



MODEL F

MODEL F DIMENSIONS

4½" x 2½" x 1⅞". Suitable for any engine up to 45 H. P. Subject to different size nozzle, according to bore and stroke of motor.

Weight: 1¾ pounds.

See that your motor is right and install and adjust the Carburetor properly as per directions sent with each shipment.

SUNDERMAN CORPORATION

Manufacturers of Safety Carburetors
NEWBURGH, N. Y.
Western Sales Office, DETROIT, 403 Kresge Building

Give References when Asking for Agency

Tell Your Friends

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***It's a*—Scientific Fact**

that Lubrication is the answer to the long or short life of a Motor.

***It's a*—Demonstrated Fact**

that Motor Oils refined from a Pennsylvania Crude Base eliminate friction and give longer life to a Motor than any other.

***It's an*—Indisputable Fact**

that



"The Motor Oil That's Clean"

has proved to thousands of motorists that it's the peer of them all when it comes to lubricating an Automobile Motor, and they not only use it, but recommend it in the *highest terms* to their friends.

Better write for proof.

M. W. 15.

Kindly send price on Tiolene.

Drum.....

½ Drum.....

Name.....

Address.....

Car.....Year.....

TIOLENE DISTRIBUTORS

General Automobile Supply Co.	New York City
Cornplanter Refining Co.	Nashua and Manchester, N. H.
Richards & Conover Hardware Co.	Kansas City, Mo.
Richards & Conover Hardware Co.	Oklahoma City, Okla.
Western Merchandise & Supply Co.	Chicago, Ill.
Jackson Motor Supply Co.	Pittsburgh, Pa.
Robertson Hardware & Steel Co.	Portland, Ore.
Sangarsa & Co. (S. Am. Distribution)	New York City
Joseph Strauss & Son	Buffalo, N. Y.
Treman, King & Co.	Ithaca, N. Y.
H. L. Hadden Co.	Milwaukee, Wis.
Burhans & Black, Inc.	Syracuse, N. Y.
N. M. Townley, Jr.	Paterson, N. J.
Detsch & Co.	Washington, Montana, Idaho
R. McC. Bullington & Co.	Richmond, Va.
H. M. Rhea	Chambersburg, Pa.
The Columbia Auto Supply Co.	Washington, D. C.
Pacific Implement Co.	San Francisco, Cal.
Janney, Semple, Hill & Co.	Minneapolis, Minn.
Peaslee-Gaulbert Co., Inc.	Louisville, Ky.
The Chapin Co.	Calgary, Alta., Can.
Canadian Selling Co.	Montreal, Que., Can.

FOREIGN REPRESENTATION

Santiago A. Pansardi	San Juan, Porto Rico
W. A. Dettmann	Rocky Point Road, Arncliffe, N. S. W.
Crystal Oil Co.	Barcelona, Spain; Milan, Italy
Eddie E. Johnston	Belize, British Honduras
Handel En Industrie Mij. M. Adler	Amsterdam, Holland; Dutch East Indies
J. Didier & Co.	Lyons, France
J. Roberts & Son	New Market, Auckland, New Zealand

TIONA OIL COMPANY, Binghamton, N. Y.

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No Weak Links

The old thoroughly established axiom that no chain is stronger than its weakest link is just as applicable to ball bearings as it is to chains.

No ball bearing is stronger than its weakest part.

If raceways are sacrificed in thickness in order to enable the carrying of more balls there is no gain because of the added carrying capacity of the greater number of balls. For it is entirely possible to get a ball carrying capacity that will not be sustained by the raceways in which the balls are mounted.

The ideal ball bearing is the bearing in which ball capacity is identical with race capacity.

Such are U. S. BALL BEARINGS. They are what we call balanced bearings, in that both in design and manufacture every component part is designed with relation to its other fellow parts. This balancing, combined with high quality materials and the highest type of manufacturing methods, give to U. S. BALL BEARINGS an exceedingly great carrying capacity and endurance.

U. S. Ball Bearing Manufacturing Co.

(Conrad Patent Licensee)

Palmer St. and Kolmar Avenue, Chicago

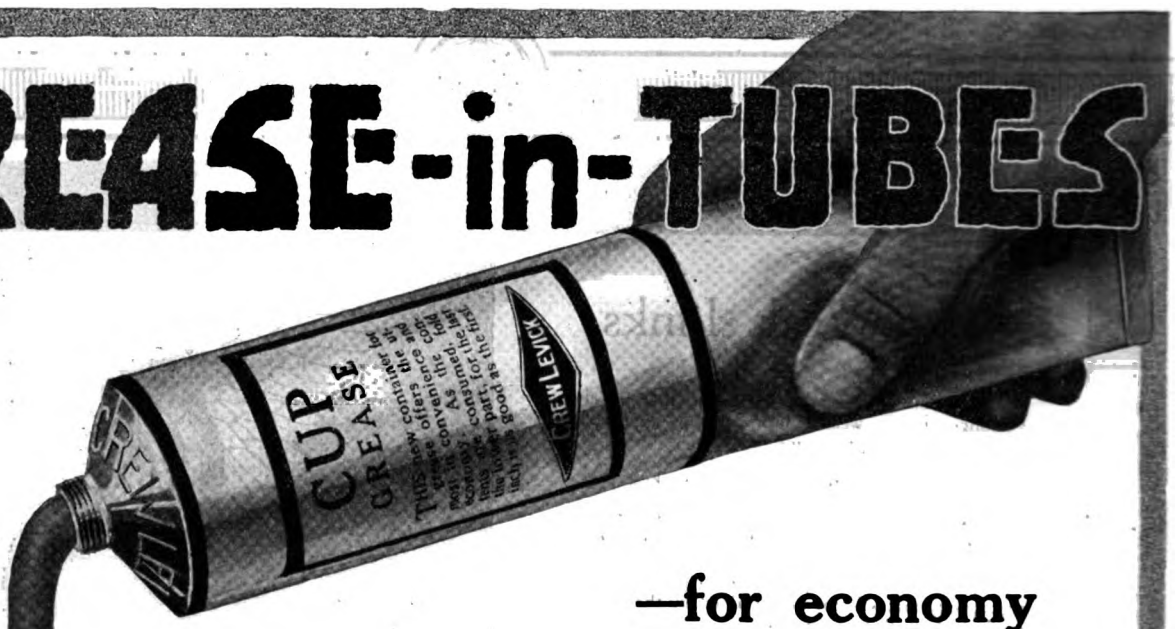
Inserted photograph shows new U. S. Ball Bearing factory General view shows part of the screw machine department

U. S.

BALL BEARINGS

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GREASE-in-TUBES



—for economy
—for cleanliness
—for speed

FOR on-the-road emergencies, or for ordinary use, the LINCOLN HIGHWAY KIT of *clean* GREASE-in-TUBES is the most convenient means for refilling cups and lubricating springs or transmissions and rear axles, with a special grease for each.

After removing the screw-cap, just the *right* amount of grease can be squeezed just *where* it is wanted—and this quickly, without muss or smear, and to the last particle in the tube.

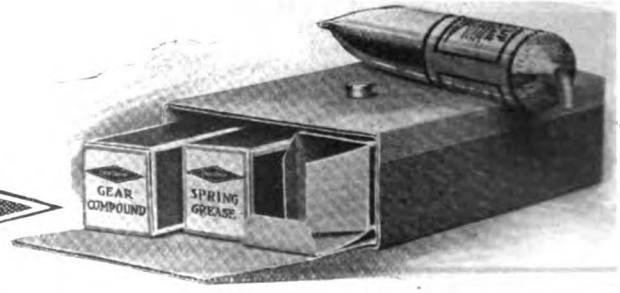
The compact form makes it convenient to carry on *any* car.

GREASE-in-TUBES is sold in cartons of three tubes each at a dollar a carton. There are separate cartons of cup grease, spring grease and gear compound, and then, of course, the LINCOLN HIGHWAY KIT, which contains one tube of each grease.

Your dealer or garageman can supply you, or if he has not yet stocked GREASE-in-TUBES and other Crew Levick high-grade motor specialties, send us his name and we will see that you get quickly whatever you want.

Crew Levick Company
2203-31 Land Title Building,
Philadelphia

Dealers! If you would care to know something about an unusually comprehensive sales and advertising campaign, covering all the well-known Crew Levick motor products, please communicate with us promptly.



CREW LEVICK

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"Name your car—*I'll* light it"

OUR little booklet lists the proper lamps for all 1916, 1915 and 1914 electrically-lighted cars. With it your clerk can't make a mistake, particularly when he has at hand the

EDISON MAZDA
Automobile Lamp Assortment]

This compact little stock contains all the sizes necessary to equip 90% of all the cars that come to your door.

Moreover, the entire assortment of less than 200 lamps costs you no more than a tire or two. And the margin of profit makes it well worth your while to make your store the headquarters for lamp renewals.

EDISON LAMP WORKS
of General Electric Company
Harrison, N. J.
6018







Write now for this booklet and full particulars of our attractive agency proposition before someone else gets your territory.

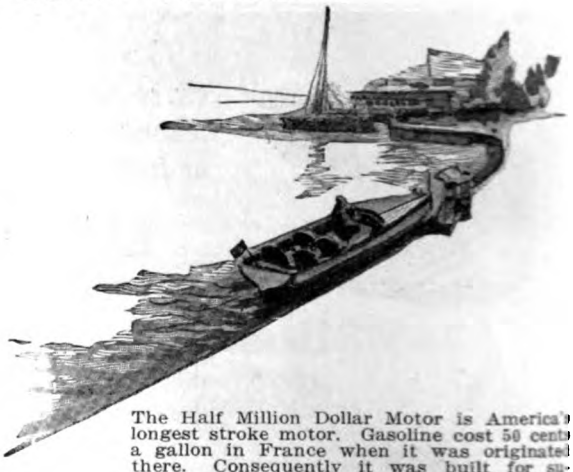
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BRISCOE $625 FULLY EQUIPPED

BUILT BY A FOUNDER OF THE INDUSTRY

It is a glorious morning in sunny France. The road is melting away under the silent speed of a new marvelous motor. The environs of Paris, the motor car vortex of the world, are left behind. The big studious man at the wheel turns into the verdant hill country, past high smiling chateaux and rumbling peasant carts.

A new principle, a new progress in automobiledom is being born. Thousands of miles fade away under the thrill of the car—the French Salons acclaim it the Internationally Accepted Masterpiece of motor construction—then it is announced to America!



—And *this* man said, "I will build *such* a car!"

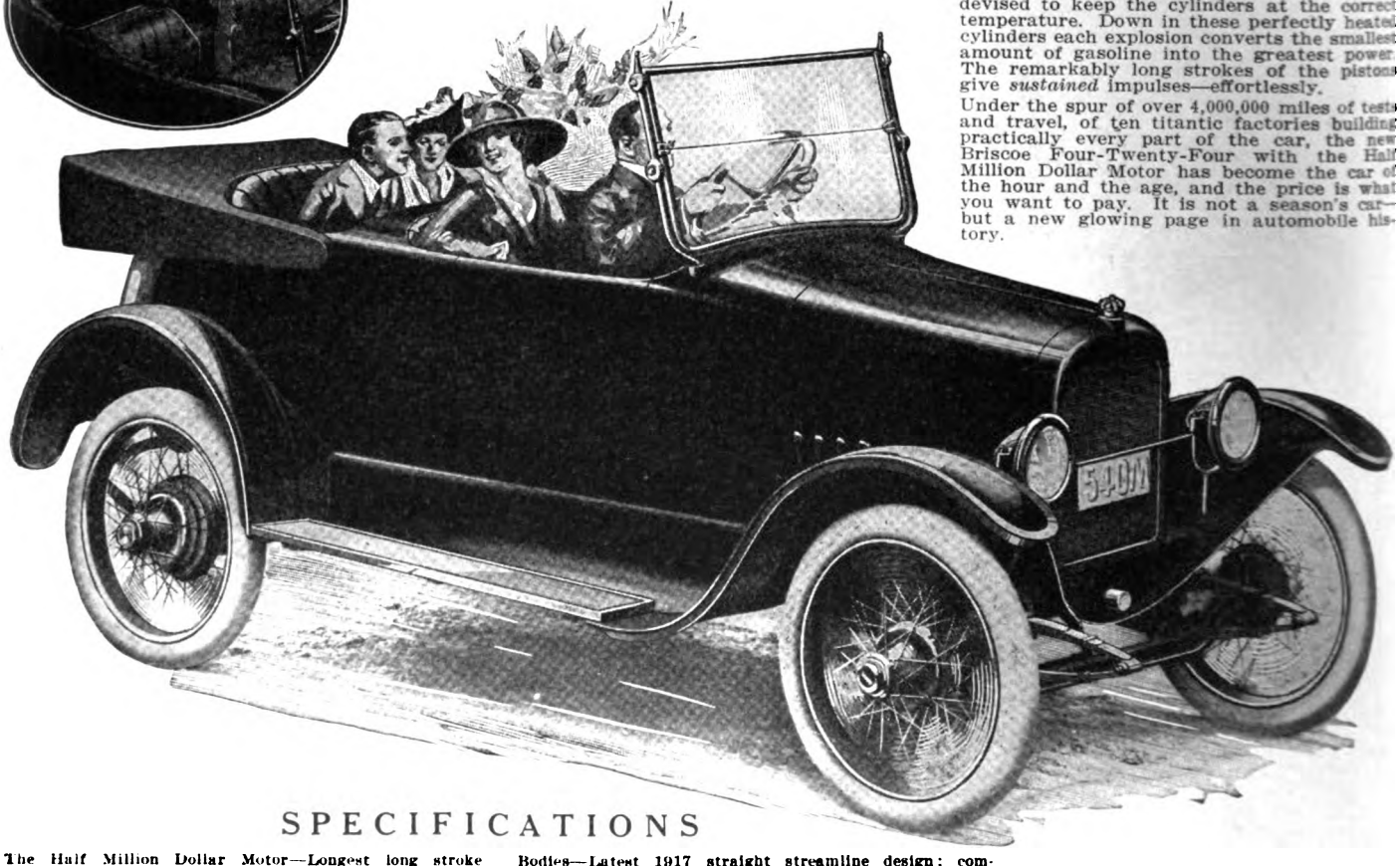
In the automobile center of the world—Paris—Benjamin Briscoe welded the world's most eminent creative engineering into the Half Million Dollar Motor. He had been a founder of the industry—had originated the modern principle of radiation—had taught men how to produce devices for cooling systems in quantities. His genius had been represented in more than a million cars!

Now—with fourteen great European engineers—German, French, Swiss—and at a cost of $500,000, he had realized his lifework's masterpiece. From Paris to Jackson, Mich., over a span of four years, he attained his object—to place within the purse-reach of every family an automobile of jubilant power, luxury and remarkable economy, fully equipped at $625.



The Half Million Dollar Motor is America's longest stroke motor. Gasoline cost 50 cents a gallon in France when it was originated there. Consequently it was built for supreme economy—now gives 25 to 30 miles on a gallon of gasoline, with other economies in the same proportion. A unique combination of water-cooling and air-cooling was devised to keep the cylinders at the correct temperature. Down in these perfectly heated cylinders each explosion converts the smallest amount of gasoline into the greatest power. The remarkably long strokes of the pistons give *sustained* impulses—effortlessly.

Under the spur of over 4,000,000 miles of tests and travel, of ten titantic factories building practically every part of the car, the new Briscoe Four-Twenty-Four with the Half Million Dollar Motor has become the car of the hour and the age, and the price is what you want to pay. It is not a season's car—but a new glowing page in automobile history.



SPECIFICATIONS

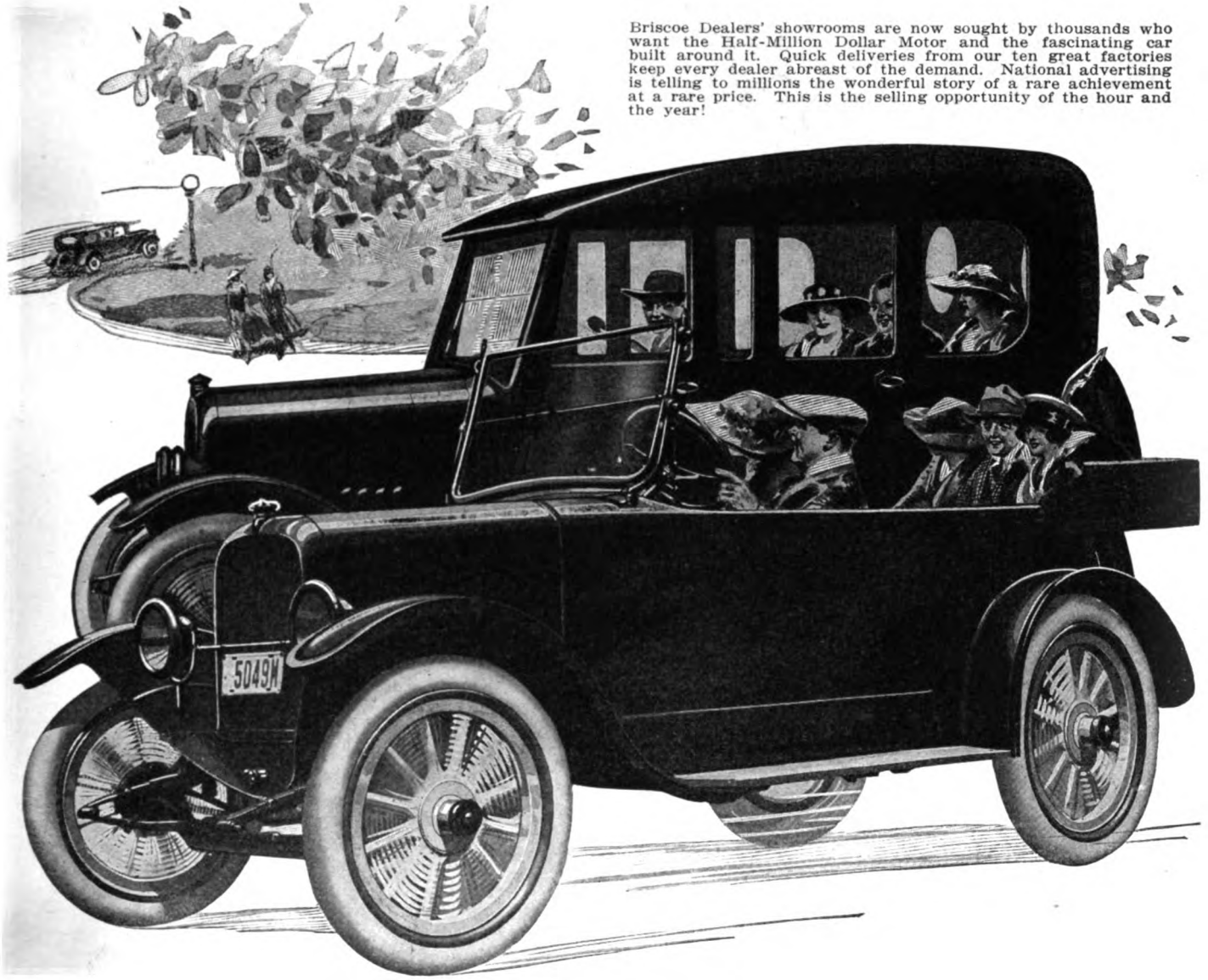
The Half Million Dollar Motor—Longest long stroke motor in America; 3⅛ inch bore by 5½ inch stroke; bore and stroke ratio 1.64; four cylinders cast en bloc integral with crank case, having a detachable cylinder head plate; lower crank case forms oil reservoir; valves on the right side, 1 7-16 inch diameter in clear and completely enclosed.
Wheelbase—105 inches.
Lubrication—Oil pump and splash system.
Carburetor—Automatic.
Drive—Left. Control—Center.
Front Axle—I-beam section drop forged with special Briscoe fixed king bolts.
Rear Axle—Floating type.
Bodies—Latest 1917 straight streamline design; comfortable room for five passengers; leg room in tonneau and front of car for a six foot man; extra high grade quality of upholstery; 46 inch rear seat; Roadster—Four Passenger.
Springs—Full elliptic front and rear.
Tires—30x3½ inches all around; anti-skid tires in rear.
Equipment—Two electric head lights with dimmers; one man top with envelope and adjustable storm curtains; tilted eye-saver windshield; speedometer; oil-gauge; gasoline gauge; demountable rims, one extra.
Prices—Five-passenger touring car $625. Four-passenger roadster $625; f.o.b. Jackson, Michigan. In Canada, $825; f.o.b. Brockville, Ont.

Briscoe 4-24 Four Passenger Roadster and View of Door Arrangement Between Front and Rear Seats.

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THE CAR WITH THE HALF-MILLION DOLLAR MOTOR

Briscoe Dealers' showrooms are now sought by thousands who want the Half-Million Dollar Motor and the fascinating car built around it. Quick deliveries from our ten great factories keep every dealer abreast of the demand. National advertising is telling to millions the wonderful story of a rare achievement at a rare price. This is the selling opportunity of the hour and the year!



The Upper Car is the Briscoe 4-24 Coachaire, the Standard Touring Model Equipped with All Year Top, $750
The Lower Car is the Standard Briscoe 4-24 Touring Model, $625, fully equipped.

Benjamin Briscoe, himself a big man physically, supervises the construction—makes it **roomy.** If you are as tall as Abraham Lincoln you'll stretch out with ample leg room in front and rear seats. Your wife or daughter will drive the Half Million Dollar Motor with ease because she can shift gears with her finger tips and operate clutch and brake with slight pressure on foot pedals. Further, the Briscoe is radiantly beautiful, because the maker has the soul of an artist. It has high sides, long, yachtlike lines, upholstery like you find in $1000 and $1200 cars. Briscoe himself has put into it all the love of the work that a great painter spreads on canvas—it is fascinating to the eye and to the eye it tells its wonderful story.

Dealers—Here are more superlative selling points: *Briscoe modern advancements in equipment, if added to another light car, would cost* $200 *more.* Your purchaser need not spend an extra penny on the Briscoe Four-Twenty-Four at $625, fully equipped with all conveniences, with speedometer, gasoline gauge, demountable rims, one-man top, electric headlights, eye-saver ventilating windshield, electric starter, linoleum running boards and other up-to-date features.

BRISCOE MOTOR CORPORATION

Department P **Jackson, Michigan**

The Canadian Briscoe Motor Company, Ltd., Brockville, Ont.

PHENOMENAL DEALERS' PROPOSITION!

This is a car in the class with unfillable demand. Ninety per cent of all cars sold are in this general price class. You know the boundless opportunity that awaits Briscoe introduction to your territory. You cash in to the fullest extent because we have inaugurated the greatest selling plan ever offered the dealer.

Wire or write today for Benjamin Briscoe's wonderful book, "The Half Million Dollar Motor" and his remarkable Dealer Proposition.

Briscoe Motor Corporation
Jackson, Michigan

Send to me, address below, copy of "The Half Million Dollar Motor," by Benjamin Briscoe, and the extraordinary Briscoe Dealer Proposition.

Name .....

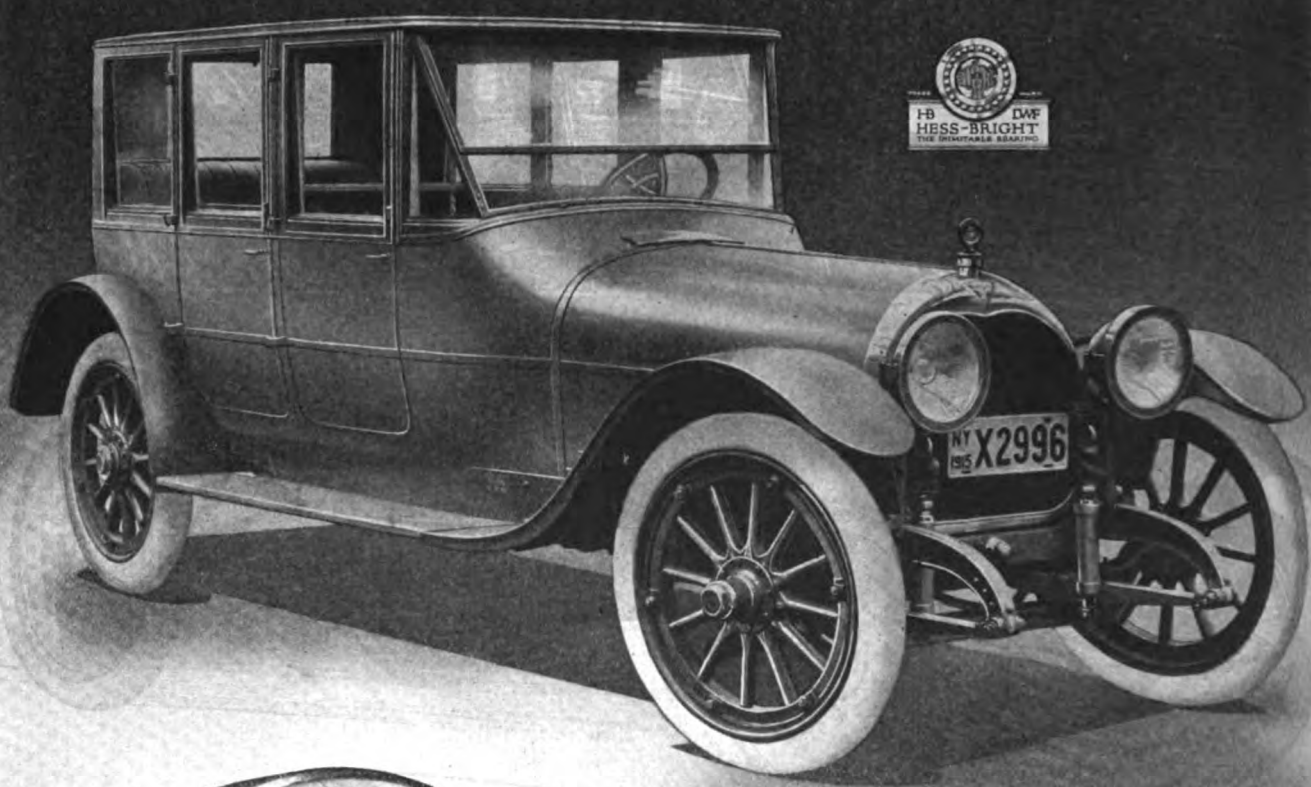
Street .....

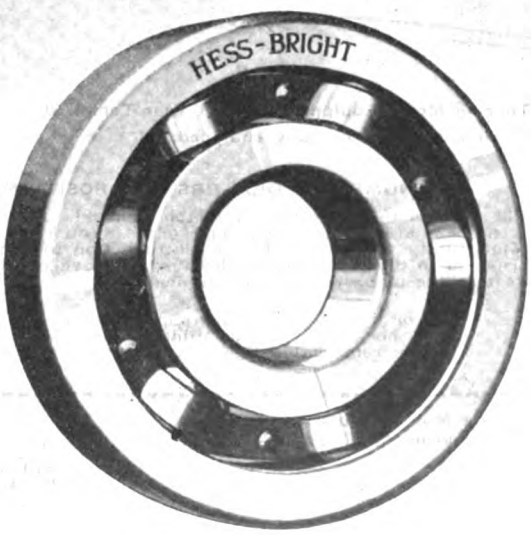
Town .....

M.W. 9-2-16

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HESS-BRIGHT BALL BEARINGS





Again we show a motor car in which every part is selected with but one thought in mind... QUALITY. Hess-Bright Ball Bearings are the preference of the makers of this very high grade automobile....it is a Simplex

THE HESS-BRIGHT MANUFACTURING COMPANY
Philadelphia

HESS-BRIGHT'S CONRAD PATENTS ARE THOROUGHLY ADJUDICATED.

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Profit for the Dealer

Here is a device which, when properly installed, means

LESS GASOLINE—MORE POWER
NO CARBON

Deitz VAPOR System

"A Rainy Day on a Dry Road"

Read this proof

"At sea level"

We have recently equipped our cars with the Deitz VAPOR System. This appliance has reduced our average daily gasoline consumption from 7.75 to 5.55 gallons per car—a saving of 2.20 gallons. We get 39% more mileage out of each gallon with the appliance than we did without it. Refer any skeptics to us.

Union Jitney Bus Co., Norfolk, Va.

"Mid the mists of Niagara"

The DEITZ System which you put on my Ford Runabout has more than paid for itself as it increases mileage better than one-third to the gallon, gives more power and eliminates carbon. We have also installed your device on our 3-ton motor truck with similar results. I unhesitatingly recommend the DEITZ to any one who is interested in cutting down gasoline bills.

Christian Flierl, Pres.
Christian Flierl Co., Buffalo, N. Y.

"Along the lake shore"

The Deitz VAPOR System which you recently installed on my Ford Tonneau has proved the best investment I ever made. Since attaching your device I have reduced my gasoline consumption from 30 gallons every two weeks to 20 gallons. Furthermore, I haven't had to clean a spark plug. If I couldn't buy another, I wouldn't sell my DEITZ for $50.

Dell Stephans, Chicago.

"On the Texas prairies"

After making a thorough test of the wonderful Deitz VAPOR System on 300 miles running with our Twin-six Packard, we installed the device on our various delivery cars. It is giving entire satisfaction in every instance and we unhesitatingly recommend it to be as advertised.

Elihu A. Sanger,
Sanger Brothers, Dallas, Texas.

"One mile high"

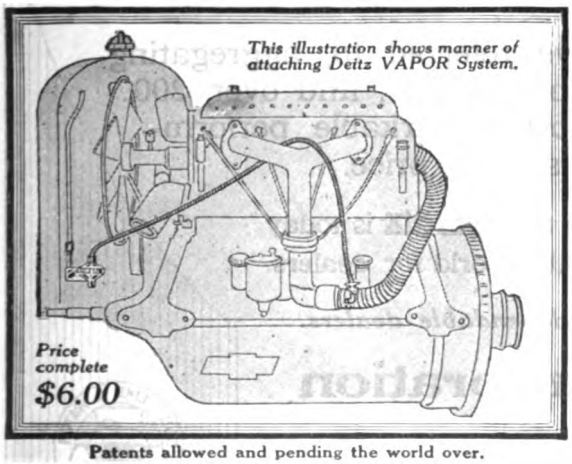
I have had your Deitz VAPOR System on my 1916 eight-cylinder Cadillac for about two thousand miles and I want to say that I am very much pleased with the results. I find that it eliminates carbon, gives about 20% more mileage and causes the motor to run smoothly and quietly on hot days; in fact gives about the same effect as driving after sundown. I can highly recommend it to use on all cars.

G. G. Pickett, Denver, Colo.

"Up in the clouds"

I recently made the most wonderful run on the least gasoline in my Ford that I have ever heard of—thanks to the DEITZ installed on my car recently. With four friends I went from Denver to Morrison, Evergreen, Bergen Park and back over Lookout Mountain to Denver, a total of 63 miles, with an actual consumption of 1 3-4 gallons of gasoline. I was getting about 18 miles to the gallon before the DEITZ was installed. At the above rate I am saving at least 50% with the DEITZ.

F. J. Lynch, Denver, Colo.



Patents allowed and pending the world over.

Conducts water vapor from Radiator to Carburetor

Watt discovered Steam Value rising from a Tea Pot.

Deitz discovered Vapor Value rising from an Auto Radiator.

The Deitz VAPOR System is designed for any type of water cooled car. It can be attached by any man in 15 to 30 minutes, without driving a screw or boring a hole in radiator, manifold or engine.

When you have properly installed our Deitz Air Valve in the radiator cap—our Deitz Automatic Water Trap in the radiator overflow pipe—our Deitz Hydrator in the carburetor and connected these with our specially made asbestos packed Flexible Hose, the suction of the engine will draw pure water VAPOR from the top of the radiator, continuously moistening the mixture of dry hot air and gas—causing three easily apparent economies—LESS gasoline—MORE power—NO carbon. The action is automatic and positive—nothing to get out of order—simply install and then forget it.

Price to Car Owner

Complete system in brass with steel tubing - - - $6.00

Money back if dissatisfied after ten days' trial.

Write for liberal proposition

The Deitz is not a "makeshift"—thousands of car owners testify it is not an experiment—it is a genuine VAPOR system. You sell it on TEN DAYS' TRIAL—it never comes back—your profits are liberal and assured. Write quick for our liberal dealer's contract, also illustrated descriptive booklet "Vapor Now Escaping from your AUTO RADIATOR Turned into Golden Dollars for You." Address nearest office—don't let some one else beat you to the exclusive agency for this wonderful device. Distributors stock everywhere.

AMERICAN DEVICE COMPANY of Delaware

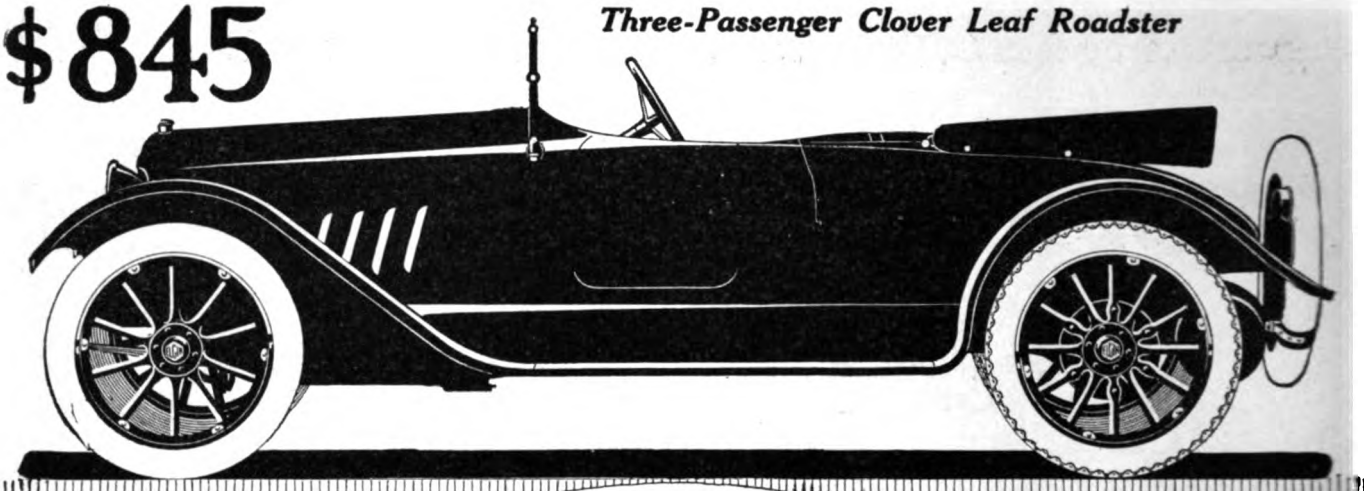
CHICAGO
1124 Michigan Avenue

DENVER
105 First National Bank Bldg.

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$845

Three-Passenger Clover Leaf Roadster



Elgin Economy

You have read in other **Elgin** advertisements of—

Elgin Character and **Elgin Endurance**

That combination of Style, Size, Beauty and general impressiveness that sets the **Elgin Six** apart in a class of its own.

The wonderful performance of the **Elgin Six** in two of the most gruelling reliability contests of the season, seven Elgins in the contests referred to coming through with perfect scores and without a mechanical adjustment. The trips were made over the roughest roads, worst hills and deepest sand in the country

This brings us to a subject close to the heart of every motorist and dealer—

Elgin Economy

The seven cars participating in the trips above referred to, aggregating 825 miles, averaged 25.5 miles to the gallon of gasoline, and over 200 miles to the quart of oil—probably the most remarkable performance ever made by a motor car of any size or price.

Ask us to send you proof and tell you why the **Elgin Six** is today the biggest and quickest money-maker in the world for dealers.

Some desirable territory still open for dependable dealers.

Elgin Motor Car Corporation

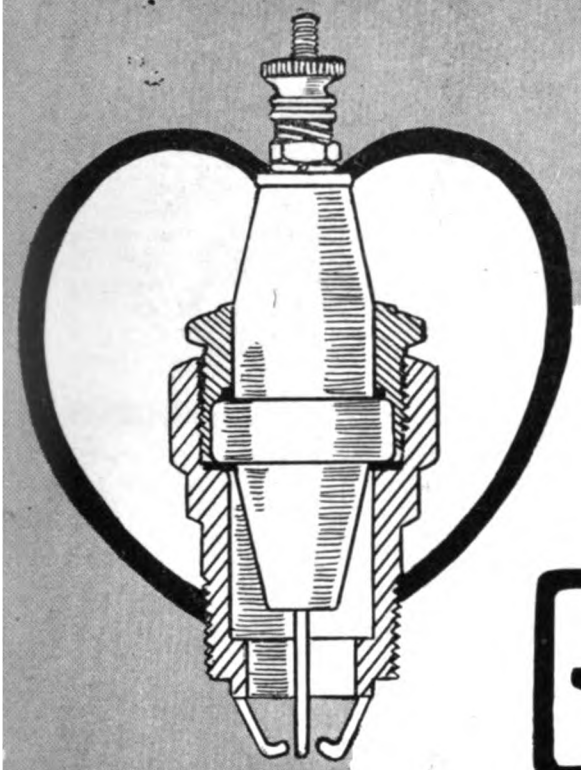
CHICAGO, U. S. A.

Five-Passenger Touring Car .
Three-Passenger Clover Leaf Roadster **$845**

BUILT LIKE A WATCH ELGIN

BUILT LIKE A WATCH ELGIN

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A HEART OF ADAMANT

MODERN engines demand a Plug that will stand the wear and tear of hard service unflinchingly. These motors must have an indestructible Plug — in other words, the

GOLDEN GIANT

Our special **Blue Adamant Insulation** is **one** of the big reasons for Golden Giant quality. It will stand hard knocks, never yielding, and it laughs at the greatest heat that any motor can give it.

Compression upon this insulation has as much effect as the slapping of the waves on the face of the Gibraltar. It doesn't even annoy it.

In order to announce to every man that the only perfect Plug made for any motor is the Golden Giant, we plated this plug with 24-K. Gold—and we back it with the strongest guarantee ever written.

Mr. Dealer, travel the Benford way. It is the way that leads to *bigger* Spark Plug sales, *bigger* Spark Plug profits, and *more satisfied* customers.



BENFORD MFG. CO.
MT. VERNON, N. Y.

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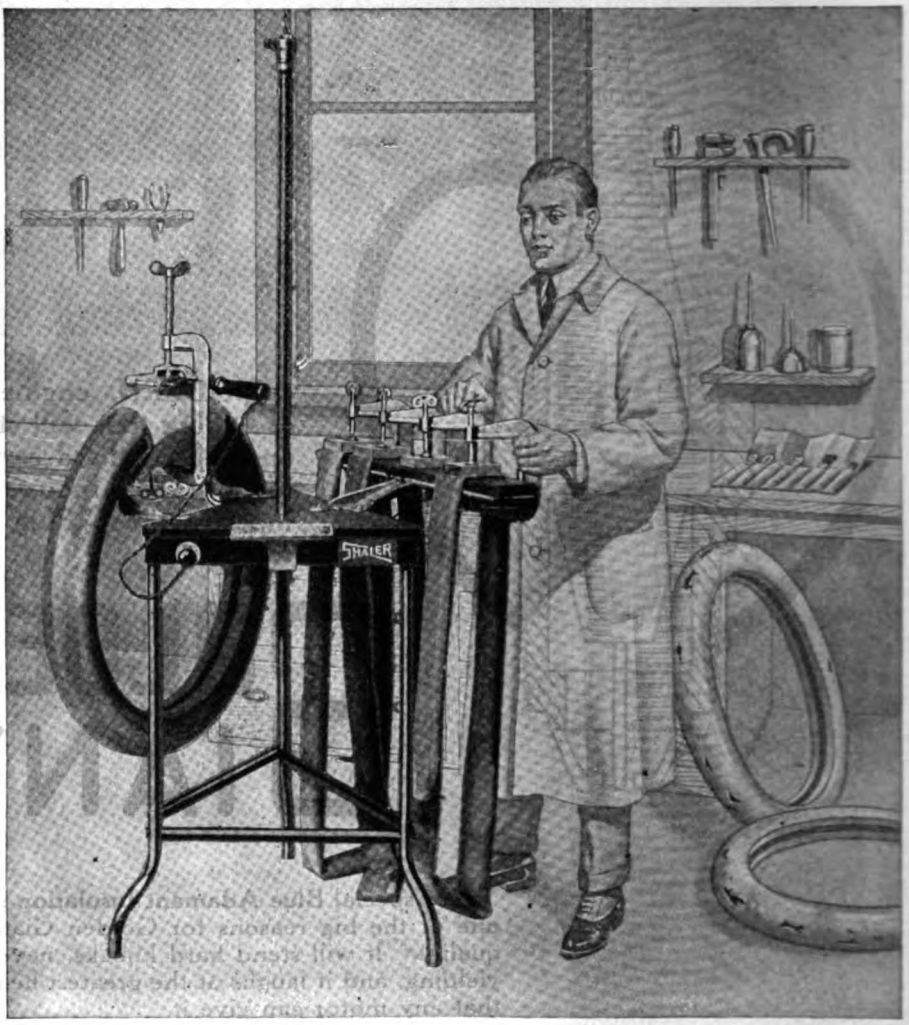
SHALER

Electric

Shop Vulcanizers

$60

Subject to Trade Discount



A Money Maker for Every Garage

Your garage, where every part of the automobile is repaired and cared for, is the logical place to mend tires. Thousands of ambitious garage owners realize it and are increasing their revenue as a result. They utilize the spare time of their help thereby reducing their overhead expense.

Every car you store, repair or adjust means eight prospective tire repair jobs because every car means eight tires per year on the average. These tires need daily attention because they blow out or puncture constantly.

Wrapped Tread Method

This simplifies tire repairing and makes every casing and tube repair perfect and permanent. It is the same method that is used and indorsed by the big tire makers. The Shaler is acknowledged to do better work than the high priced complicated machines.

It is so easy to repair tires the Shaler way that anybody who can clean or wash a car can operate a Shaler the first time and make perfect repairs. It heats from city electric light—uses very little current and requires little bench room.

Automatic Temperature Control

This, together with thermostat attachment, is an exclusive Shaler feature that controls and maintains the temperature of the Vulcanizer exactly at the right point for every type of repair without watching or regulating and without fear of overcuring or undercuring the tire.

Tubes can be repaired simultaneously with casings yet each unit is complete in itself and may be used independently. In casing repairs the Shaler retains the original pattern of any non-skid tread and makes the repair the strongest part of the tire.

Write Today for Complete Catalog

Send at once for the new Shaler Catalog of Shop Vulcanizers and investigate this extra avenue of profit for garages. You'll be surprised how easily and quickly you can add to your revenue. Steam heated vulcanizers furnished if you have no electric current. Mail your letter tonight.

C. A. SHALER CO., 430 Fourth St., Waupun, Wis.

The Largest Manufacturers of Vulcanizers in the World

Canadian Distributors: JOHN MILLEN & SON, Limited, Toronto, Winnipeg, Montreal, Vancouver.

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Different

The newest and most improved type of one-quart extinguisher, readily distinguished by its exclusive two-way method of operation.

The J-M Fire Extinguisher may be discharged by pumping, like other types—or in cramped quarters, where there's no room to pump, by opening nozzle and releasing the air pressure previously created; this discharges contents in a steady, non-pulsating stream, and leaves both hands free to aim.

Liquid is harmless to skin, fabric, or metal, but kills fires quick—whether originating from gasoline, oil, grease, kerosene, or electrical arcs.



SAVES 15% ON AUTO FIRE INSURANCE

The J-M Fire Extinguisher retails for $8.00, brass or nickel finish, bracket included. J-M Fluid, sold in sealed cans, is the only liquid recommended and guaranteed for re-charging J-M Extinguishers.

If your dealer hasn't stocked the J-M, write our nearest Branch.

As a result of the tests made under the direction of the National Board of Fire Underwriters, the J-M Fire Extinguisher has been approved by and bears the label of the Underwriters' Laboratories Incorporated. To motorists this means a 15% reduction on automobile insurance.

TO THE TRADE

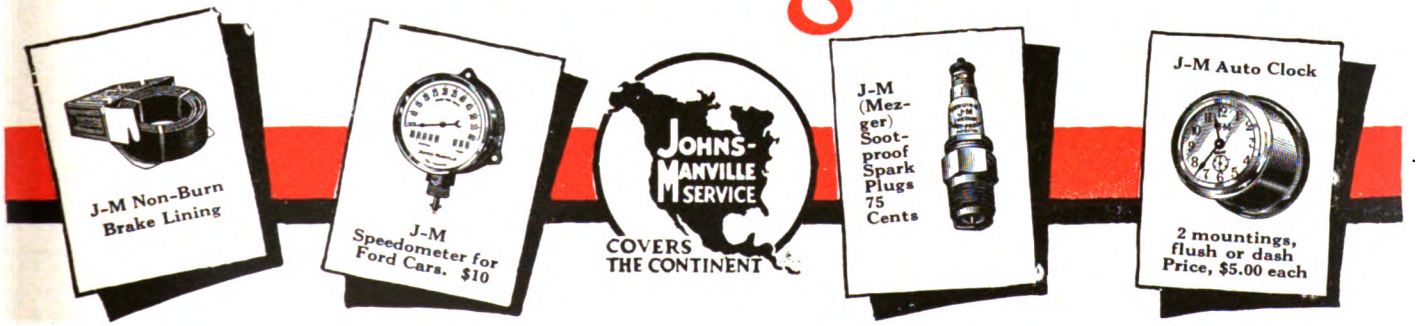
Our trade policy is "different," too, and on a par with the machine. Regardless of the size of your order, discounts are liberal and strictly maintained. Jobbers and dealers everywhere are finding our proposition a profitable one. Why not write for details?

H. W. JOHNS-MANVILLE CO.

Executive Offices: 296 Madison Ave., New York

Boston	New York	St. Louis
Chicago	Philadelphia	San Francisco
Cleveland	Pittsburgh	Seattle
	Toronto	

JOHNS-MANVILLE
Fire Extinguisher



When writing advertisers please mention Motor World

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1 ton $1020
(With Open Express Body)



2 ton $1790
(Chassis Only)



2½ ton $2090
(Chassis Only)

DENBY

TRUCKS

FOR TRAIL OR PAVEMENT

THE wonderful esteem in which the buying public holds the Denby truck is an asset of great value to the Denby Dealer.

This public esteem—based originally on the known successes of the men in the Denby organization—has been intensified by the remarkable performance of the truck itself, under the severest service conditions.

Today the dealer finds no argument necessary to demonstrate Denby quality to his customers. It is admitted; and sales follow the line of least resistance.

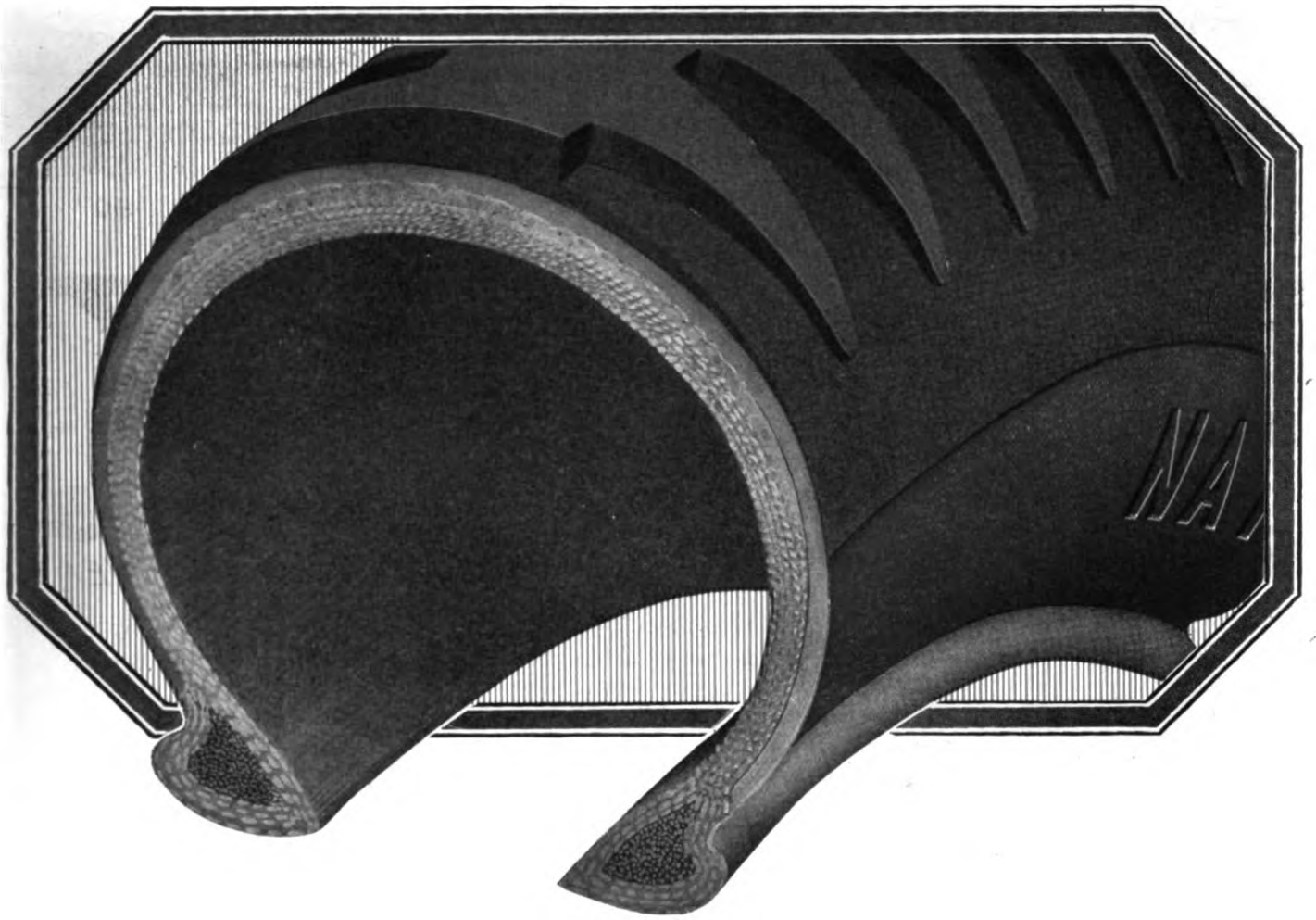
Write us regarding your territory—or we'll be glad to see you at the factory.

DENBY MOTOR TRUCK COMPANY, Dept. F, Detroit, Michigan



1½-ton (Chassis Only) **$1575**

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National REDWALL Speedway Type

Now-a-days you hear a great deal about why this tire or that one is better.

Yet building tires is no different from building most any other commodity that must give service.

The grade of materials used and the grade of workmanship used invariably determine the service to be rendered.

All other selling features shrink into insignificance when looked at from this viewpoint.

"Speedway" Tires deliver more than average mileage and successfully withstand more than average punishment *because they are well made of excellent materials.*

To be sure there are other tires equally well made, but there the comparison ends, for such tires invariably sell for a higher price than *"Speedways."*

This is a strong statement to make. It is paramount to claiming that National REDWALL "Speedway" Tires, in spite of their price, are similar in quality and performance to tires selling for a much higher list.

Yet facts speak for themselves. Performance convincingly bears out the truth of this statement.

At no time since the introduction of this tire have we been able to supply the demand for it.

For it has all the qualifications necessary to meet the demand for tire luxury at a popular price.

It is rich and distinctive in appearance. It outstrips other tires in mileage and all round satisfaction.

It has a new type of *smooth riding* non-skid. This one feature alone is sufficient to distinguish it from all other tires selling at anywhere near the price.

For this new type of *smooth riding* non-skid has many advantages. It is extra thick, like an added or double tread. There are no lumps, nor knobs nor depressions. Inside fabric wear, such as develops in most non-skids, is impossible because of the continuous unbroken contact of the tread with the road.

Yet these are merely extra features, to insure extra satisfaction. We repeat, the big important reason why SPEEDWAY Tires are good is because *"they are made well of excellent materials."*

TO DEALERS

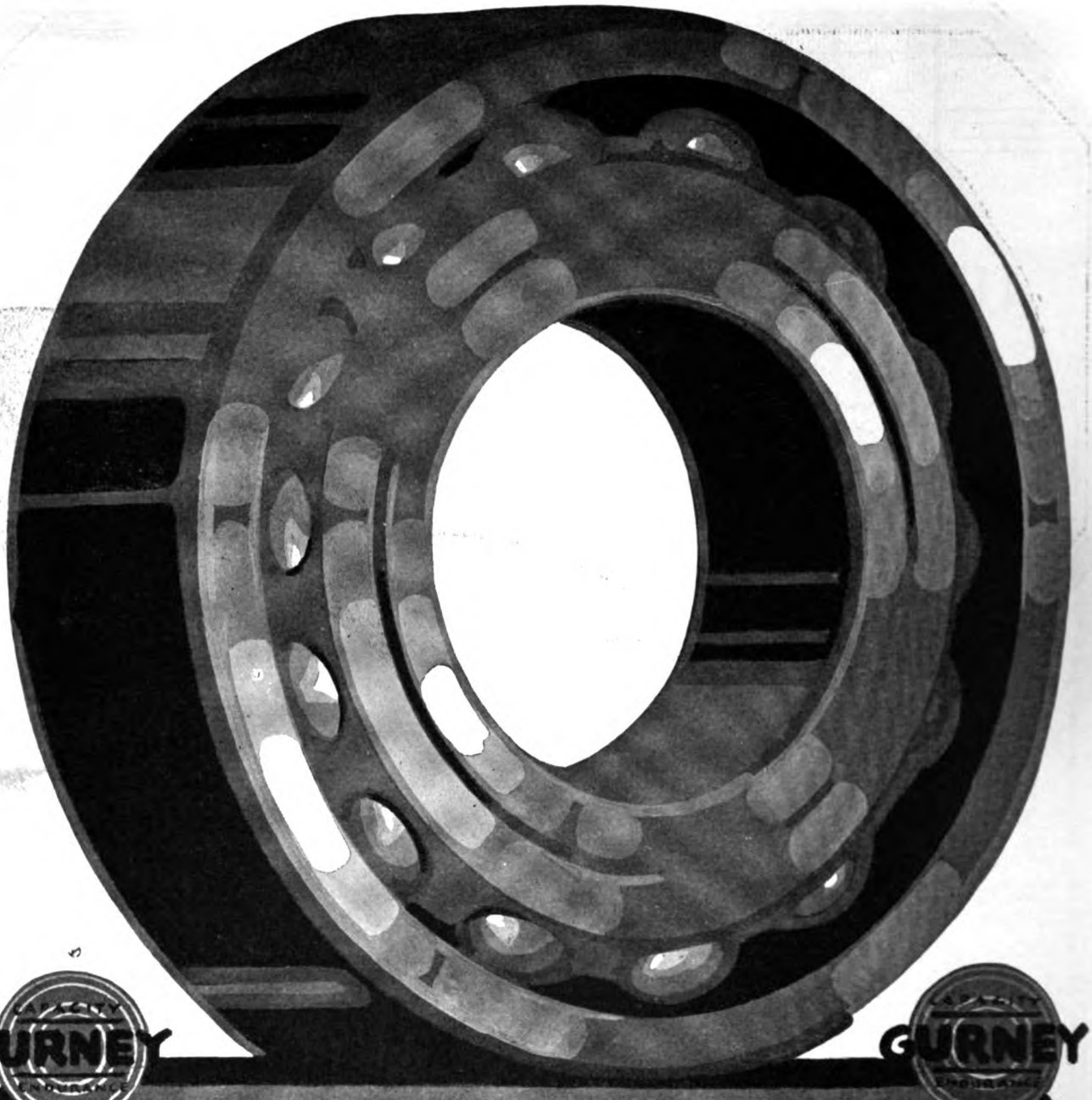
By early Fall our present capacity will be greatly increased.

Dealers and Jobbers who are looking for a high quality tire to sell at a popular price, on an exclusive territorial basis, to be backed by a generous national advertising campaign, should investigate our proposition at once.

More complete details will be forwarded upon application.

NATIONAL RUBBER COMPANY, Pottstown, Penna.

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GURNEY

GURNEY

Unequaled Exactness and Accuracy of Race Contour

It is this feature of Gurney construction that enables Gurney Ball Bearings in actual practice to live up to their great theoretical possibility.

For, no matter how many balls, and of what size, you assemble in your bearing, and no matter how full depth or uninterrupted the raceways may be, the whole unit fails if there is the slightest inaccuracy or inexactness in the contour of the raceway.

By the term "exactness of race contour" we mean the degree of closeness with which the contour of the raceway may approach the contour of the ball. If the contour of the raceway be too great in its relation to the contour of the ball, then capacity is sacrificed, for the ball bears upon the raceway with too little surface.

If the contour of the raceway approach too closely that of the ball, excessive friction offsets the carrying capacity.

There is a happy medium in which contour of raceway and contour of ball so approach each other as to give the minimum of friction with the maximum of capacity. Faithful adherence to this condition of exactness insures both capacity and efficiency in Gurney Ball Bearings.

By the term "accuracy" we mean, of course, the machining and grinding, within size limitations, that approach as nearly to perfection as is humanly possible. Through the use of specially designed machines the Gurney Ball Bearing Company is able to hold these operations to such microscopic limits as are commercially impossible in any other bearing.

GURNEY BALL BEARING COMPANY
Conrad Patent Licensee
Jamestown, New York
Chicago, Ill. New York City

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RAY

TIRE CARRIERS *and* SOCKET WRENCH SETS

DELIVERIES NOW

RAY Socket Wrench Sets and RAY Tire Carriers are ready for delivery now. No delay. No orders to sign weeks in advance. We can take your order now, and DELIVER AT ONCE.

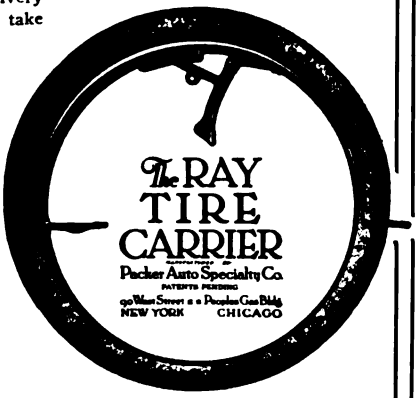
Live jobbers and dealers on the alert for a fast going line cannot afford to overlook RAY Products.
RAY Socket Wrench Sets established the standard of their field. Made in all sizes, from special motorcycle kits to full equipment for the public garage.

Absolutely the only socket wrench sold IN PRESSED STEEL ENAMELED CASES.

The RAY Patent Reversible Ratchet Handle is a unique exclusive feature. Ratchet proper has effective varying lengths of 1½ inches—smaller than any other type. Can be easily used where other handles will not go, without danger of pinching user's hand.



Tire Locked on Carrier



Carrier Contracted to Remove Tire

The famous RAY Tire Carrier and Lock for Ford cars is the fastest selling Ford accessory on the market today. An absolute necessity on every one of the million Ford cars in use. Quick, easy sales assured at prices within the reach of every Ford owner. List price, single, $3.00, double, $4.00.



Set No. 22

$9.00

List Price

Made of best quality pressed steel. Absolutely thief-proof. Attaches to rear of either Ford runabout or touring car. Holds either 30 x 3 or 30 x 3½ tire or demountable rim. Positively prevents tire chafing and affords same protection from mud and water getting inside tire as if on the rim. The lightest tire carrier for Fords made. Guaranteed for the life of the car. Easy to put on, instantly taken off, securely locked. Dealers and Jobbers write.



Set No. 39

$15.00

List Price

Manufactured By

Packer Auto Specialty Co.

NEW YORK CHICAGO

Exclusive Selling Agents

FULTON SALES CO.

KARPEN BLDG. CHICAGO.

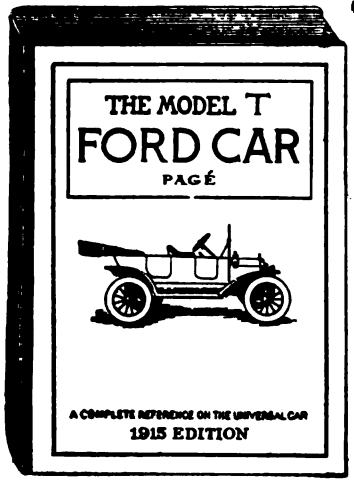


Set No. 11A

$7.50

List Price

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A New, Complete Book for Every Ford Owner, Dealer, Salesman and Repairman

The Model T Ford Car

Its Construction, Operation and Repair

By VICTOR W. PAGE

Member of the Society of Automobile Engineers
Author of "The Modern Gasoline Automobile," etc.

300 (5x7) pages. Over 100 specially made engravings and two large folding plates

Price $1.00

This is the MOST COMPLETE and PRACTICAL instruction book ever published on the FORD CAR. A high grade cloth bound book printed on the best paper, illustrated by specially made drawings and photographs. All parts of the Ford Model T Car are described and illustrated, in a comprehensive manner—nothing is left for the reader to guess at. The construction is fully treated and OPERATING PRINCIPLE MADE CLEAR TO EVERYONE. Complete instructions for driving and repairing are given. Every detail is treated in a non-technical yet thorough manner.

This book is written specially for FORD DRIVERS and OWNERS, by a recognized automobile engineering authority and an expert on the FORD, who has driven and repaired Ford Cars for a number of years. He writes for the average man in a practical way from actual knowledge. All parts of the Ford Model T Car are described. ALL REPAIR PROCESSES ILLUSTRATED AND FULLY EXPLAINED.

Written so all can understand. No theory, no guess work

Authoritative—Unbiased—Instructive—Complete

BOOK DEPARTMENT

CLASS JOURNAL COMPANY

231 West 39th Street New York City

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THE THREE GREATEST RECORDS OF AUTOMOBILE PERFORMANCE

ARE ALL BACKED BY

OAKES FANS



PATHFINDER '12'
HIGH GEAR RECORD
4889 Miles—Coast-to-Coast



MARMON '34'
COAST-TO-COAST RECORD
3476 Miles—5 Days, 18½ Hours



KING '8'
NON-STOP RECORD
10850 Miles Without Stopping Engine

Efficient, Reliable Cooling

Oakes Fans Prove 100% Perfect

Each of the three greatest records of performance ever made by an automobile is backed by the reliable, cooling efficiency of Oakes fans.

The Pathfinder with a twelve-cylinder engine ran 4889 miles from coast to coast in high gear—mounting the stiffest mountain grades of the Rockies—pulling through miles of sand and mud—averaging over 60 miles per hour at the finish. Against such tests as 8 miles of hub-deep sand—in 5 days of temperature above 100 deg.—over desert and mountain in high gear this car used but 24 gallons of water.

The King with an eight-cylinder engine covered 10,850 miles in two weeks, running without stopping the engine, making a world's record for Non-Stop performance.

The Marmon with a six-cylinder engine broke all time records from coast to coast, covering the 3476 miles in 5 days, 18½ hours.

And in every mile—in the face of the hardest tests—on each of these three types of engines—Oakes fans registered 100 per cent perfect. The detailed records of each test show gasoline and oil economy and absolute freedom from overheating.

Backed up by their wonderful service records on hundreds of thousands of cars, using both poppet and slide-valve motors, these new records stand as conclusive proof of the value and efficiency of Oakes fans.

The new Oakes factory, doubled in size within a year, has a capacity of half a million fans annually. Already a big proportion of the best automobile engines are using Oakes fans to guarantee freedom from overheating and save gasoline and oil.

Oakes fans back up the radiators of the best cars in the world.

Submit your engine-heating problems to the Oakes organization. Our experts, guided by years of experience, can successfully solve YOUR problems—put them up to us.

THE OAKES COMPANY

Indianapolis Indiana

Among Others These Makers Use OAKES FANS

Inter-State Motor Co.
Paige Motor Car Co.
Chevrolet Motor Co.
Grant Motor Co.
The Winton Co.
Allen Motor Car Co.
H. A. Lozier Co.
Velie Motor Vehicle Co.
Knox Motors Co.
Dorris Motor Car Co.
Moline Automobile Co.
General Motors Truck Co.
Republic Motor Truck Co.
Continental Motor Mfg. Co.
The Buda Company
Falls Machine Co.
Golden, Belknap & Swartz Co.
Milwaukee Machine Tool Co.
Rutenber Motor Co.
Wisconsin Motor Mfg. Co.
Weidely Motor Co.
The Willys-Overland Co.
National Motor Vehicle Co.
Apperson Bros.
Empire Automobile Co.

OAKES BEARTONE For FORDS



MOTOR DRIVEN
Sounds Thru Radiator

Fan and Horn Combined

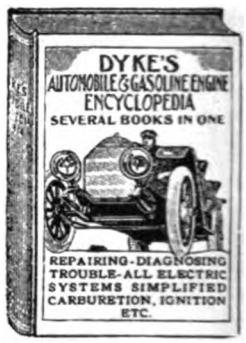
This specially designed Fan cools 50% more efficiently than present Ford Fan. Also embodies the finest horn ever made. Ask for new Introductory Offer

$5

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Mechanical Instruction Books
For the Dealer

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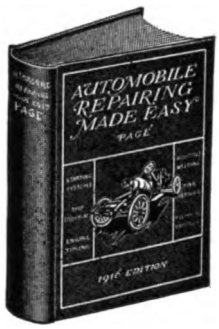
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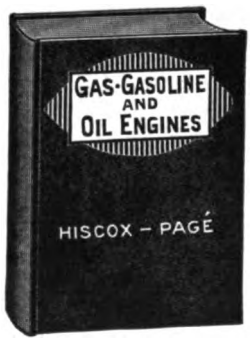


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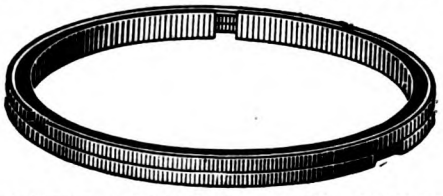
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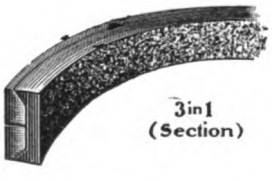
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Aug. 31,

The Motor World Publishing Co.,
239 West 39th St.,
New York City.

Gentlemen:-

We wish at this time to offer just a word of appreciation of the wonderful instructive work you have been doing for the automobile industry through your articles in your magazine the past year in which you have strived to make better business men of the garage men as a whole.

We feel that the entire trade is deeply indebted to you for the campaign you have been carrying out. Not only has the dealer himself been wonderfully benefitted by the suggestions, instructions and guidance you have given, but this in turn reverts to the benefit of the jobber, the manufacturer of accessories and the manufacturer of automobiles. The entire industry in every line accordingly is benefitting by the improvement made in the financial and more business-like condition in which we find the garage man at the present time as compared to his condition several years ago.

We know of numerous instances where the garage men previous to the educational campaign you undertook was living and conducting a business in quarters and under conditions which would hardly be tolerated in the worst slums in this country. No accounting system, no method of keeping track of the merchandise and repair work sold from day to day, walking in the mire and filth up to his knees and today these same merchants are operating places of business which have neat clean show rooms and shop in such a condition of order and cleanliness that they are a pleasure to go into. We know that such improvements are due directly to your wonderful work and want to add our thanks to the thanks of the multitude whom you have benefitted.

We realize the lack of appreciation sometimes in return for efforts such as yours, but we trust that the expressions of appreciation will compel you to continue in your good work and wish you every success and prosperity, and beg to remain,

Yours very truly,
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"Almost every dealer with whom we have taken up this matter (Motor World's Winter Business Number) is convinced that this campaign will increase their business during this dreadful period. To show our appreciation of your efforts we have instructed our salesmen to advise all customers to subscribe to your publication, which we feel will result to our mutual benefit."

The above is from a letter dated Sept. 1st from the Phoenix Auto Supply Co., St. Louis, over the signature of J. F. Shuford, vice president and general manager.

It is one of the many to reach us since the big Winter Business number (to be out Oct. 11th) was announced in last week's issue.

Thousands of business men in the industry will aid Motor World to improve conditions during the forthcoming winter months. They feel that we have inaugurated a big work, and are willing to help by putting their shoulder to the wheel.

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The reproduced letter on the opposite page is evidence of Motor World's standing in the trade it represents.

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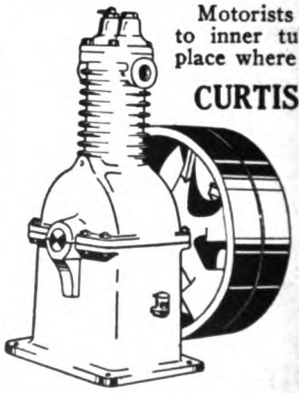
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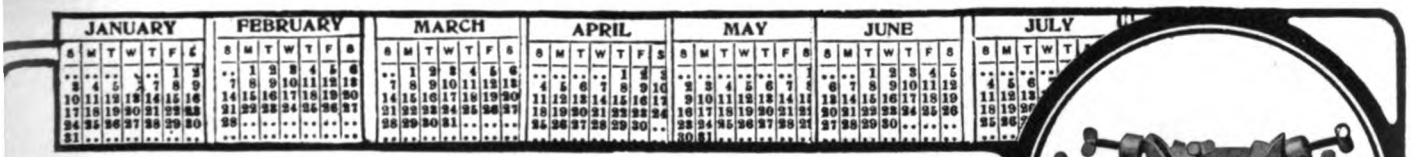
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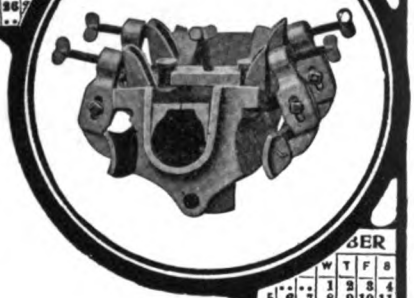
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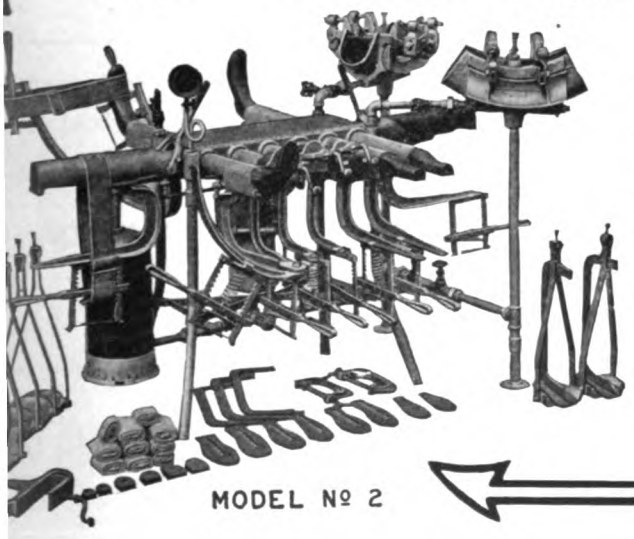


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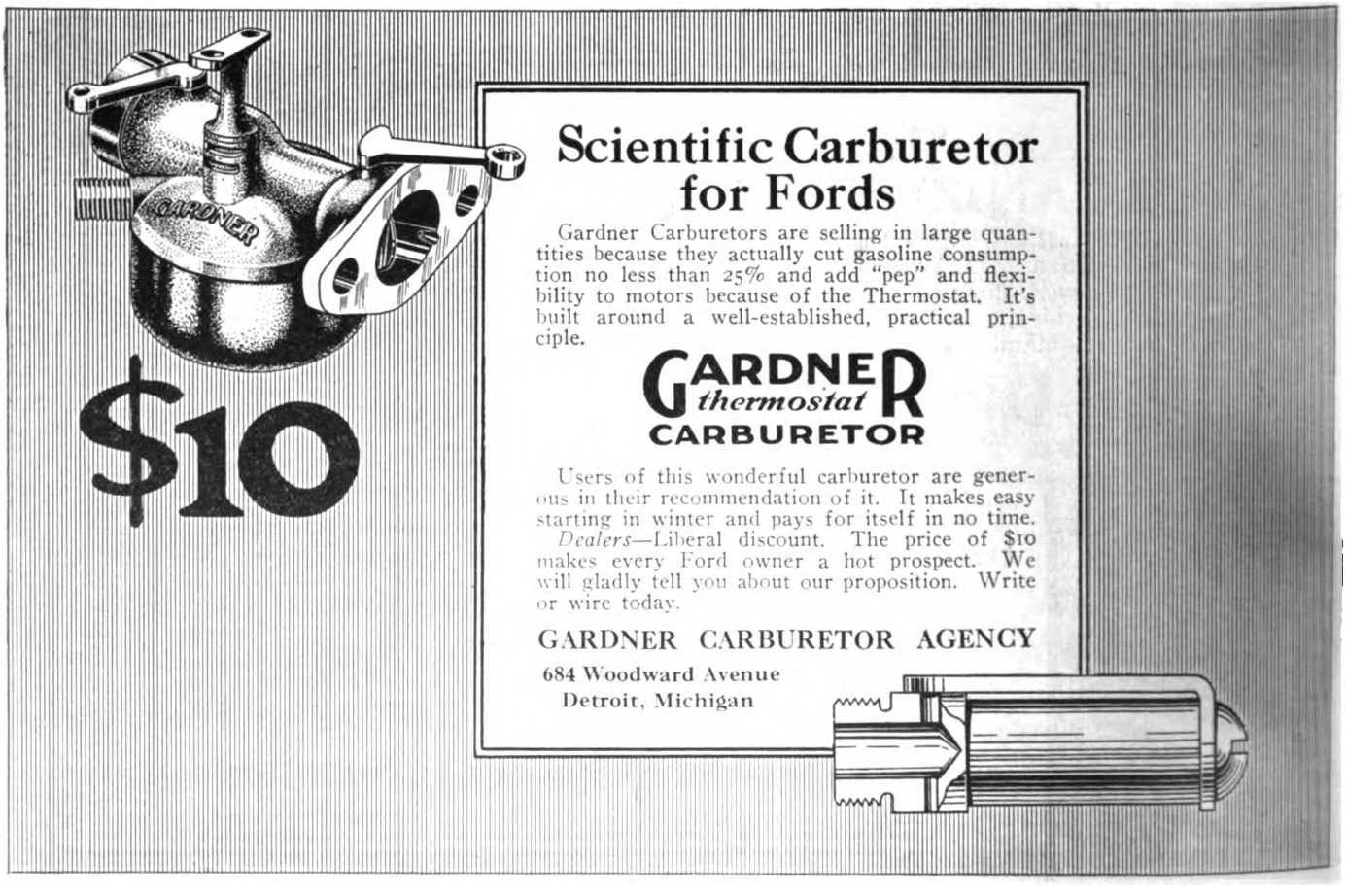
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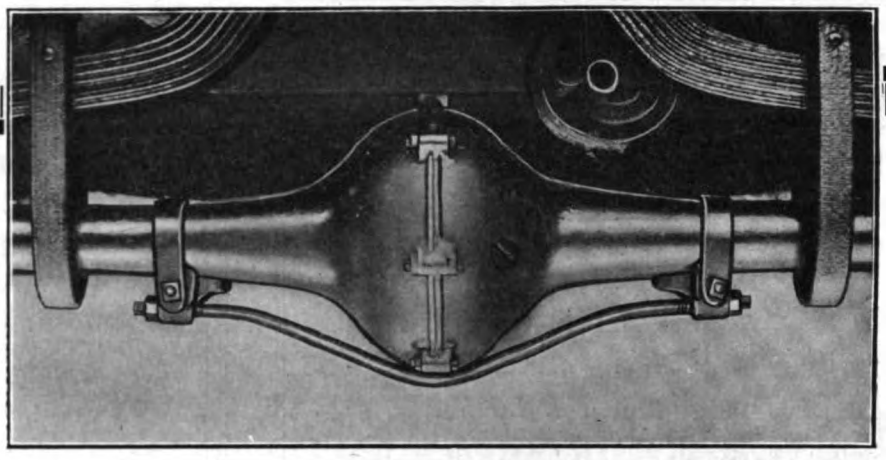
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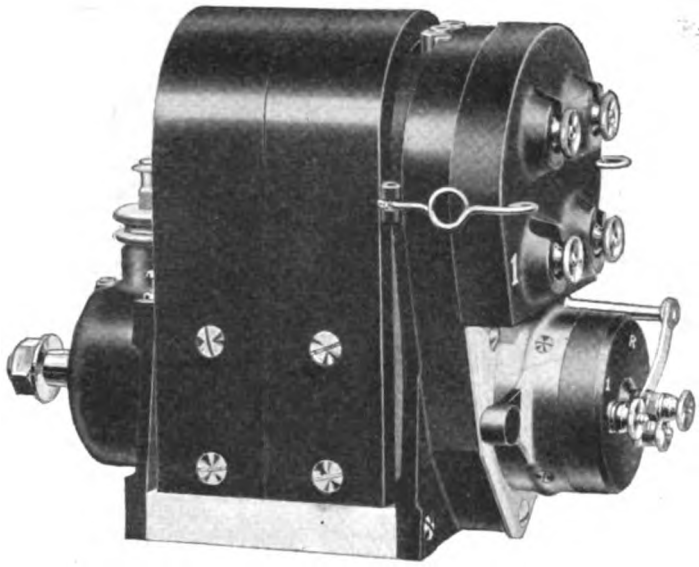


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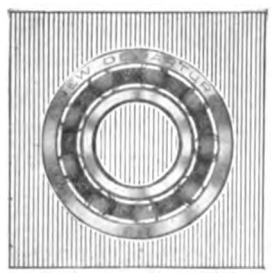
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Can be had on any car, no matter how low-priced. If your car is not fitted with the reliable Bosch Magneto, write us for suggestions.

Be Satisfied *Specify Bosch*

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INVENTED BY G.F. LONG

"Always Warns"

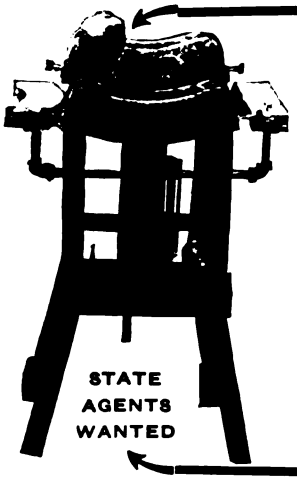
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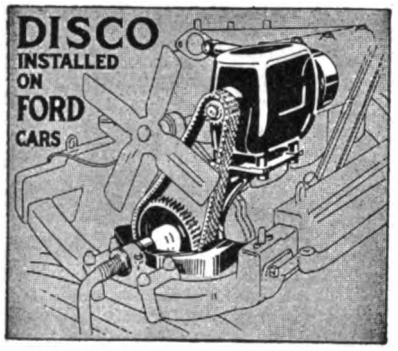
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STARTING AND LIGHTING
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FOR FORD CARS

The Disco operates on a twelve-volt current and is absolutely the most powerful starter made for Ford cars. Single unit system, simple, light, reliable. Mounted on patent yoke bracket, which maintains alignment and prevents chain troubles. The Disco SPINS the motor, insuring a start every time.

$75 Complete

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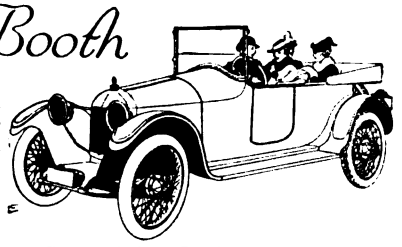


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Gives the most effective spark at every speed for four, six or eight cylinder motors.



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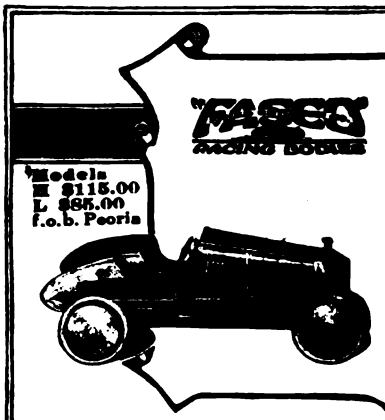


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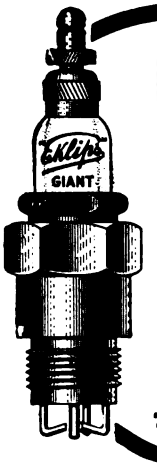
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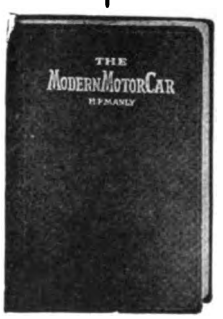
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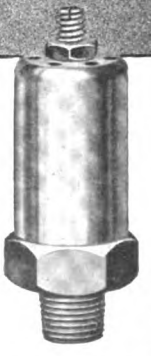
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A precision instrument giving permanently, exact carburetion for your car.

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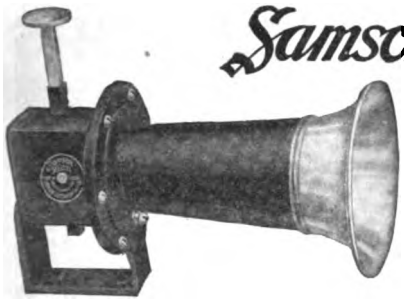
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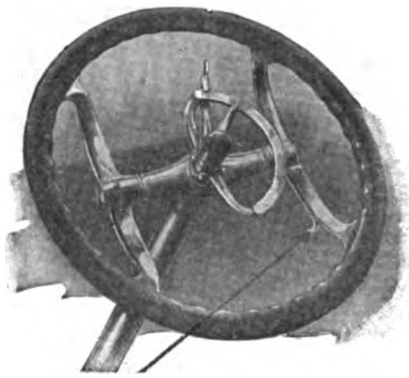
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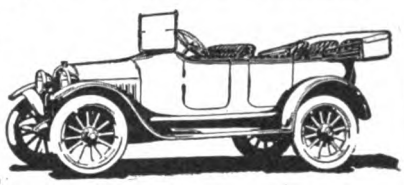
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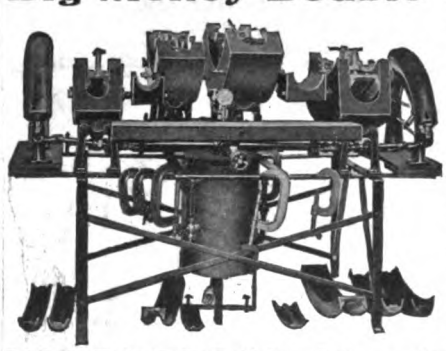
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The Searchlight "De Luxe"

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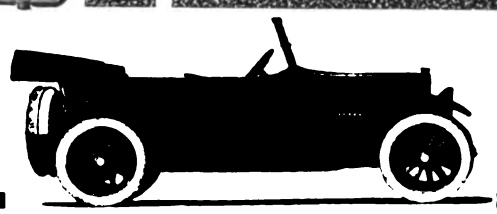
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Specialists on this work. Our facilities guarantee perfect service and prompt delivery. Parts for all magnetos carried in stock.
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31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
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32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
32x4	7.00	1.60	35x5	8.50	2.00
33x4	7.25	1.70	36x5	9.50	2.00
34x4	7.75	1.70	37x5	9.75	2.20

All goods shipped C. O. D. subject to examination, on receipt of 10 per cent of order.

TIRE REPAIR & SUPPLY CO.,
1461 Michigan Ave., Chicago, Ill.

GUARANTEED
HEAVY RED OR GRAY TUBES

Size	Price	Size	Price
30 x 3	$1.50	36 x 4	$2.80
30 x 3½	1.65	35 x 4½	3.40
32 x 3½	1.75	36 x 4½	3.50
34 x 3½	1.80	37 x 4½	3.60
33 x 4	2.50	36 x 5	3.90
34 x 4	2.60	37 x 5	4.00

The above prices are net to dealers. These tubes are fresh stock. Not blemished. Terms: Cash, including postage.

Tough Tread Tire Co., 25 William St., Newark, N. J.

New Double Tread Tires
Sent To You C. O. D.

No money in advance. Made from 2 of your old tires. **Guaranteed for 100 days.** We will furnish one or both tires if desired. Also buy, sell and exchange firsts, seconds, second-hand and double tread tires, and tubes.
World's largest exclusive tire dealers.

AUTO TIRE EXCHANGE

Write nearest branch for price list.
225 Halsey St.....Newark, N. J.
237 E. Jefferson Ave.....Detroit, Mich.
58-60 Temperance St.....Toronto, Can.
1217 Harmon Pl.....Minneapolis, Minn.

NEW DOUBLE TREAD TOPS

DOUBLE TREAD TIRE MAKERS

We build new tops, using 3000-mile tread stock, all sizes, 30x3 to 37x5, and make 48-hour shipments. Send list sizes you need for quotations and cross sections.
Complete line repair stocks. Five-Minute Cure Patch stock and cements.

MIAMI RUBBER CO. Akron, Ohio

A GREAT TIRE AND TUBE SALE
100 Makes—15,000 Tubes and Shoes. New and A1 Stock
AT RIDICULOUSLY LOW PRICES
Saving from 40% to 70% "Cheapest House in the City"
Jandorf Automobile Co.,1764 B'way,New York City

UNIVERSAL TIRES

CARRY STANDARD GUARANTEE
OF 3500 MILES

	Plain	Non-Skid		Plain	Non-Skid
30x3	$6.15	$6.75	35x4	$13.85	$14.85
30x3½	7.95	8.65	36x4	14.10	15.30
32x3½	9.20	9.65	34x4½	17.19	18.75
32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
34x4	13.30	14.25	37x4½	19.45	20.75
			37x5	22.20	23.10

ON ACCOUNT OF LOW PRICES ALL GOODS SHIPPED C. O. D. EXPRESS OR FREIGHT BILL OF LADING TO DRAFT SUBJECT TO EXAMINATION. WE ALLOW 5% DISCOUNT WHEN CHECK OF 10% ACCOMPANIES ORDER.

UNIVERSAL RUBBER COMPANY
15th and Arch Streets Philadelphia

Welding and Welding Apparatus

A BIG GUARANTEE. Trial Bar with full Directions 50c. Don't scrap aluminum parts. Save them with So-Luminum, new great welding compound. Half time and cost of acetylene. No flux—use gasoline torch. Booklet 88. **SO-LUMINUM MFG. CO., 1790 Broadway, New York.** So-Luminum Repair Shops, 126 Nassau St., Brooklyn, N. Y.

ALUMINOID, $2.00 Pound

A special alloy for repairing broken ALUMINUM PARTS. Applied with Gas or Gasoline Blow Torch.

No Pre-Heating, No Warping, No Cracking
STRONGER THAN ORIGINAL CASTING
SAMPLE BAR—½ POUND—$1.00

SUNDERLAND COMPANY
1007-9-11 Douglas Omaha, Neb.

FINISHED WELDING

Our Oxy-Acetylene welded jobs seldom show repairs. Parts machined to original shape and painted.
HOBBIE WELDING PLANT, HAMPTON, IOWA

ATLAS WELDING CO. 46 Elizabeth Ave. RAHWAY, N. J.
Guarantee to repair parts pronounced impossible or spoiled by others. Broken Crankcases, Axles, Pistons, Flywheels, scored or cracked cylinders. Stripped Gears, rebuilt equal to new. Lost pieces supplied. Crankshafts welded, trued to original diameter of bearings.

Advertise in the Clearing House for results.

1916 Catalogue of
AUTOMOBILE SUPPLIES

will be sent upon request to all dealers in Automobiles, Automobile Supplies or Repair Shops or Garages.
Full stock at all times insures service—quality—price. Write at once as prices are advancing.

Chicago Automobile Supply House
1349-53 Michigan Ave. Chicago, Ill.

MATCO
The Best-Selling
TRAILER

Fastest moving line. Prospects in every kind of business. Built to suit the requirements of every customer. Standard motor car construction. Service guaranteed. Price and discounts are right. Write or wire for details today.
The Michigan Auto Trailer Co. 220-224 Twenty-First St., Detroit

LEWIS VALVES Toledo

Ask Lewis about valves

We make valves exclusively—special heat-treated valves that "stand up" in service. Don't take chances. For anything in valves, write

Lewis Electric Welding & Mfg. Co.
TOLEDO, OHIO

BETHLEHEM FIVE POINT SPARK PLUGS

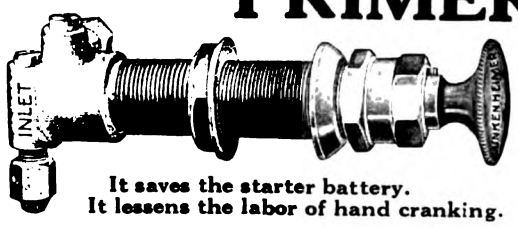
Guaranteed for the Life of the Car

STOCKED BY ALL JOBBERS

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LUNKENHEIMER

Gasoline Engine PRIMER



It saves the starter battery.
It lessens the labor of hand cranking.

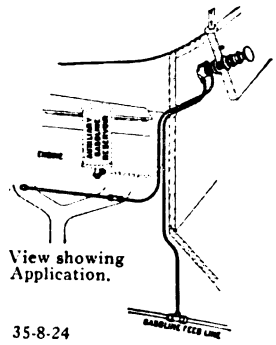
A stroke or two of the plunger forces a gasified charge to points which positively insure its entrance through the intake valves to give a power impulse on the first turnover.

The convenience of this device leads the operator to prime the engine before each start, resulting in a saving of battery energy, or time spent in cranking by hand.

All necessary fittings and tubing for attaching are furnished. No extra parts required.

A profitable accessory for dealers and garagemen.

Write for booklet No. 513.

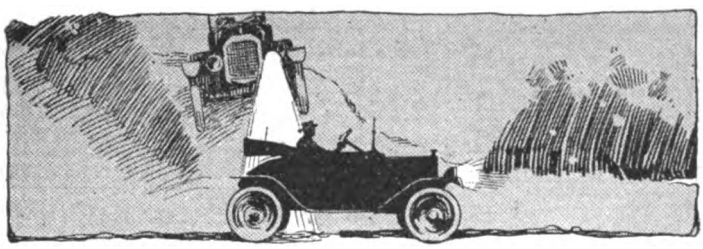


View showing Application.

35-8-24

THE LUNKENHEIMER CO.
"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World
CINCINNATI
New York Chicago Boston London



A Safe, Certain, Bright Light at Slow Speeds for FORDS

The VAN SICKLEN Concentrator assures such a light at slowest engine speed, when you need it most.

At 5 m. p. h., 10 m. p. h. or 15 m. p. h. with a VAN SICKLEN Concentrator you always have sufficient light for every driving purpose. $2.00—the price of the Concentrator—is a very small price to pay for so necessary a convenience.

$2



VAN SICKLEN
AUTOMATIC
HEAD LIGHT CONCENTRATOR
FOR FORD CARS

The VAN SICKLEN Concentrator at all speeds below 15 m.p.h. automatically disconnects the right headlight, shunting double current into the left headlight. At 10 m.p.h., for instance, the left headlight burns as brightly as it ordinarily would at 20 m.p.h. Above 15 m.p.h. the regular Ford 2-lamp system automatically re-asserts itself.

Price, $2.00 complete, ready to put right on. Easily installed. Full instructions with each order. Installed under hood on dash. Guaranteed not to injure magneto or bulb. Neat, compact, handsome.

Obtainable from most good dealers or sent prepaid direct upon receipt of price.

Dealers: Some desirable territory still open. Over 600,000 prospects. 40,000 sold in last two months. Wire or write.

The Van Sicklen Company
15 Chicago Street, Elgin, Illinois



Note Simple Installation

Advertisers' Index

A
Ahlberg Bearing Co. ... 67
Ajax Rubber Company ... 105
Allen Motor Co. ... 48 A-B-C-D
American Device Co. ... 79
American Electric Co. ... 103
Ames Co., F. A. ... 61
Anderson Steam Vulcanizer Co. ... 101
Arthur Vulcanizing Machine Co. ... 95
Auto Pedal Pad Co. ... 105
Automobile, The ... 100

B
Backus Novelty Co. ... 102
Bales Distributing Co. ... 104
Benford Mfg. Co. ... 81
Blake Signal & Mfg. Co. ... 105
Bosch Magneto Co. ... 101
Bower Roller Bearing Co. ... 68
Briscoe Motor Co., Inc. ... 76-77
Brown-Lipe-Chapin Co. ... 104
Brugan Co ... 102
Brummer Mfg. Co. ... 96

C
Caskey-Dupree Mfg. Co. ... 70
Cassidy, E. A. ... 101
Champion Ignition Co. ... 97
Champion Spark Plug Co. ... Front Cover
Chevrolet Motor Co. ... 47
Chicago Auto Supply House ... 111
Chicago Solder Co. ... 98
Combination Rubber Mfg. Co. ... 104
Connecticut Tel. & Elec. Co. ... 101
Corbin-Brown Speedometer Co. ... 2
Curtis Pneumatic Mchy. Co. ... 94
Crew-Levick Co. ... 74

D
Dann Products Co. ... 54-55
Disco Electric Starter Co. ... 101
Dixie Motor Car Co. ... 63
Du Pont Fabrikoid Co. ... 98
Denby Motor Truck Co. ... 84

E
Elgin Motor Car Corp. ... 80
Eisemann Magneto Co. ... 56

F
Fedders Mfg. Co. ... 104
Ferro Electro Air Pump Co. ... 94
Firestone Tire & Rubber Co. ... 103
Fisk Rubber Co. ... 2
Ford Motor Co. ... 103
Foster Accessories Co., C. H. ... 94
Fried & Stonier Co. ... 102
Fulton Company ... 102
Fulton Sales Company ... 87

G
Gardner Carburetor Agency ... 96
Gardner Governor Co. ... 104
General Electric Co. ... 75
Gibson-Hollister Mfg. Co. ... 105
Goodman Auto Body Co. ... 102
Grossman Co., Emil ... 105
Gulf Refining Co. ... 104
Gurney Ball Bearing ... 114

H
Hartford, E. V., Inc. ... 94
Hess-Bright Mfg. Co. ... 78
Hotel Marie Antoinette ... 100
Houk Mfg. Co. ... Third Cover
Hyatt Roller Bearing Co. ... 105
Hoyts Auto Supply ... 97

I
Ideal Hose Clamps ... 105
Inter-State Motor Co. ... 103
International Harvester Co. ... 67

Digitized by Google

Advertisers' Index

J
Jenkins Vulcan Spring Co. 99
Johns-Manville Co. 83

K
Kelly Convertible Truck Co. 95
Kissel Motor Car Co. 105

L
Laird & Lee 102
Leather Tire Goods Co. 69
Lewis Electric Welding Mfg. Co. 111
Liberty Motor Car Co. 48
Lozier Co., H. A. 98
Lumkenheimer Co 112

M
Michigan Auto Trailer Co. 111
Mitchell Motor Co. 53
Moline Automobile Co. 94
Moon Motor Car Co. 59
Mosler & Co., A. R. 103

N
National Rubber Co. 85
New Departure Mfg. Co. 99
New Era Spring & Specialty Co. 105
New Process Gear Corp. 46
N. J. Carspring & Rubber Co. 57
Nordyke & Marmon Co. ..... 49 and 50

O
Oakes Co 89
O-So-Ezy Products Co. 100

P
Pennsylvania Rubber Co. 49-50-51-52
Pittsburgh Electric Spec. Co. 105
Pouvaillsmith Corp 103
Prest-O-Lite Co. ..... 60 and 103

Q
Quaker City Rubber Co. 100

R
Rayford Co 113
Russell Motor Axle Co. 103

S
Scrippa-Booth Co. 101
Shaler Co., C. A. 82
Sheldon Axle & Spring Co. 103
Silvex Co. 111
Sparks-Withington Co. 104
Splitdorf Electrical Co. 100
Standard Thermometer Co. 100
Stevens & Co. 91
Stewart-Warner Speedometer Corp. ..... Second Cover
Studebaker Corp. 114
Sunderman Corp 71
Swinehart Tire & Rubber Co. 101

T
Tay-Miller Mfg. Co. 99
Tiona Oil Co. 72

U
United Engine & Mfg. Co. 113
U. S. Ball Bearing Co. 73
U. S. Light & Heat Corp. ..... Back Cover

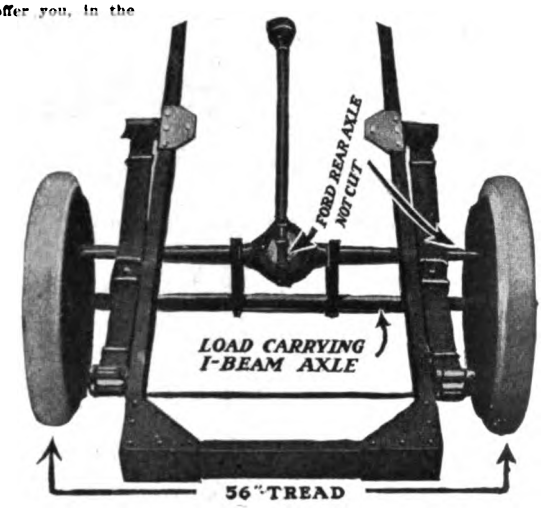
V
Van Cleef Bros. 1
Vanderpool Co. 104
Van Sicklen Co. 112

W
Warner Lenz Co. 62
Waltham Watch Co. 45
Warner Auto Top Co. 101
Willys-Overland Co. 4
Westcott Motor Car Co. 58

Z
Zenith Carbureter Co. 102

EVERY MERCHANT IN YOUR VICINITY IS A LIVE PROSPECT RIGHT NOW

—for the Dealer who is handling a good, dependable, low-priced truck We offer you, in the



Internal Geared Rayford a Ford + $30(

undoubtedly the best value now existing along these lines.

A final drive combining the strength and lightness of the chain with th silent smoothness of the worm.

Every bit of Ford strength and compactness retained, untouched.

Load carried entirely by Rayford I-Beam axle, Ford axle being used as jackshaft to turn the wheels.

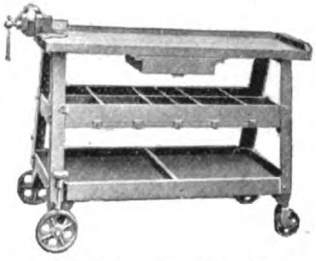
These advantages, combined with the **LOWEST PRICE OF ANY SIMILAR DEVICE**, make this

THE GREATEST SELLING UNIT IN THE TRUCK FIELD TODAY

Write at once for our unusual and extremely generous proposition.

RAYFORD COMPANY,

Palethorp and Indiana Avenues, Philadelphia, Pa



MANLEY "QUICK ACTION" PORTABLE BENCH

Are you moving the big car to your work-bench or are you moving the light, portable Manley bench to your car?

By using this "Quick Action" bench you can finish a job in the time it takes to move the car.

This bench is specially made to hold exactly the tools needed. Wheels can be locked, making bench immovable when using vise. It is just the right size to slip between cars and get anywhere in the place easily, quickly and conveniently. It is invaluable when tearing down a car, to keep all parts together.

A glance at this illustration tells you where the right tools are kept, convenient to the hand at all times.

A convenience no garage should be without, it is sold at a price to justify its purchase for any shop.

Top 13 x 44 inches. Height, 33 inches.
Bottom Width 22 inches.
Price, $27.50; with vise, $31.50

The United Engine & Mfg. Co.

"Pioneers in Garage Equipment"

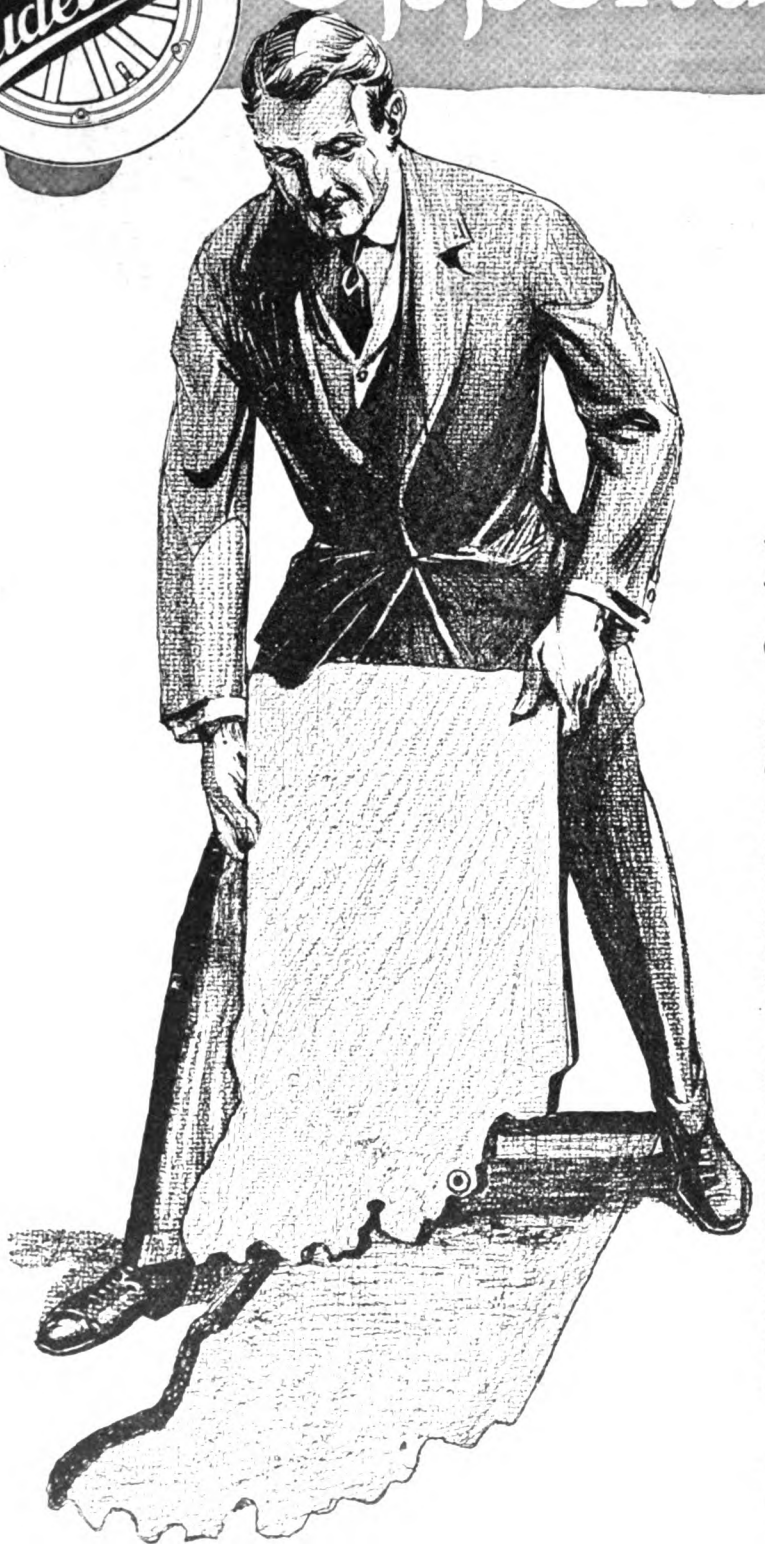
Hanover, Penn.

THE Manley SHOP AND GARAGE EQUIPMENT

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Studebaker

Opportunities



Read about this one in Indiana

A city located on the Ohio River opposite Louisville, Ky., with a population close on to 11,000.

Three big railroads run through the place which is noted for its ship and car building industries closely followed by the production of oils, trunks and lighter grade of lumber. A government supply station is also maintained at this point giving employment to many in the production of clothing and army equipment.

In spite of its prominent location this city has never yet been the objective point for a vigorous campaign of selling on behalf of the Studebaker line of motor cars. With the exceptional values offered in the Studebaker line contrasted as they are by prices that are remarkable to say the least, this opportunity bids fair to become one of the most lucrative in the middle west to the man who will take advantage of the cooperation that Studebaker has to offer.

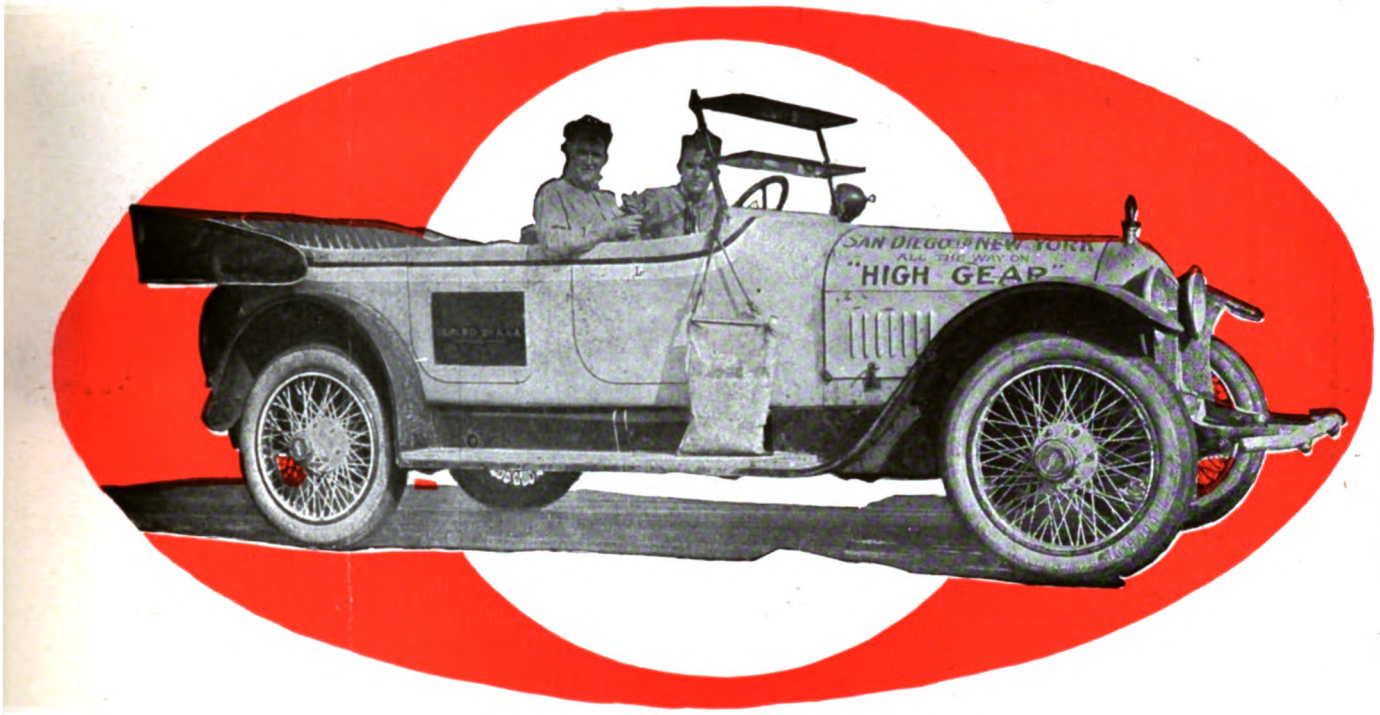
Write for the facts.

STUDEBAKER

Detroit, Mich.
South Bend, Ind. Walkerville, Ont.

Address all correspondence to Detroit

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DURING this high gear test you are aware of the fact, of course, that we used Houk wheels and that the equipment consisted of 5 wheels. However, it was not necessary for us to use a spare wheel at any time. The tire changes which we made were not made by using the extra wheel—we always changed tubes. The Stamina of these wheels was demonstrated by the manner in which we were forced to hit the bad places and hills in order to negotiate all the mountains on high gear.

HOUK
QUICK CHANGE
WIRE WHEELS

After having the car washed in New York, from the condition and appearance of the wheels one would never know but what they were new. Any further particulars of this trip I will gladly furnish you upon request at the Pathfinder Company of Indianapolis, Indiana.

Yours very truly,

(signed) W. A. Weidely.

Sworn to before me, August 3rd, 1916,
CHARLES NETTER,
Notary Public, N. Y. County, N. Y.



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USL

US LIGHT & HEAT CORPORATION



DURING the past year the demand for the USL Machine Pasted Plate Batteries increased so much that for several weeks during the early summer we were unable to fill all orders promptly.

We have, consequently, so increased our factory facilities by the addition of new machinery and additional floor space that we are now making prompt deliveries of Machine Pasted Plate Batteries in any quantity.

As we have closed large new contracts with automobile manufacturers and lighting and starting systems for their 1916-1917 productions, far seeing dealers will be quick to realize the profit-making possibilities of the U S L service station agency.

Correspondence with reliable dealers solicited

U S Light and Heat Corporation

Niagara Falls, N. Y.

Branches in
Boston Buffalo Cleveland Detroit
Chicago St. Louis Kansas City
San Francisco Washington, D.C.

Service stations in principal centers

15 Months Guaranteed Adjustment Plan

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 11

New York, September 13, 1916

Ten cents a copy
Two dollars a year

HUDSON SUPER SIX

Are You Running A Circus Lemonade Stand?

Some automobile men have had that kind of business this year.

They have had a rushing, profitable business, limited only by the number of cars they could get.

The public has been thirsting for cars and, like the circus crowd, have gone to whatever stand that could give them the earliest delivery.

They haven't been very particular about the kind of a car they were to get.

But the lemonade stand at the circus ground went out of business when the circus moved away. Some automobile dealers will be like the lemonade stand and will also disappear when the keen buying season is over.

The permanent automobile dealer is he who has a real organization, who is operating his business on the basis of tomorrow and next year. And of course to do this he must have a car for which there is a standard demand.

The Hudson Super-Six is a car of that type.

HUDSON SUPER SIX

HUDSON MOTOR CAR COMPANY
DETROIT, MICHIGAN

If you are of the other kind perhaps sometime our acquaintance may be of mutual advantage. We do not advertise for dealers to make up the Hudson organization. We are too particular in our choice to rely upon such a manner of recruiting the kind of men we want in this organization. But we do want to meet real automobile merchants. We have no place for the circus-refreshment kind.

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Watch the 1917 Automobile Announcements

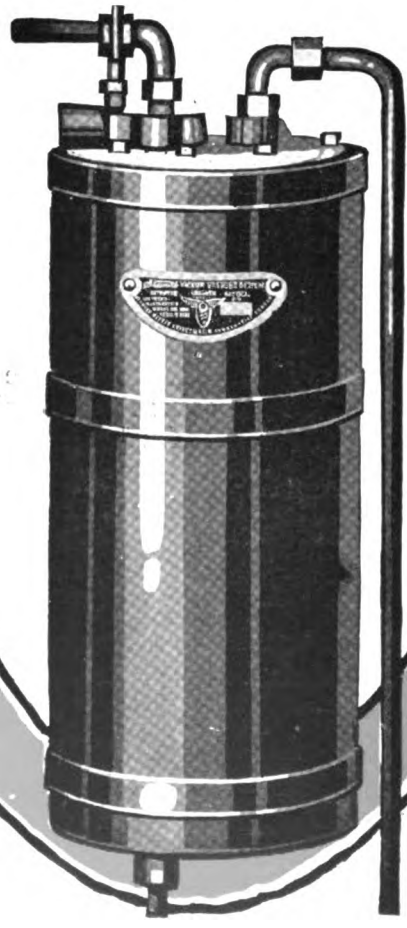
See the long list of automobile manufacturers who have adopted as standard equipment and are featuring the Stewart Vacuum System.

We believe that in a very short time, every automobile will leave the factory equipped with the Stewart Vacuum System.

"It will pay you to see that the car you buy is equipped with Stewart Products"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

Stewart
Vacuum System



$10

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Why I Am a Studebaker Dealer

In five years experience as a distributor I have been forced by one condition or another to change lines three times during that period.

Realizing the importance of selecting a connection that would be permanent, I began a careful comparison of various cars. After several weeks of thorough investigation I decided upon Studebaker—because, with their experience and unexcelled manufacturing facilities coupled with their vast financial resources, I was convinced that the Studebaker Corporation is in position to produce a car, not only of matchless value, but at a price that would make a competitor bite his tongue when Studebaker was mentioned.

I am proud to say since handling your product eleven months, I have not had one single cause for regret.

Capital City Auto Co., Inc.
New Orleans, La.

by

Fred Perkins

President

Studebaker

THE experience of Mr. Perkins and his associates is by no means unusual. Oftentimes, of course, this shifting about from one make of motor car to another is nothing more than short-sightedness on the part of some dealers; but there will always be exceptions and the Capital City Auto Co., Inc., seems to be one of them.

Likewise there are other members of the Studebaker dealer organization who came into the ranks with anything but pleasant recollections of former business connections, but under the influence of the Studebaker policies of service and co-operation have not only increased their profits materially but their efficiency and enthusiasm as well.

And what we have done for these men, we can do for you too—that is if you are interested in Studebaker cars and profits present in their sale.

STUDEBAKER

Detroit, Mich.

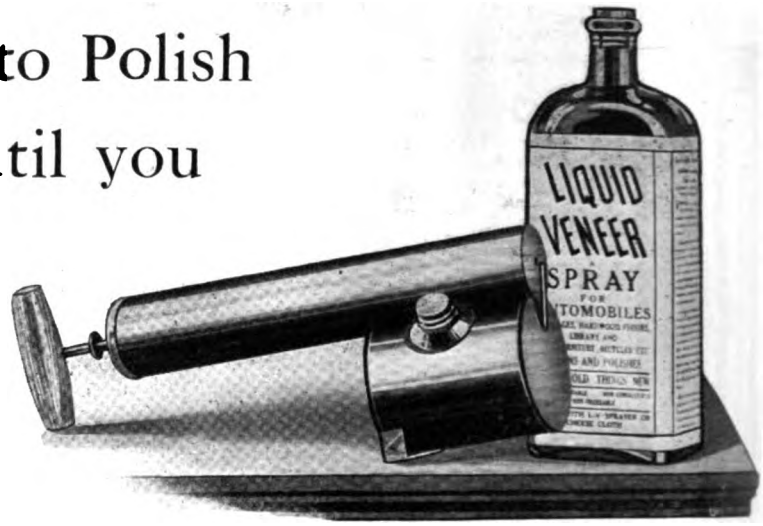
South Bend, Ind. **Walkerville, Ont.**

Address all correspondence to Detroit

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DEALERS, STOP!

Don't Stock any Auto Polish or So-called Mist until you have considered *The Leader of Them All—*



AUTO LIQUID VENEER

The SPRAY Your Customers Will Demand

In choosing a polishing preparation to offer your customers, pick out from the confusing number of preparations now on the market *the leader,* the polish which you know will be the *big seller,* manufactured by the biggest, best known and most reliable polish concern in the world.

Here are the reasons why Auto Liquid Veneer is the leader and why you will sell *ten times* as much of this product as you will of any other on the market.



1. It is now and for years has been used by millions of Americans for cleaning and polishing the finest surfaces, *including automobiles.*

2. It is nationally advertised and is the best selling polish on the market.

3. Now, especially prepared as a spray for automobiles, it is without question the most wonderful polish and cleaner the world has ever known.

4. The Liquid Veneer Spray treatment saves washing, dissolves dust and dirt, removes road tar, preserves the beautiful glossy finish, leaves no oily film to catch the dust, and imparts a brilliant, spotless lustre—*all this in five minutes' time at a cost of less than 5 cents.*

5. It will be most extensively advertised to the 3,000,000 motor car owners in this country, all of whom *already* have confidence in Liquid Veneer, and who will want nothing but Liquid Veneer!

6. It will pay you a good big profit, and will turn over more rapidly than any other preparation.

Get started right. Hook up with the leader. Liquid Veneer will be selling when all the rest are down and out. Send the coupon below for full particulars.

The Automobile Liquid Veneer Outfit consists of one $1.00 quart bottle of Auto Liquid Veneer and a 50c. brass finished L-V Sprayer, packed in a handsome display carton, to retail at $1.25.

Buffalo Specialty Company

Buffalo, N. Y. U. S. A. — **Bridgeburg, Ont. Canada**

Buffalo Specialty Company,
Buffalo, N. Y.

Send me full particulars about Automobile Liquid Veneer, specially prepared as a spray for automobiles.

Name .....

Address. .....

State kind of business.....

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

Sell Advertised Goods.....5-6-7
The dealer should not attempt to build his business upon the unsecure foundation of non-advertised merchandise. This story is part of a campaign in Motor World to show why advertised goods are the best business builders.

Hartford Dealers Have State Fair Show.....8-9
Central Connecticut merchandisers find the State Fair an excellent opportunity to give their cars publicity.

Milwaukee's State Fair Show On..... 39
The event is conducted on an elaborate scale and rivals the exhibitions staged during the Winter.

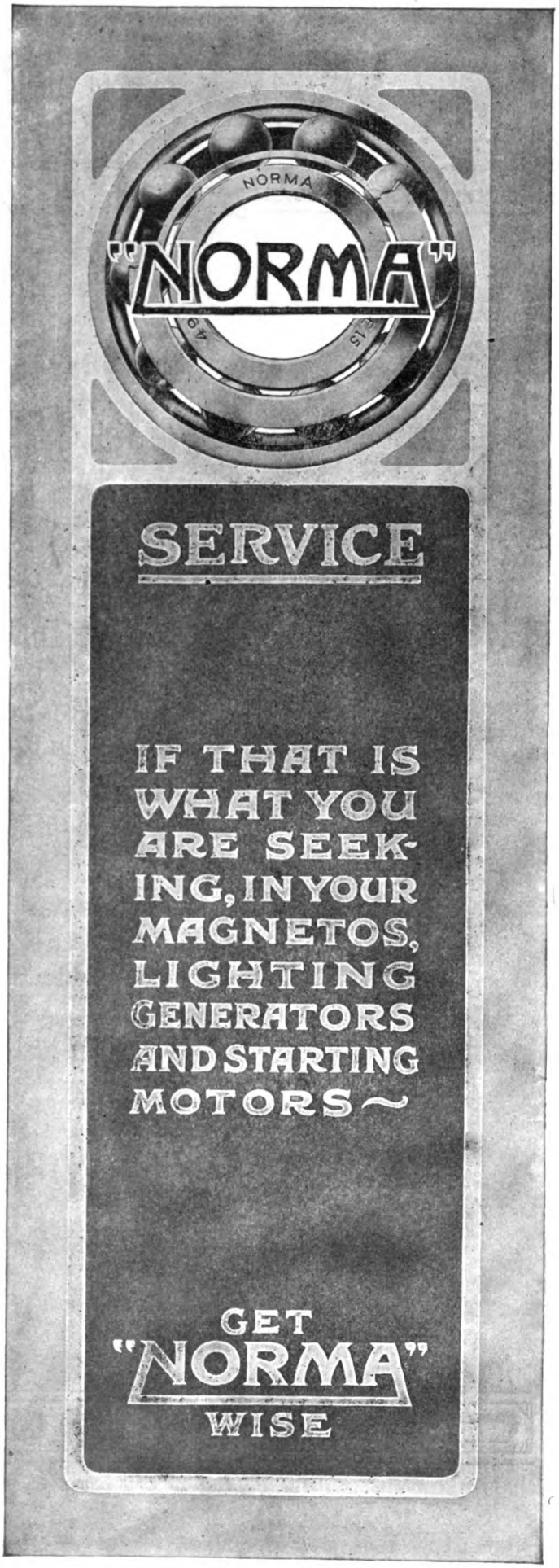
What Good Is Milwaukee's Boosting Tour?..10-11
An analysis of the results that are secured in the tour of Wisconsin boosting the state fair and motor car show.

Dealers Who Have Made Good..... 13
The fourth in a series. This week it is Charles W. Price, Chicago.

New Cars:
Paterson 14-15
Inter-State 16-17
Mitchell 33
Westcott 33
Jackson roadster 17

Klaxon Bought by United Motors..... 41
Three Thousand Overlands Next Year..... 41
Motor Products Buys Lozier Plant..... 43
H. A. L. Revamps Plans..... 43
Aitken Wins at Indianapolis..... 42
Birthday Party for "3400 R.P.M."..... 40
Is the Motor World System Too Simple?..18-21
Building Department 22-23
Repairshop Short-Cuts 24-25
Accessories and Supplies.....26-27
Editorial Comment 28
Readers' Opinions 29
Retail News 30-32
Query Department 34

Advertisers' Index on pages 104-105



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Overland Business Shows a Fourfold Increase in Grand Rapids, Michigan

300 Overlands were shipped to our Grand Rapids dealer in 1912.

1260 Overland and Willys-Knight cars were sent to that territory during the past year.

And dealers in other territory—in all parts of the country—are reporting just as wonderful gains.

Overland dealers are making money.

"Made in U. S. A."

The Willys-Overland Co.

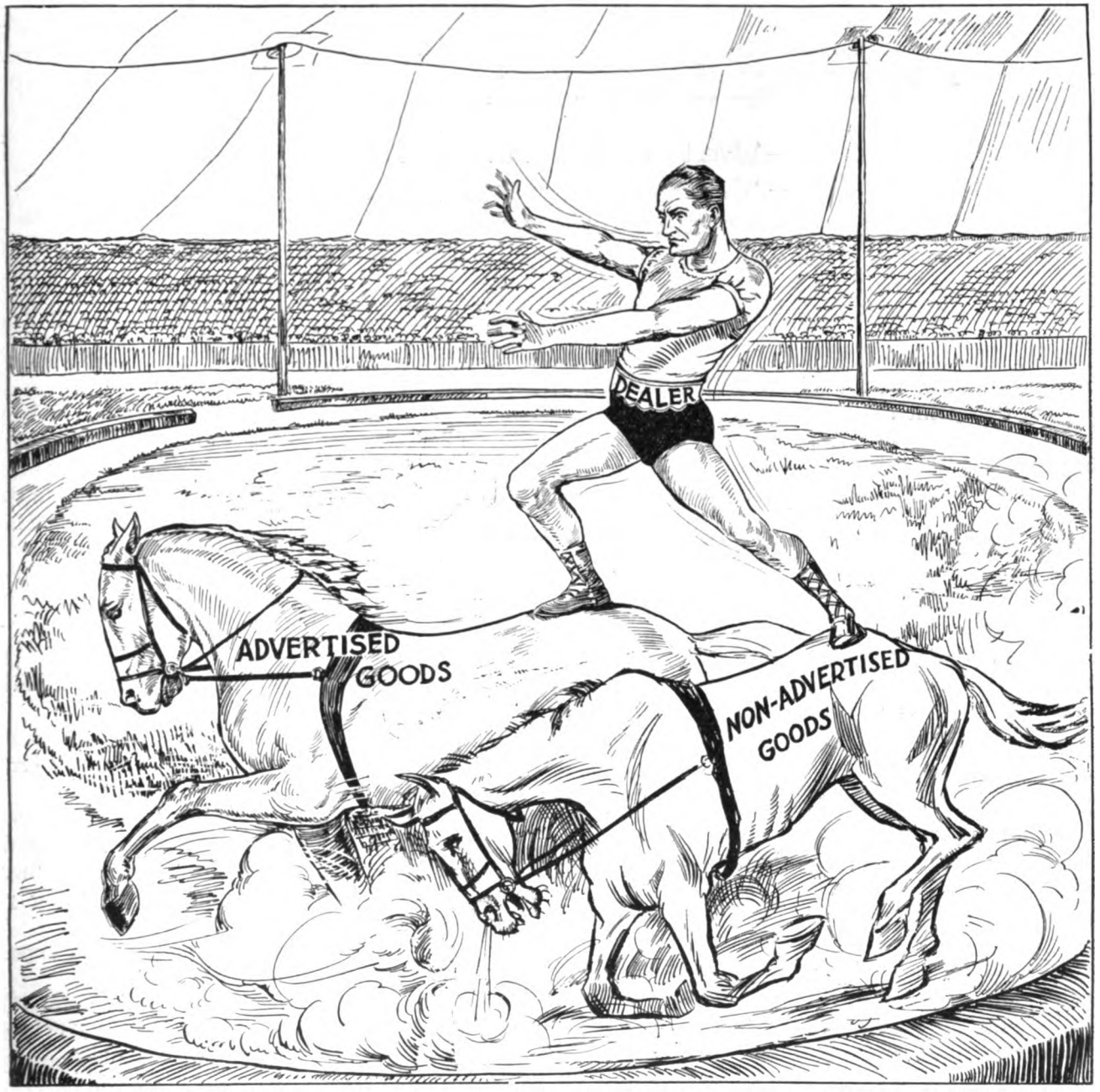
Toledo, Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

ol. XLVIII New York, U. S. A., Wednesday, September 13, 1916 No. 11

Taking Chances



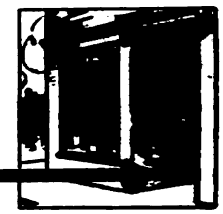
The rider to make a successful performance must have two good horses. One that is unsafe risks the driver's neck. Advertised Goods are a safe business horse. The Non-Advertised Goods may go all right for a while, but—

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The Straight-Line Business Way

ADVERTISED GOODS



SELL ADVERTISED GOODS

Here are the Four Principal Reasons

1—Advertised Goods Are Easier To Sell
2—Advertised Goods Bring Bigger Profits
3—Advertised Goods Stay Sold
4—Advertised Goods Are Guaranteed

A STRAIGHT line is the shortest distance between two points.

Advertising is the straight line of business. It is the force that makes the buyer go in a straight line to your shop and to the advertised goods in your shop.

Advertising is more: It is the suggestion that starts the buyer's mind working. It starts his mind working in a straight line that leads to the advertised goods in your shop.

The buyer is thinking of some advertised article on your shelves before he enters your door.

That is why it is easier to sell advertised goods.

1. Easier to Sell Advertised Goods

THE manufacturer of an advertised article has done all the preliminary sales work. He has put his product before millions of prospects in its best light. He has illustrated it. He has described it. He has told what it will do. He has kept it in the limelight. He has put its name in the buyer's mouth. He has made the buyer think of it, want it, demand it.

A person must know of a thing, think about it before he can want it.

Advertising makes the prospect know about a product. It is his introduction to the product. It is the suggestion that makes his mind start working in the straight line that leads to your door.

When you want chewing gum the chances are ten to one that you ask for "Spearmint." Why? Because you know about it. You are thinking "Spearmint," not chewing gum, when you enter the store. It is an advertised product. The manufacturer has introduced it to you and kept it everlastingly in front of you. You simply can't help saying "Spearmint" to the clerk when you want chewing gum. "Spearmint" has become YOUR name for chewing gum.

It is easy for the clerk to sell "Spearmint."

And so it is with spark plugs, horns, the hundred and one other devices on your shelves.

The buyer is thinking of one particular brand before he enters your store. He has seen that brand advertised.

Analyze your sales: When a prospect comes in and wants spark plugs he asks for them by name. He does not simply say, "Give me four spark plugs," and leave it up to you to hand him anything you like.

He asks for an *advertised* brand and he expects you to have it in stock for him.

If you have that brand, it is already more than half sold. The buyer knows about it. You don't have to introduce it to him, tell him all about it—sell it to him. He's sold before he comes in.

Suppose you haven't got the plugs he wants. You try to sell him something else—perhaps something "just as good."

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Immediately there arises a conflict of ideas and thoughts in the buyer's mind. Unconsciously he becomes antagonistic. He feels like fighting for what he wants. This makes it doubly hard for you to sell the unadvertised, unknown product.

Take the easiest path—sell advertised goods—the straight-line way.

2. *Advertised Goods Mean Bigger Profits*

BIGGER profits follow bigger sales. The rate of turnover is what determines profit. *Because it is easier to sell advertised goods, you sell more of them.* The margin of profit on each article may be a little smaller, but the number of sales is much greater.

"How many packages of A. B. C. Wheatlet will you sell to-day at 10 cents a package?" asked a grocery salesman recently of a retail grocer. He mentioned a well-known, advertised brand.

"About a dozen," the grocer replied.

"And what does it cost you?"

"Eight cents."

"Now, how many packages of D. E. Wheat will you sell in the same time?" continued the salesman, mentioning an unadvertised, almost unknown brand.

"Perhaps half a dozen."

"What does that cost you?"

"Seven cents."

"All right—twelve times 2 cents, the profit on A. B. C. Wheatlet, is 24 cents. And six times 3 cents is 18 cents."

"There's more money in advertised goods, isn't there?" asked the salesman.

The salesman hit the nail squarely on the head. This grocer, any grocer, will sell more advertised goods than he will unadvertised goods, and sell them easier.

But the extra penny a package he makes on the unadvertised goods has blinded him. He forgets, overlooks, perhaps never thought of TURN-OVER.

So in the motor car trade: A cheap, unknown, unadvertised spark plug may cost you less. But think this way:

"How many do I sell?

"How hard, how long, must I work to sell one?

"In selling one am I not undoing all the work that has been done for me by the makers of advertised plugs?

"With the same effort I could sell three or four sets or half a dozen sets of KNOWN, ADVERTISED BRANDS."

3. *Advertised Goods Stay Sold*

CONSIDER a cheap, unknown, unadvertised body polish. You buy it on the salesman's say-so—not because it has a national reputation and is in demand.

But will your customers buy it from you on your say-so?

They have never heard of it. It has no regular brand or name—just so-and-so's polish.

Now, when your customer comes in and asks for a regular, advertised, known brand, and you try to sell him the unknown brand, you will have to do all the work of:

(a) Introducing it.

(b) Telling what it is for.

(c) Telling why it is better than half a dozen advertised, known brands.

(d) Selling it.

And then it probably won't stay sold. This cheap body polish may catch dust after all—it may even ruin the finish.

The advertised brands do or don't do what the advertisements say.

The manufacturers stand back of them. They are responsible. They can afford to be responsible.

The unadvertised product is an orphan. No one is responsible for it—except the dealer.

If the purchaser is dissatisfied and demands his money back, who is the goat?

The dealer.

The advertised product is right before it is advertised. It stays right because it is made right. It stays sold because it stays right and does what the advertisements say it will do. No comebacks.

But if it should come back? you say. Why then the manufacturer is right there to make good.

4. *Advertised Goods Are Guaranteed*

UNADVERTISED goods are cheap, poorly made, shoddy. The manufacturer rushes them on the market to meet a demand created by a legitimate, well-made, well-advertised product. But generally he carefully neglects to put his name on them.

He can't afford to stand behind them because he has shaved his selling price to you too close to his production cost as an inducement to you to buy. He does not have to stand behind them because his name is not on them—the product is not advertised. He has nothing to lose. He has made his sale to you. The rest is up to you.

The manufacturer of these cheap, unadvertised, shoddy goods can't afford to make good when his cheaply made, cheaply put together product falls down in ordinary service. That is up to the dealer—provided he values his reputation for fair dealing.

The dealer's reputation is built on the merchandise he sells. If the manufacturer can't or won't make good, the dealer must.

THE DEALER'S SALVATION IS ADVERTISED GOODS.

NEXT WEEK

Watch Motor World for something that vitally affects you in your relation to

ADVERTISED GOODS

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J. C. SHEEHAN, Hartford M. C. Co. (Dodge)



W. J. RANKIN, Hartford Auto Parts Co.

G. M. WELLS, Overland & Hartford Co.

W. G. WOODWORTH, Hartford Buick Co.



L. C. HILLER, (Reo)

S. R. TABER, (Reo)

E. V. MILLER, (Reo)

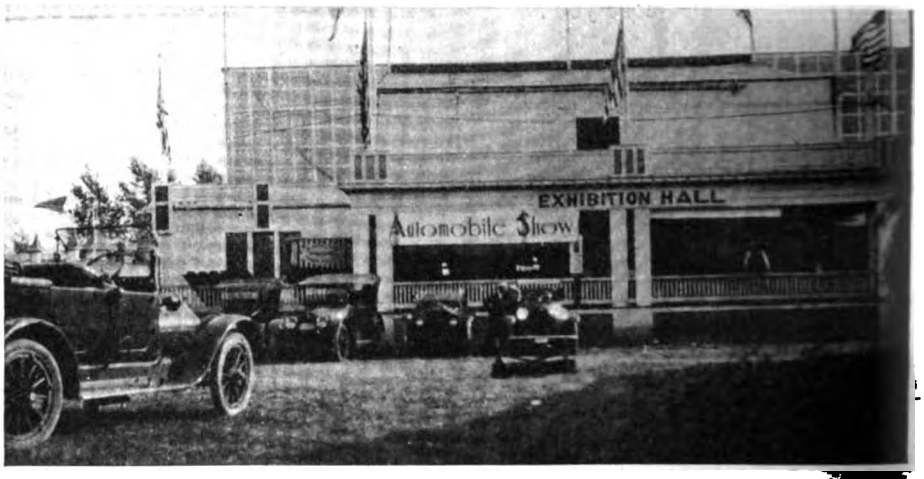
Hartford Dealers Show Cars at State Fair

Fine Exhibits at Connecticut Fair Excellent Means of Advertising

HARTFORD, Sept. 8—Hartford dealers do not look for direct results from the State Fair show which closed here to-night after a run of 5 days. They view the exhibition as an excellent advertisement, but they do not expect to do much business. Sales are the exception rather than the rule, though several subdealers were appointed.

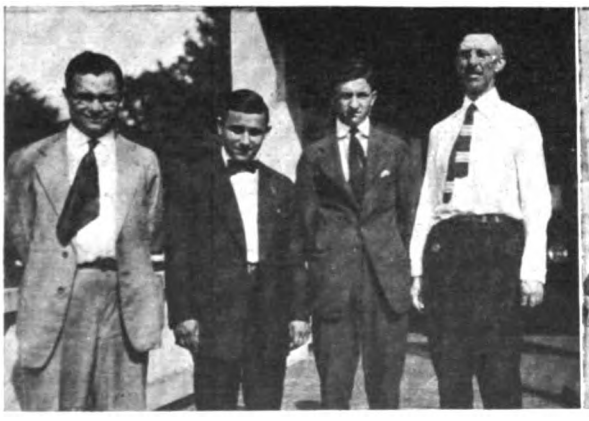
Hartford is in the center of Connecticut's tobacco growing industry. Crops this year have been excellent and the tobacco farmer is the Hartford dealer's best prospect. Tobacco crops, however, are not sorted until along in February, and farmers are not ready to purchase until they have disposed of their crops. But they are looking now and that is why the State Fair is a good advertising medium for motor car dealers.

The show is held in a building about 140 ft. square. It is not run by the dealers' association, which has nothing to do with the affair. A man not connected with the trade stages the event each year.



The Show was given a building all to itself. The exhibition floor measured about 140 ft. square.

Dealers are charged for space at the uniform rate of 20 cents per square foot and are permitted to do whatever decoration they deem necessary. Most of them were content to place a few potted palms in their spaces. The show management decorates the building with flags and strips of colored bunting and furnishes



W. H. GOLDSTEIN, National Chemical Works

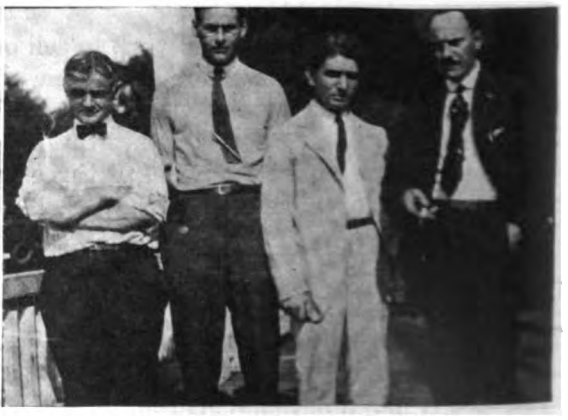
A. GREENSTEIN, A. C. Hine Co.

J. E. CALLAHAN, Auto Washer Mfg. Co.

B. F. SMYTH, Dry-Savo System



J. P. GRADY, University Auto Co. (Franklin)



F. J. SNOW, Colonial Auto Co. (Studebaker)

A. P. PINNEY, Colonial Auto Co. (Studebaker)

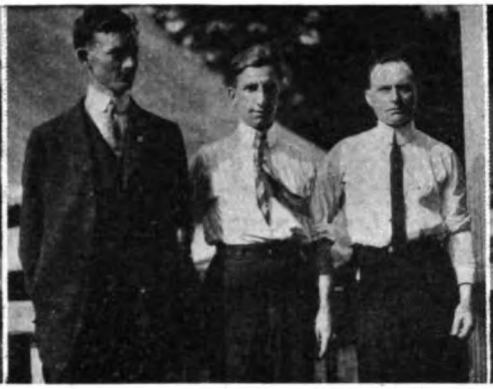
W. I. TULIM, S-R Tire Filler Co.

M. H. SCHEIDING, Retail Sales Manager, Overland & Hartford Co

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J. CLARK, Harrington Hudson Co.



L. R. SCHADWALD, White Auto Supply Co. *F. A. STEVENS, Hoyt Supply Co.*



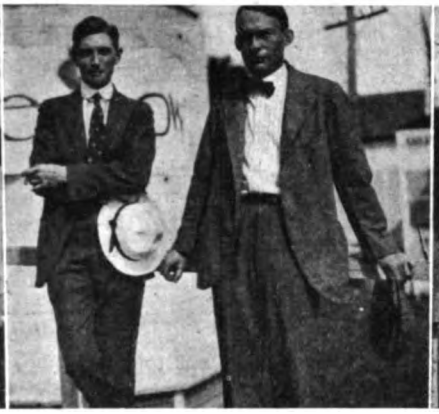
JOHN W. KEMP, A. C. Hine Co. *B. B. STEIBER, Show Manager*



W. HIGBIE, Chevrolet Motor Co. *D. D. LULL, Reid Motor Co. (National)* *W. M. TURNBULL, Colonial Auto Co. (Studebaker)*



F. W. WILLIAMS, Williams Auto Co.



D. A. HARRINGTON, Harrington-Hudson Co. *W. H. VINAL, Russell P. Taber (Reo)* *RUSSELL P. TABER, (Reo)*



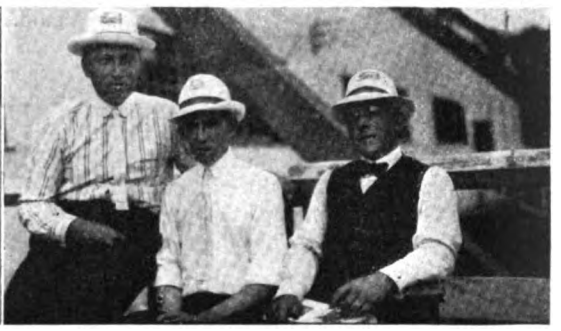
A. M. SKIDMORE, Smith Form-A-Truck Co. *L. D. FISK, JR., Reid Motor Co.* *FRANK BERSON, (Maxwell)* *B. O. PRENTISS, Hartford Apperson M. Co.*



GEORGE H. GABB, (Auburn)



L. H. ELMER, Elmer Auto Co. (Ford) *A. S. RAMPELL, Union Truck Mfg. Co.* *FRED WILLIAMS, Elmer Auto Co. (Ford)*



D. A. MACKENZIE, Hartford Buick Co. *T. B. GEARY, Hartford Buick Co.* *H. L. MUNSON, Hartford Buick Co.*

a three-piece orchestra, piano, violin and drum; there was also a young lady who sang at intervals.

The Hartford Buick Co. and Russell P. Taber, Reo dealer, both made noteworthy attempts to inject merchandising flavor into their exhibit spaces. The Hartford Buick Co. rented from a theater a garden drop for the rear of its space, with a forest border and forest wings and two sets of strip lights. This made a nice stage setting and cost about $50. A brass rail inclosed the space.

The exhibit was pleasing in appearance, but the brass rail tended to give an air of exclusiveness. Dealers in this territory believe that they must get close to their prospects, fraternize with them, in fact, but the brass rail made this difficult. It made prospects stay outside and look in instead of circulating among the cars and giving the salesmen a chance to talk with them.

Russell P. Taber put no rail around his space. His cars were well arranged and there were a number of really clever signs. For example, on the windshield of each six there was a sign which read, "ONE OF THE WORLD'S GREAT SIXES." Another sign gave a tabulation of the exact number of fours, sixes and trucks sold by Taber since the beginning of the season.

Few dealers exhibited closed cars, though most of them are frank to admit that closed car business bids fair to be better this fall and winter than ever before.

During the 5 days of the show, attendance was good only 1 day—Labor Day. Other days the attendance was poor, and the dealers lay this down to lack of sufficient advertising. Some of the dealers carried ads in the daily papers, but the fair itself was advertised very little. There were no advertisements calling attention to the motor car show; they were all general in nature. It is proposed next year for the dealers to get together and advertise the show exclusively of the fair advertising.

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What Good Is Milwaukee's State Fair Boosting Tour?

By Ray W. Sherman

DURING the week of Aug. 28 the Milwaukee Automobile Dealers, Inc., left their business and made a tour of the state of Wisconsin, boosting the state fair, which is being held this week. It is one of the biggest pieces of dealer enterprise in the United States. It cost a lot of money. It took a lot of time. It cut in on business at a busy time of the year. Some salesrooms were practically closed that week. Dealers elsewhere are likely to ask: "What good did it do? Was it worth what it cost?" And because of these questions an analysis of the tour may be interesting. Before going further let us say the tour seems to be worth all it costs.

Why Is It Held?

THE tour is called a "State fair boosting tour." That is its big object. On that score the event is purely civic enterprise, undertaken because of interest in the city, the State and their welfare.

Why should a single class, such as the motor car men, take upon their shoulders the boosting of something that concerns the whole people? Why shouldn't others participate?

The answer is, that the motor car industry is the livest thing in America. It it full of snap and spizz. It moves—and it moves things. Give a bunch of car dealers an excuse for doing a thing and it is half done. If there is any advertising value in the proposition, if it will in any way help the car industry and the dealers, these dealers will get out and whoop! Not only whoop, they'll spend money at so much per whoop!

The Real Reason

Therefore, the real excuse for this tour is the motor car show at the fair. This show differs from most fair shows. It is bigger and better than Milwaukee's midwinter show. It is held in Machinery Hall, a mammoth building, which is decorated with electric lights and scenery and made to look like a regular show.

To this show come farmers from all over the State. They are potential buyers. They are the buyers in the field to which the Milwaukee dealers distribute. It would not be possible to get them in for the midwinter show. The fair is a great territorial opportunity.

Unless the fair is successful the show cannot be successful; therefore the fair must be boosted, and if the farmer visits the fair he will visit the show. Ten cents admission is charged to the show and last year 75 per cent of the fair visitors went to the show.

Considerable business is done at the fair show and much foundation work is laid for future business. As many dealers attend the fair as attend the midwinter show.

What Does it Cost?

To start with, each entrant has to put up $25 to cover general expenses, such as labels for the cars, numbers, hats, canes, and a deposit on the dusters, which cost $3 each unless they are turned in at the finish. Some of this $25 is refunded. There is also the band and singers to be paid.

In addition, each man pays his own expenses, and ordinary traveling expenses range nearly $5 a day, making $30 for the week. Gasoline for the nearly 600 miles cost probably $15, not counting the oil. Wear and tear on the car and absence from business are not included in this estimate. The cost for the week to each dealer is something like $65 for himself and car, and if he takes any of his men along their hotel expenses must be added. The Overland had three cars in line, each carrying four and five men. The association's funds covered much of the general and preliminary expense.

What Do the Dealers Get out of It?

1. Primarily the benefit accruing to the dealers is a successful show at the State Fair. That statement requires no detail explanation.

2. En route some business, but not much, is done. A few sales are made. Last year one man is said to have made so many sales in towns where he had not yet placed dealers that the factory took the agency away from him for failure to work his territory properly. And always there is the arousing of interest and the securing of prospects, both retail and wholesale.

3. The motor car business is stimulated throughout the territory. The farmers are made to think about motor cars and they get an excellent opportunity of seeing a bunch of different makes, from Fords to Packards and Pierce-Arrows. The tour is a demonstration of the runableness of the modern motor car. There were few accidents—and all trivial.

4. The country dealer and the distributer are brought closer together. Each distributer had opportunity for a social call. Some of the local dealers entertained their visitors at dinner. Necessarily there was added a germ of enthusiasm for business.

5. The dealer himself gets closer to his merchandizing problem. He meets owners all along the route. He has a better understanding of his field, no matter how well he understood it before. Owners frequently were found looking at the model of the car they owned and would greet the dealer: "I own one of these little boats." Oftentimes a good word paved the way to the adjustment of a complaint.

6. Salesmen who accompanied dealers got a broader understanding of things as they are. They saw the country, they got full of fresh air, they were burned and tanned, they met the men who buy the cars, they saw cars perform at all speeds over all kinds of road, they got a week's strenuous vacation.

7. Some mechanics were on the tour. They saw all makes of car at work on typical roads. They saw how the cars stood up. They got away from shop routine for a week. They should be better mechanics. They should have a better spirit.

8. The City of Milwaukee necessarily must have a higher opinion of its motor car tradesmen because of the whole-

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hearted manner in which they took hold of this civic propaganda.

9. The feeling of harmony and unity has been increased. The dealers worked in harmony for 6 days under conditions which made the results of and need for harmony apparent.

Why Was It Successful?

1. The spirit of co-operation prevails throughout among the dealers. There was no knocking. Every one co-operated with the man they had chosen as manager.

2. The affairs of the Milwaukee Automobile Dealers, Inc., are well managed. Bart J. Ruddle, the assistant secretary, handles most of the detail. He works in harmony with the dealers. Every association requires a paid manager of some kind and a great trouble with these secretary-promoters is that they are more promoters than they are association secretaries. While the promoter element is essential, a good combination of the two is ideal—and hard to find—but in Ruddle the Milwaukee dealers seem to have found a man who can run their affairs with full satisfaction to them, and this means that his services are worth something.

3. The association officers work. Edgar F. Sanger, chairman of the tour committee, was very much on the job.

4. The dealers made it what they said it was, a State fair boosting tour, and not a car boosting tour. There were no car speeches at all, and very little effort to make it a business trip.

What Made It Effective?

1. The most effective point about the tour was its bigness. There were thirty-seven cars and 160 men. The line-up was impressive. It included big business men from the State's biggest city, and it was significant that these men should desert business for a week and devote themselves to the fair.

2. The appearance added to the effectiveness. The cars were kept in good condition. Every man was dressed alike, in duster and hat, and with a cane.

3. Things moved with snap and dash. The cars traveled at high speed across country, entered towns with a dash, ran off the brief program like machinery, shouted a vociferous farewell and sped away. The absence of a reception committee never mattered, for the boosters took possession of the town and ran things just as well.

4. The Mayor of Milwaukee and the State Commissioner of Agriculture are big dignitaries, and their presence added prestige.

5. A small band and a professional quartet added considerably to the pretentiousness of the tour. The boosters carried their own band and it helped amazingly.

6. The speeches were generally short, snappy and to the point. They appealed to the people.

7. Pistol and whistle novelties were distributed by the Milwaukee newspapers and were cherished by the kiddies. There probably are still in some Wisconsin homes these toys, each of which bears a message about the fair. A special State Fair section of a newspaper was scattered broadcast.

8. The tour was well advertised in advance and the country papers gave good co-operation.

Chances for Improvement

1. Hotel reservations were badly handled. The dealers thought Bart Ruddle was going to make reservations in advance for the whole party, but this was left to the dealers, with the result that baths were a scarcity and there was much inconvenience.

2. Near the close of the tour one of the State officers became rather long-winded. There should be a fairly accurate time limit for every speech.

3. A standard form of novelty might be distributed by the boosters. Some of the newspapers gave away whistles and paper pistols bearing booster talk, but if several thousand of these were prepared by the association and scattered broadcast it would keep the message alive in thousands of homes until fair time.

4. Some of the hotels are alleged to have raised their rates on the boosters above the regular rate. This should be prevented.

5. Some of the boosters went astray, due to too high speed on the part of the pilot car when leaving town. The pilot should go slower for a couple of miles.

6. Some of the dealers wanted to sing a pretty farewell song as the cars left town, but they couldn't think of one. That certainly would make an impressive and pleasant departure.

7. There should be a speed limit. Speed helped make the tour spectacular, but 50 miles an hour over some Wisconsin roads in some of the light cars is not safe.

Wisconsin is Buying Cars

MILWAUKEE, Sept. 11.—Wisconsin is absorbing motor cars at an unprecedented rate and the most optimistic predictions are being fully realized. The report of owners' registrations, on the morning of Sept. 1, showed 110,350 cars in the hands of owners have been registered since Jan. 1. On the same day a year ago, the total was 75,600, a gain of nearly 35,000 cars for 1916. At this point last year, the gain was 25,500 over the corresponding period of 1914.

On Sept. 1 Wisconsin registered 30,559 more cars than the total for the entire year 1915, which was 79,791. The gain represents more cars than were registered in Wisconsin during the entire year of 1912, when 24,578 cars were licensed.

The 100,000 mark was passed before July 15, and the 110,000 mark was reached Aug. 29. Applications are coming at the rate of 150 to 200 a day, and it is reasonable to suppose that before Dec. 31, 1916, 5000 more cars will be added, for a total of 115,000, inasmuch as 4200 cars were registered between Sept. 1 and Dec. 31 last year.

The decided increase in the number of dealers is a feature of the situation. In 1915 the state licensed 1583 dealers. This year, up to Sept. 1, the number was 1,936, a gain of 353. Inasmuch as the practice of using dealers' licenses on privately-owned cars has been almost wholly discouraged, the license figures would indicate that Wisconsin has nearly 2000 motor car dealers at this time, or just twice as many as it had in 1912.

Comparative figures on Wisconsin registration follow:

	1912	1913	1914	1915	To Sept. 1, 1916
Motor cars	24,578	34,646	53,160	79,791	110,350
Dealers	1,052	1,393	1,202	1,583	1,936

D. D. SHEERIN

President and Manager of Wheeler-Sheerin, Inc., Accessory Jobbers, Indianapolis, Ind.

Says:

"We have always favored Motor World ourselves as being the publication more generally read than any other trade paper, and more carefully gotten up. They have done a lot of constructive work among the trade and have earned a standing with jobbers and retailers that should prove valuable to advertisers."

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Dodging the Prospect's Heavy Left

By Ray W. Sherman

"I KNOW our car is a darned sight better than the Colt," contended Tommy Trumbull, "but I know just what Whedon is going to say. He's going to start in telling me that the Colt motor has a detachable head and overhead valves and he's going to harp on that point until he's blue in the face."

"I know," replied Reilly, the Sennett dealer in Callawassa, "Whedon has all sorts of ideas. He has owned a Colt for 2 years and naturally he is inclined to believe that if his judgment was good then it ought to be good now. He's due for another car and he probably has an idea in his noodle that he ought to buy another Colt."

Just Likes to Talk

"That's all that ails him," retorted Tommy, Reilly's junior salesman. "He really doesn't know what he does want, but he likes to hoot about that overhead valve business because he knows his car's made good with it and we don't have it."

"Evidently, Tommy, you feel like a prize-fighter who knows the other man has a heavy left and that if it ever connects the count will go away beyond ten. You at least have the advantage of knowing what to watch out for. The only thing you can do is imitate the pugilist and dodge that heavy left."

"Sounds well," chirped Tommy.

"It's the best way I know to handle these strong-arm gents. You don't accomplish anything by standing up in front of your man and letting him hammer away at you with his strong point. What you must do is duck it and get in some good work of your own.

Dodge It!

"If you let him have his way about it he'll soon beat you down and wear you out and have you licked before you're due. The only way you have an even chance with him is to leave his strong point out of the fight entirely until he has run down a little and you don't need to be so much afraid of it."

"Sure! But how?"

"Just this way," continued Reilly. "In comes Whedon, all full of overhead valves—and you know it. Naturally, the first chance he gets he's going to begin a technical dissertation on motors in general and the merits of overhead valves.

"What you must do is get him away as diplomatically and quickly as possible from this motor stuff and pull him over to the other parts of the car. On the other parts of the car we have the Colt backed off the map. We ride easier, we look better and we can beat them on almost every point. Whedon doesn't consider all these things in his mental picture of a car; in fact, I doubt if he has much of a mental picture. Therefore, some of the things we can show him about the Sennett, its looks, its easy riding, its comfort and quality, will be in a way a revelation to him and surely should make considerable impression on him.

Use Your Own Left

"By the time you have taken him over the rest of the car you should have him admitting that the Sennett—thus far—is about the best thing he has seen."

"But those valves!"

"Yes, those valves. Whedon is coming back to them soon. We haven't them, we admit, and we also admit they're good, although if we thought they were the best thing on earth we'd put them into the car. We have perfectly good arguments on our motor as it is, and we go at Whedon like this:

Do It This Way

"We tell him that since he is exceedingly well versed in motors and is an expert on the overhead valve construction, he naturally will be interested in the story of our motor, which differs a little from the type with which he is most familiar. Get him coming along thusly, and you have made a start. Then, by catering to the knowledge he thinks he has, the way is easy to get in our story. You certainly will get his attention, which is what you couldn't get if you had tried to argue with him about valves when he first came into the salesroom.

Performance Counts

"And then, even if he does believe the overhead valve motor performs better than anything else in the market, he is bound to admit that the only thing that counts is performance, and we should get a chance to show him what the car can do. And we ought to shoot him up some of the hills he has been in the habit of blatting about with his Colt.

"By the time we get through we have at least gotten our story before him despite his original determination to concede nothing except that the Colt is the greatest car in the world. I don't believe, Tommy, that a man is always so sewed up with one car that he can't be induced to switch when he buys a new one.

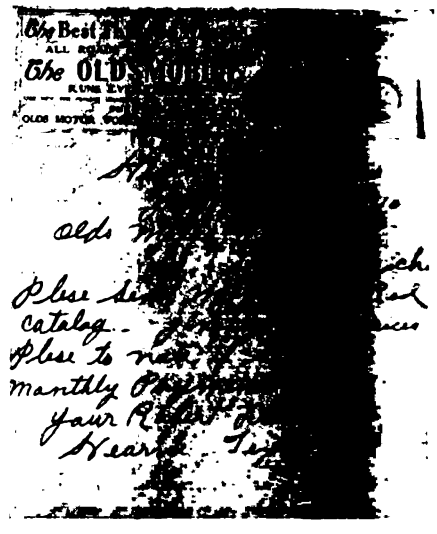


"Some owners are in the habit of buying the same car year after year, but I believe many of them could be pulled over to another make if gone after properly. Certainly because Whedon is full of overhead valves is no reason he shouldn't get our story.

He Just Plain Blats

"Furthermore, we have just as many valves as the Colt and they are just as good. And when Whedon sits at the wheel he can't see them. What he means is that his car has power, and we can easily meet him there. He really doesn't know what he is talking about. All you've got to do is dodge that heavy left in his argument and the first thing you know he'll hit himself in his own eye."

Hears from an Old Ad



The Olds Motor Works recently received the above letter, asking for its "new red catalog" that was advertised many moons ago. Has advertising a permanent value? Give your own answer

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Charles W. Price

Overland Motor Co., Chicago

The fourth in a series showing

Dealers Who Have Made Good

CHARLES W. PRICE, who distributes 5000 Overlands in and about Chicago, was born 45 years ago in Monticello, Ia.

In the early years of the present century he was a bicycle racer, and won professional championships in the United States and Europe.

In 1905 he entered the employ of the old Maxwell-Briscoe Co., Tarrytown, N. Y., and two years later became associated with the Willys-Overland Co. through his acquaintance with John N. Willys.

The first year with the Overland he managed an agency employing two persons. Then he persuaded Willys to invest with him in the Chicago distributing company. In 1910, Price bought the Willys interest and is now owner of the Chicago Overland business.

About a year ago he opened one of the most modern salesrooms in Chicago and also has a wholesale station and service building in another location, covering 3½ acres, and 3 acres more are to be added. There are 450 people in his organization.

Sixty-five per cent of the 5000 cars he sells is retail sales.

The Why

PRICE is successful because he dreams—and then works like —— to make his dreams come true. His success, he asserts, is nine-tenths plain work.

Four years ago he realized that Willys was detsined to do mammoth things in car manufacture. Said Price to himself: "If he can do that MAKING the car why can't I do big things in SELLING the car?"

Then he went to work on this dream and has had only 10 days' vacation since.

When he saw the necessity for moving cars in the winter he drove a car hundreds of miles on a personal tour through the snows of Illinois — and moved cars "immediate delivery, sight draft."

Personal observation of his business is his hobby. Every now and then he goes through departments of his business, remedying weak spots. Efficiency follows.

Courtesy is a rigid rule. Organization building and betterment are his aims. Cooperation and sales unity are effected through close contact and organization meetings.

He charges for service and gives value for the money.

He spends money to get money. He repaints, retops and revamps new Overlands, puts a "coat of arms" on the front and sells them to critical owners. He utilizes advertising of many kinds.

He works, works, works—and dreams—and works.

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Refinements of Design Mark the New Paterson

A Sociable Roadster or Close-coupled Body Now Included

THE 1917 Paterson line is changed in several respects. In addition to the touring model heretofore marketed, the line now includes a sociable roadster, or close-coupled body.

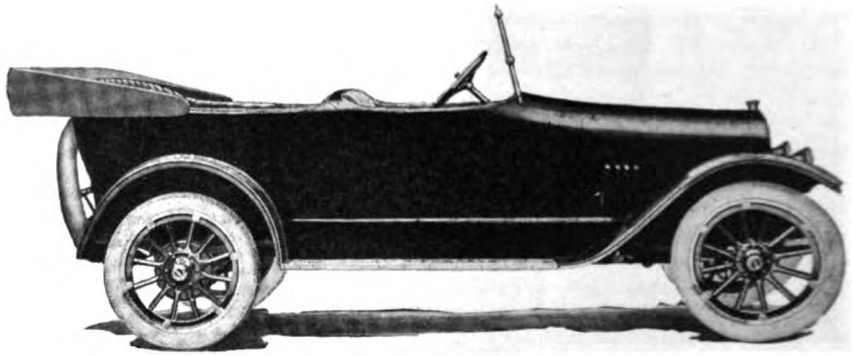
In the chassis a Hess floating axle supplants the type used last season, and the new models have a Hotchkiss type of drive, wherein the driveshaft back of the gearbox is open and fitted with two universal joints; the drive and torque are taken through the rear springs. Heretofore the drive has been inclosed, with a single universal at the front. The newer construction is lighter and is considered more efficient.

This drive without torque members lightens the shaft considerably. Besides the driveshaft the only parts running back from the front are the two brake rods. The brake equalizers are attached to the axle housing with the control rods just ahead of the axle tubes.

In addition to the new roadster body the lines throughout have been changed. The touring body is longer and wider and straighter lines have been secured by raising the radiator and hood 1½ to 2 in. Another detail of appearance is a double cowl, and the windshield has been tilted backward at a pleasing angle.

The front seat has been moved back a few inches and the upholstery throughout is in parallel plaits instead of tufting. Auxiliary seats, making the car seven-passenger, are fitted if desired. The touring model sells for $1,065.

The Paterson company has always been conservative in its output and the car is conventional throughout, utilizing standard units. The unit power plant includes a 3¼ x 4½ Continental motor, a Warner gearset and a leather-faced cone clutch, which has an easy pedal movement.



Straighter lines have been obtained by lengthening the body and raising the radiator and hood and are further carried out by the double cowl and tilted windshield

1917 Paterson

W. A. Paterson Co., Flint, Mich.

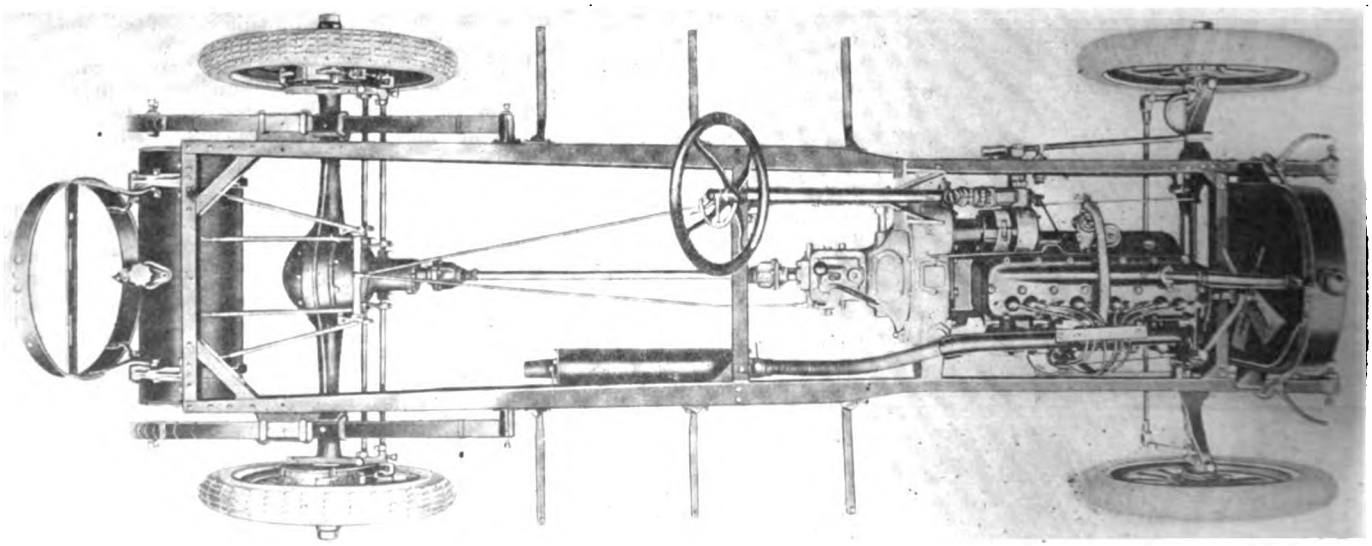
Price—	
Touring	$1,065
Make of motor	Continental
Number of cylinders	Six
Shape	L-head
How cast	Block
Bore	3¼
Stroke	4½
S. A. E. horsepower	25.4
Ignition	Delco
Carbureter	Stromberg
Engine starter	Delco
Lighting system	Delco
Clutch	Cone
Gearset	3-speed Warner
Wheelbase	117
Front tires	32 x 4
Rear tires	32 x 4 non-skid
Wheels	Wood
Steering	Left
Control	Center
Make of axles	Hess
Type rear axle	Floating
Equipment: Stewart speedometer, Stewart vacuum feed, electric horn, universal-acting slanting windshield, one-man top, extra demountable rim, quick-adjustable side curtains, pump, jack, tire repair kit, Willard battery.	

The cylinders and upper half of the crankcase are a single casting with the cylinder-head detachable as a unit. Nothing is carried on the left side except the carbureter, which is the new type of Stromberg and which bolts to the casting well up in the center. The distribution of the mixture within the casting itself affords heat for the gas and eliminates the necessity for an elaborate carbureter jacket.

Gasoline is fed from a tank at the rear through a Stewart vacuum feed system.

The crankshaft and camshaft have three bearings, and flanges on both sides of the main shaft bearings at the front take thrust. The bearings are kept at a low temperature, because they are made of nickel babbitt and are bronze-backed, the material being a good heat conductor. A plunger pump feeds oil through copper tubes within the crankcase to the main bearing and also to the helically-cut timing gears, which are housed at the front.

The pump and generator shaft on the right is also utilized to drive the fan by



The addition of the Hotchkiss type of drive has eliminated the torque tube with its single universal joint. An open driveshaft with two universals is now used

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a flat belt. The four-bladed pressed steel fan is supported by a rocking bracket which seats in a hole cast in the front end of the cylinder plate and by moving this bracket up or down the belt tension can be adjusted. A centrifugal water pump, located ahead of the generator unit, delivers water to a single opening in the cylinder block directly above the pump, thereby shortening the supply pipe and making it a straight passage.

The rear of the engine is suspended on arms extending from the flywheel housing and the front end hangs on a forged crossed member which is bowed upward to allow the front end of the motor casting to pass beneath it. While this is not strictly a three-point suspension, three-point advantages are obtained and the engine is solidly carried.

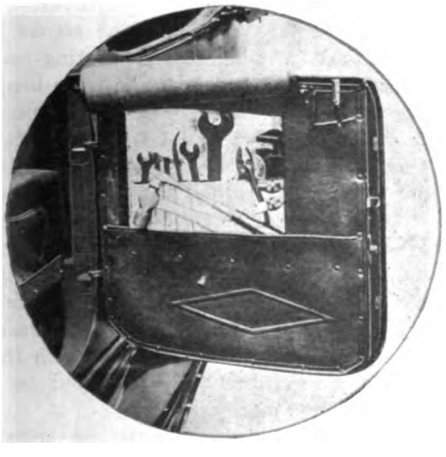
Separate Delco starting and lighting units are used, with the ignition distributor mounted at the forward end of the generator.

The frame is slightly tapered from back to front, and while very sturdy and strengthened by wider flanges at the center, it is quite light and indicates engineering skill. There is a single cross-member midway between the rear end and the motor. Brackets at the rear serve the double purpose of supporting the gas tank and the spare tire and rim carrier.

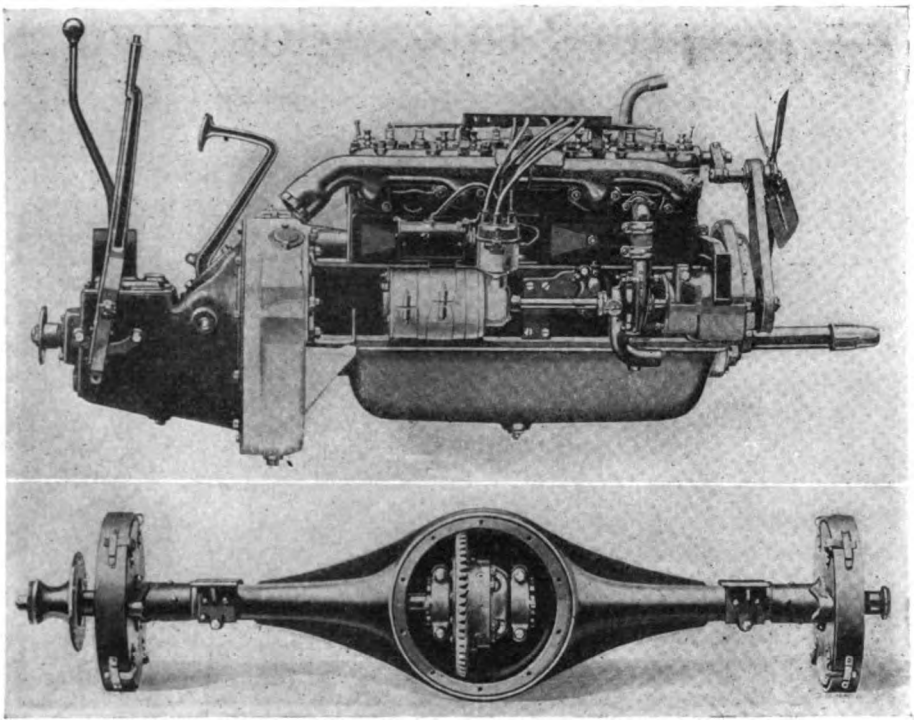
The new axle is demountable, with a one-piece pressing, webbed outwardly, serving for the differential housing and the axle tubes as well. It is fitted with spiral bevel driving gears.

Rear springs are three-quarter elliptic. Tires are 32 x 4, on demountable rims, with non-skids in the rear. Upholstery is of leather.

The tools are handily arranged in a compartment in the left front door, close to the driver's hand. Each tool has its own pocket, which makes it easier to keep them in order than in disorder and is much handier than an under-the-seat arrangement. A flap with spring fasteners covers the compartment.



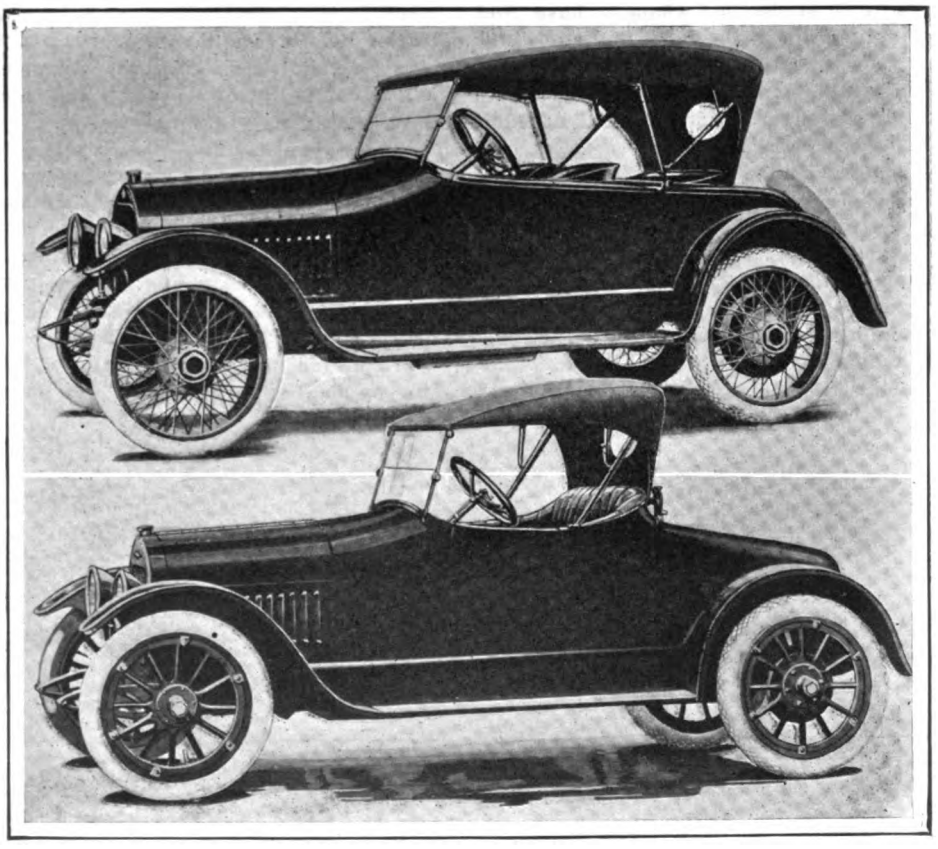
Compartments in the left front door carry the tools and make them very accessible to Paterson drivers



Upper—Exhaust side of the Continental Paterson motor. It is made a unit with the Warner gearset and the cone clutch
Lower—The Hess floating axle with a spiral bevel drive is demountable and mounted in a one-piece pressed steel housing

Two New Jackson Roadsters

Both Have Tilted Windshields and Rolled in Body Rim

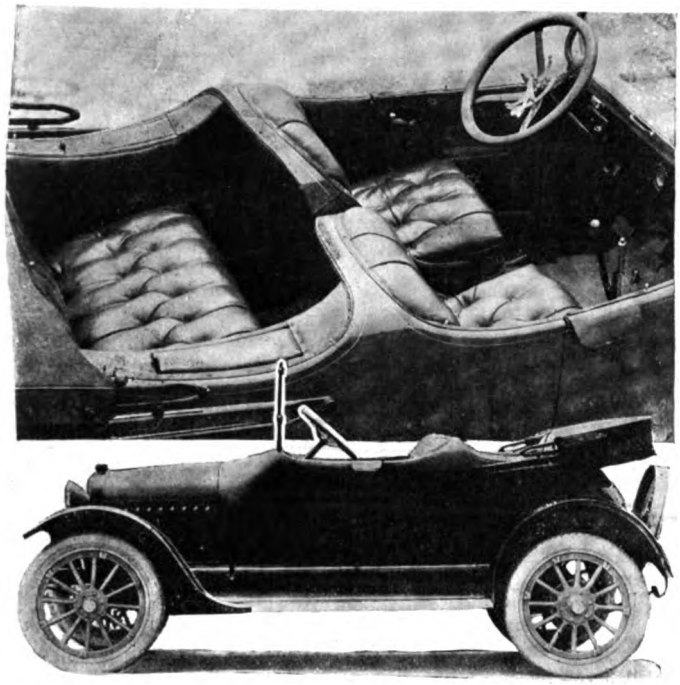


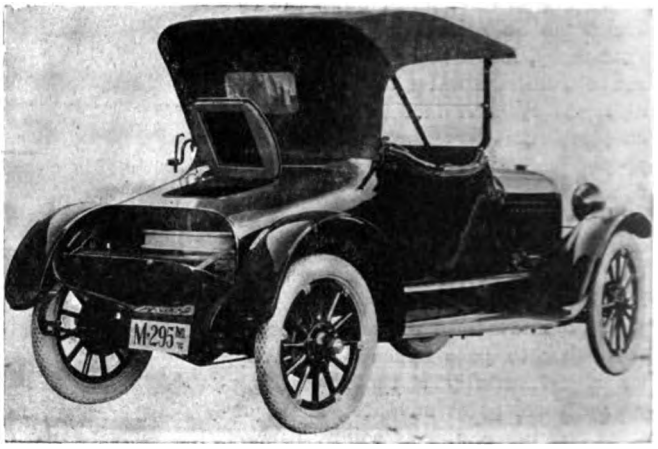
Upper—The four-passenger roadster is characterized by divided front seats and sloping deck. Wire wheels are fitted as standard equipment on this model, and it lists at $1,395
Lower—The standard two-passenger roadster, selling for $1,295. The sloping turtleback joins smoothly onto the body lines and forms a large compartment for storing luggage

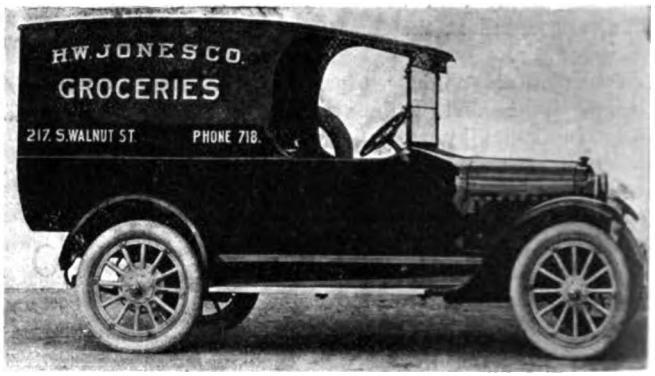
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Inter-State Adds Two New Models

Commercial Car Also Is Added to Line







Upper right—The standard roadster model remains unchanged except that another door has been added to the top of the turtle back

Lower right—A commercial job has been added in the form of an 800-lb. delivery car listing at $850

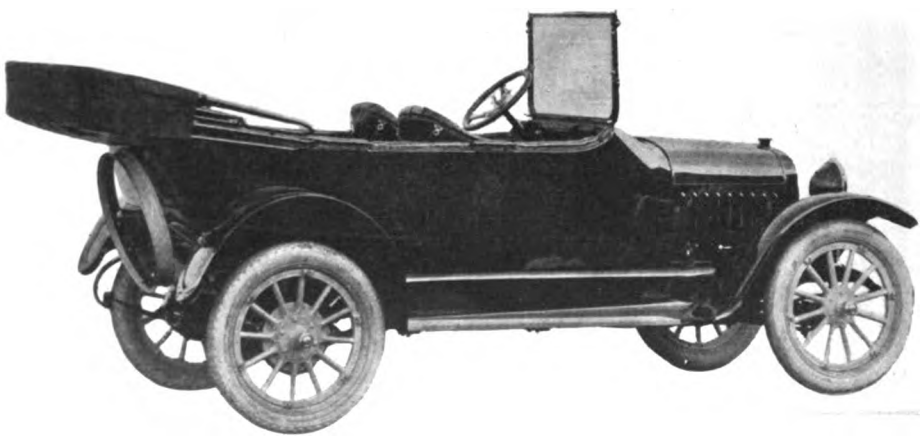
Upper left—Side view and body details of the new four-passenger roadster

NO mechanical changes have been made in the Inter-State for 1917, the only addition to the line being a divided front seat touring car and a four-passenger roadster listed at $895. There is also a de luxe delivery car, mounted on the same chassis, priced at $850.

Distinctive finish features the two new bodies, the divided front seat touring car having for its standard colors a dark green body with cream wheels and the running gear finished in black. The four-passenger roadster is furnished in a gun-metal gray body with battleship gray wheels and upholstered in brown Spanish leather. Both cars have the modern low long lines and the Inter-State Company has made a point of roominess and comfort in the seating arrangement.

In the five-passenger divided seat job, the driver's seat can be moved backward or forward to suit the height of the driver, giving an arrangement which will be suitable for anyone to drive. As the adjustment is quickly and easily made, two people of different statures can drive the car with little inconvenience.

In addition to the cars mentioned, the Munsey plant will shortly bring out some inclosed bodies. The standard series T five-passenger touring car, which is a conventional design with continuous front and rear seats, remains unchanged. It sells for $850, as does also the series TR roadster body, which is a continuation of the design of last season except that a door has been added on top of the turtle back. This new feature permits of ready access to the large baggage compartment immediately behind the front seat and renders it possible for this space to be used without removing the tires.



The divided front seat touring car has the modern low lines coupled with roominess and comfort in the seating arrangement. It is finished with a dark green body, black running gear and cream wheels

The engine is a specially-built Rutenber job, having the four cylinders cast in a block, with the valves located overhead in a removable cylinder cover.

The bore is 3½ in. and the stroke 5. Drop-forged I-beam connecting-rods having a length of 9¼ in. between bearing centers are used. The rod bearings are 2 in. in length and 1¾ in. diameter. They are lined with babbitt, as are also the bearings for the 2-in. carbon steel drop-forged crankshaft. The dimensions of the main bearings are 2 in. diameter and 2¾ in. length for the front, 2 in. diameter by 2 in. length for the center, and 2 in. by 3⅜ in. length for the rear. The bearings are steel, backed with the babbitt lining, accurately scraped to a finish fit.

Lubrication is by circulating splash system operated through a gear-driven

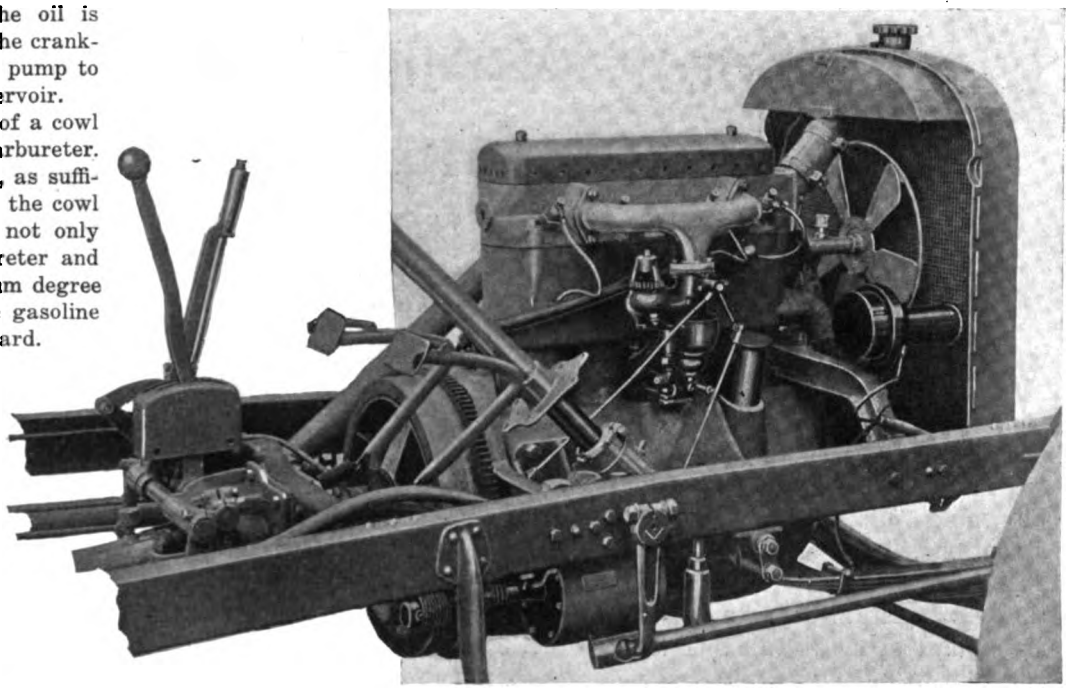
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pump from the camshaft. The oil is contained in the bottom pan of the crankcase, being carried by the gear pump to the bearing leads from this reservoir.

The gasoline system consists of a cowl tank and a Schebler 1-in. carbureter. The gasoline flow is by gravity, as sufficient hydraulic head is given by the cowl location of the tank, which is not only high but is close to the carbureter and hence affected only to a minimum degree by variations in gradient. The gasoline gage is mounted on the cowlboard.

Electrically, the Inter-State car is Remy equipped, having this system for starting, lighting and ignition. The distributor is mounted on the left side of the motor block, with the coil just behind. The ignition distributor drive is taken by bevel gears directly off the generator shaft, which is connected by a flexible coupling to the same shaft which operates the oil pump. The starting motor is at the rear right and engages with the flywheel, which is equipped with a ring gear on its forward face. The heavy wiring is inclosed in flexible metal conduits.

From the engine the drive is taken through a leather-faced cone clutch to a three-speed gearbox. There is a cross-frame member just behind the clutch, supporting the clutch shaft and the forward universal and torque yoke. The gearbox itself is mounted on the rear axle with the face of the box bolted directly against the rear axle housing. A direct ratio of 4 to 1 is secured through the bevel gear axle, which is supported on Hyatt roller bearings. The axle shafts are floating.

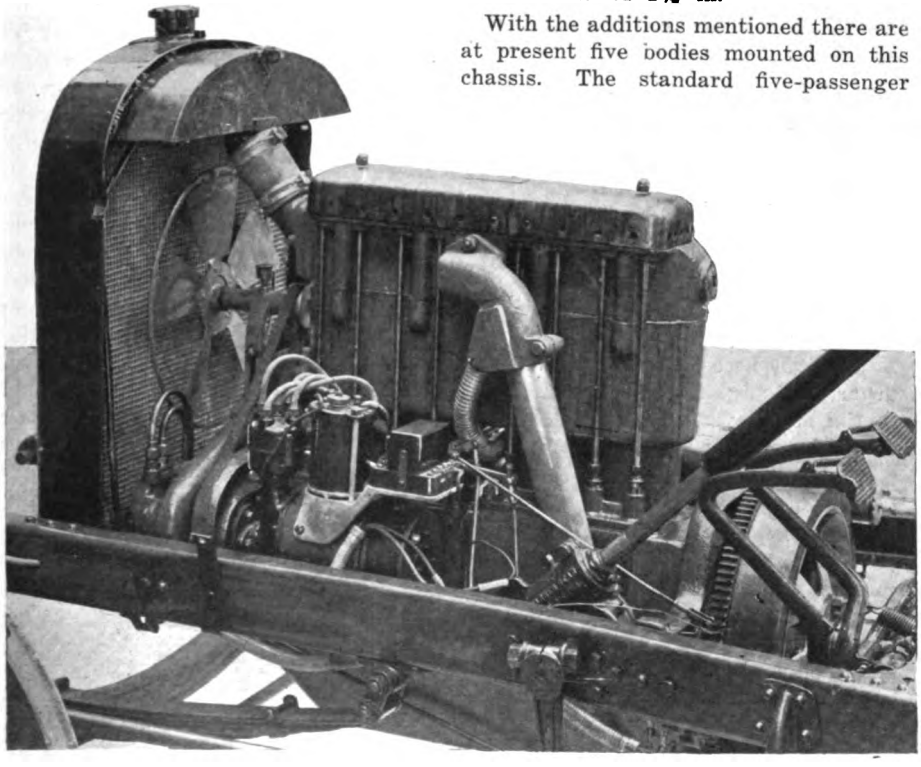


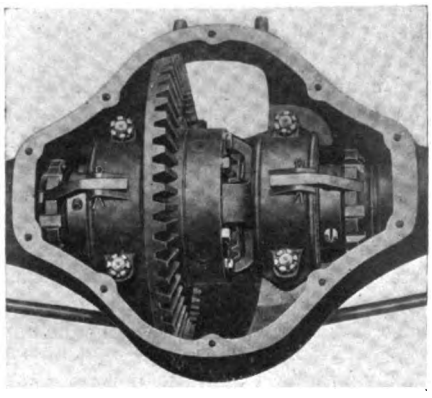
Carbureter side of the valve-in-head motor showing the mounting of the Remy starting system

A pressed steel bottleneck frame is used, with the side channel members 3½ in. deep with a 5/32 in. section. The wheels are wood, artillery type, having twelve spokes each 1⅜ in. in diameter. They are equipped with Firestone demountable rims, carrying 33 x 4-in. tires and with non-skids fitted as standard equipment in the rear. The make of tire employed is the Goodyear. Three-quarter elliptic rear springs are used, the length of these being 46 in. and the width 2 in. The front springs have a length of 36 in. and a width of 1¾ in.

With the additions mentioned there are at present five bodies mounted on this chassis. The standard five-passenger touring, known as series T, has the continuous front and rear seats. The TR is the standard roadster with rear deck, having a two-passenger capacity. The TD is the divided front seat job with the adjustable driver's seat feature. Series TR Four is the new four-passenger roadster, and TC is the parcel delivery wagon of 800-lb. capacity. It is especially adapted for the use of florists, confectioners, clothiers and grocers. There are double doors in the rear and the loading dimensions give a width inside of the body at the top of 46 in. and at the bottom 42 in. The height is 51 in. and the length from the back of the seat to the doors is 65 in.

In finishing these bodies all the fenders and dust skirts are black enameled and baked in the ovens of the Inter-State factory. Selected natural wood wheels will be furnished on any of these cars at $5 extra per set.





Upper—The rear axle is unchanged. Left—Exhaust side of the motor showing the accessible mounting of the Remy generator and ignition system

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Is the Motor World Simplified System of Accounting Too Simple?

Or Isn't It Simple Enough?

By T. W. Snead

WHEN this system was designed it was devised with the idea that it must be so simple that the small garageman, with no bookkeeper, could run it if he would follow a few simple instructions.

It was also borne in mind that there are certain departments that are found in nearly all businesses and that in some garages there will be more departments than those shown and in some garages less. An effort was made to cover the departments that generally are found. It was desired to serve the greatest number.

There have been criticisms of the system, and we welcome them. We welcome them because we always welcome criticism and because it shows people are at least studying and thinking system, something many never did before.

So far as criticism is concerned the system is not in a unique position, for there is criticism of the President, of Theodore Roosevelt, Ex-justice Hughes, the Kings, Kaiser and even the milkman; no one is exempt from criticism. Nor is any man, or any system, perfect.

But on these pages we have two criticisms. One says the system is too simple; another man says it is not simple enough. One man makes a study of his accounting; the other says he is so busy on the garage floor that he doesn't have any time for such things as accounting.

Disregarding the fact that some 1000 of these systems are giving excellent satisfaction, Motor World wishes to present these two criticisms and its answers. It believes its readers are entitled to this information. Furthermore, it asks its readers to study the forms that were devised by the Motor World Reader. We do not think this man is quite fair to the system for he admits that he did NOT read the system booklet.

And once again, as was asserted many times when the system was first presented, six months ago: Motor World doesn't care WHAT system the dealer and garageman uses, so long as he uses SOME system.

If you can get up a system of your own that suits you better than the Motor World system, fine business! Go to it! And we'll give you any help we can!

But GET A SYSTEM OF SOME KIND and then USE IT. Don't kid yourself into thinking that work on the garage floor is more important than your accounting.—EDITOR.

Too Simple

Says This Man

System Editor, Motor World:

Believing the sheets of the Motor World Simplified System of Accounting were not exactly suited to my needs, I have made some alterations in them and have had some printed for my own use. I would like an expression from you regarding these.

I cannot help but notice in the Motor World of May 17 the answers to several questions pertaining to your accounting system. In answer to one question in particular, you advise throwing storage and wash rack all into one account. You advise throwing some other items into one account that some one else wants to separate. Instead of offering the excuse for this of not having columns enough for distribution in your system, you told him to bunch these accounts and if necessary make separate separations. If one is going to do this, why go to the trouble of keeping the system at all? Why not bunch all of them into one account and make separate separations, the same as other accounting systems?

It is just as necessary to keep a separate department of your wash rack and storage as it is for any one of the five departments that you speak of in your system. In my garage business I always knew what my storage and wash rack were doing, but I had to separate them to do it. The storage usually takes care of itself. If there is a loss, it is likely to appear in the wash rack. This is why it is necessary to keep these two departments separate, and even more essential as the wash rack is usually conducted by a night force.

On the other hand, a car agency maintaining a stock of automobile parts should be kept entirely separate from the rest of the parts and accessories, and occasionally it might be well for a man to keep his tires separate, and in view of these things why is it necessary to tell Mr. Wehrstedt of Winnetka, Minn., to bunch his different departments into five when you could just as well print sheets like mine and give him his different departments? It would not be necessary to give all the departments a heading, but I would suggest heading six or seven of them and leaving the other three or four blank, and if you would do this you would give a man some sheets that he could work with.

Personally, I cannot conceive of why the parties responsible for this system are so determined to force those sheets on the public when they could just as well give them something that they could work with. This, I explained previously in my letter, pointing to the width of the dollars and cents columns, etc. I do not expect any compensation from you people for these improved form sheets, but I do expect you or someone else to put them to use, as the system is too good to let lay idle.

Another suggestion is this: Instead of taking off separate statements from the books at the end of the month and dividing this department and that department and drawing this conclusion and that conclusion, I post the monthly footing of each department account to a department account in the ledger. If

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there is no inventory, I post the difference of this account directly into the loss and gain account in the ledger. If there is an inventory in a department account, I add the amount of the inventory to the amount this account produced for the month and then take the difference as my profit in this account for the month and enter it into the account itself and post the same over into the loss and gain account.

This then shows that the difference of this particular department account an asset to the amount of the inventory shows in the account itself, while when all the department accounts are likewise closed off into the loss and gain account, you then have your monthly statement recorded in your loss and gain account.

Previous to posting the cost of these departments, I distribute my general account into them in proportion to the amount that I think each account should bear; then, when these postings are all done, my books are balanced and my statements are all recorded in the ledger automatically, and the whole transaction requires less bookkeeping than is necessary to keep an ordinary set of books and take a trial balance each month. If I had the time I would like to sit down and dictate complete working instructions for handling this system the same as I have applied it to my garage.

MOTOR WORLD READER.
Detroit, Mich.

Motor World's Answer

ANSWER—This is in answer to your letter of May 24, in re the accounting system that you have worked out for your garage, using as a base the idea which we use in the Motor World Accounting System.

To prove our contention, Mr. ——, that this department, and Motor World in general, has no prejudiced interest in the sale of systems, we have decided not only to publish your letter and to illustrate your forms, but also to publish the letter of a fellow townsman who, we believe, feels entirely different in regard to systems of accounting.

Motor World's one idea in this system work and accounting was and is to create interest and to show the business man, in the industry which we represent, a picture of his business. **We do not care what system he uses as long as that system produces this picture.**

A statement of any man's business never is and never will be a statement of fact, but is simply the expression of that man as to what his business is and what his business is doing.

If you can accomplish this, then your system has accomplished the desired results; if you can accomplish it with less labor than any other system, you are certainly to be congratulated, but at the same time we want again to remind you that you are probably a little more advanced in the art of accounting, or that you appreciate accounting, a little more than the average business man in your trade.

As an explanation of why we divided our system into its various departments, we can only say that the departments as itemized in our system seem to us to be the absolutely necessary ones, and if by chance some garagemen requires additional information, he could work out an idea along the same lines as you have.

The departmental idea of accounting is in a way what you might call a new idea; that is, to some of us, and if we had attempted to give as a standard system of accounting a system consisting of a great many departments, we would have failed in what we were trying to accomplish; and if you will compare the forms used in your system you will find that in this respect you differ from ours only to the extent that you separate tires and tubes from parts and accessories and your wash rack from the storage.

You have eliminated the explanation columns on the credit side of Form 1, thereby enabling you to use three blank columns. This will necessitate your using a symbol of some kind to indicate what account is being credited when you write an amount in the All Other Accounts column. All the time remember, Mr. ——, that Motor World is trying to reach and show better business to the large number of garagemen and dealers rather than to one class of garagemen and dealers.

On the debit side of Form 1 in your system you have simply reversed the two columns and transferred the sales number column to this side of the form. On Form 2, in your system, you have eliminated the account columns under each department, again necessitating an expense symbol in order to designate the particular expense to which an item is being charged. This would be most confusing to a large percentage of garages.

We might suggest, as an advance further along the lines that you have worked out your forms, that you use one of the columns on Form 1, Credit side, and one of the columns on Form 1, Debit side, to figure the cost of goods sold, for your parts and accessories, tires and tubes stock. In other words, as each sale is made that sale is priced and the cost of the article noted on the sale slip by the use of a code, and when each sale is entered in your system a corresponding entry is made, charging the cost of the goods and crediting your inventory. This would give you the first profit each day and would tell you the value of your stock at all times.

We want again to take the opportunity of complimenting you on what you have done and to thank you for the opportunity of allowing us to publish your letter and show your forms. If you will kindly advise us as to just what these sheets cost you, we will endeavor to reduce this as much as possible in the event that we can be of service to any garageman, dealer or supplyman who may wish to follow your idea.

It may be interesting to you to know that over 1000 complete Motor World systems are in use to-day and in the neighborhood of 5,000 instruction books are in the hands of dealers and garagemen. We hope before the year is over to see 2000 systems in use, and we believe that if we had many such representative business men as yourself, who know the value of accounting in any business, to push things along as you have done, then we would have no trouble in reaching that goal.

If this department, or any other department of Motor World, can be of any further service to you, or your business, we feel sure that you will call upon us.

Too Complicated
Says This Man

Editor Motor World:

In reference to your Simplified System of Accounting: We have had this system in practical use since Jan. 1, and I most frankly state that to a person of ordinary public and high school education, like myself (I have always taken care of the office work), the system is a difficult one, necessitating a great increase in work and trouble out of all proportion to the needs of our business.

I find that in order to follow the system in all its details it will be necessary to engage an accountant, or at least a person with some knowledge of bookkeeping, or some one who can give all his time to the work. But for the garageman himself to run your system properly, **I tell you frankly that the average garageman is a mighty busy man, spending most of his time on the garage floor and with very little time to follow the routine of office work.**

I have no difficulty in doing the daily posting of all business done, the Expense and Accounts receivable; my difficulty is with what comes after, or the Recapitulation, analysis of Profit and

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DATE 191

CASH RECEIPTS AND SALES RECORD

D E B I T S

ALL OTHER ACCOUNTS			CUSTOMERS ACCOUNTS		ALL CASH REC'D	
AM'T.	AM'T.	EXPLANATION	CHARGE AM'T.	NAME		FROM WHOM RECEIVED

This is the left half of MOTOR WORLD'S *Form No. 2. The right half is on the opposite page*

Date.....191..

DEBITS

Cash Received and Sales Record

ALL OTHER ACCOUNTS		EXPLANATIONS	ALL CASH RECEIVED	SALES SLIP NO.	ALL CHARGE ACCOUNTS	NAME OF CUSTOMER	
AMOUNT	AMOUNT						
		AMOUNTS FORWARD					

This is the left half of MOTOR WORLD'S *Form No. 1, as changed by a reader. The right half is on the opposite page*

DATE 191

CASH PAID AND EXPENSE RECORD

D E B I T S

STOCK ACCOUNTS		EXPENSE ACCOUNTS							
		GENERAL DEPT.		GAS DEP'T.		REPAIR DEP'T.		STORAGE DEP'T.	
AM'T.	NAME	AM'T.	ACCOUNT	AM'T.	ACCOUNT	AM'T.	ACCOUNT	AM'T.	ACCOUNT

This is the left half of MOTOR WORLD'S *Form No. 1 The right half is directly opposite on the opposite page*

DEBITS

Date.....191..

Department Distribution Record

STOCK ACCOUNT	CUSTOMERS ACCOUNTS	GENERAL EXPENSE	GAS, OIL AND GREASE	REPAIRS	PARTS AND ACCESSORIES	TIRES AND TUBES	STORAGE	CAR SALES	WASH RACK		

This is the left half of MOTOR WORLD'S *Form No. 2 as changed by a reader. The right half is directly opposite*

Loss, Assets and Liabilities, Analysis and Comparison, Income and Expenses itemized.

It seems to me that a great deal of this can be eliminated for the small garage, thus making the system more practical and less complicated for us. You should also furnish blank forms for making these various statements at the end of the month, so that we can easily fill them out and refer to them easily. To rule paper for the purpose seems very crude, to me, at least.

I would like to make a suggestion, viz.: Why not have one of your men who understands the system thoroughly come to Detroit and inspect, correct, instruct and advise the users of this system? It will be expensive for you at first, but will pay in the end through increased satisfaction felt.

I know positively that the majority of users in this city are very much dissatisfied with the system, and I have not been able to find one man who follows the system all through as you have built it.

I also know many cases where garagemen have refrained from buying the system owing to the advice of those who have it, and I personally would not advise the installation of the system where the garageman does his own office work.

—GARAGEMAN, Detroit, Mich.

Motor World's Answer

ANSWER—In answer to yours of April 12, we would like to emphasize one paragraph in your letter. We quote as follows:

"I tell you frankly that the average garageman is a mighty busy man, spending most of his time on the garage floor

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CASH RECEIPTS AND SALES RECORD

DATE 191

C R E D I T S

INCOME ACCOUNTS										ALL OTHER ACCOUNTS		CUSTOMERS ACCOUNTS	
AS, OIL GREASE	G SALES NO.	RE-PAIRS	R SALES NO.	PARTS ACCES.	A SALES NO.	STOR-AGE	CAR SALES	EXPLANA-TION	MISC'L.	AM'T.	EXPLANA-TION	NAME	CR. AM'T.

CREDITS

Department Distribution Record

GAS, OIL AND GREASE	REPAIRS	PARTS AND ACCESSOR-IES	TIRES AND TUBES	STORAGE	CAR SALES	WASH RACK				ALL OTHER ACCOUNTS	CUSTOMER ON ACCOUNT

CASH PAID AND EXPENSE RECORD

DATE 191

D E B I T S C R E D I T S

EXPENSE ACCOUNTS										
PARTS & ACCESS. DEPT.		CAR SALES		ALL OTHER ACCOUNTS		CHECK NO.	ALL CASH PAID	ALL OTHER ACCOUNTS		TO WHOM PAID
AM'T.	ACCOUNT	AM'T.	ACCOUNT	AM'T.	ACCOUNT			AM'T.	ACCOUNT	

DEBITS CREDITS

Cash Paid and Expense Record

		ALL OTHER ACCOUNTS	EXPLANATIONS	BANK BALANCE	BANK CHECK NO.	ALL CASH PAID	CASH DISCOUNT	ALL OTHER ACCOUNTS	TO WHOM PAID
			AMOUNTS FOR'D						

and with very little time to follow the routine of office work."

In our opinion, if he were to attend more to office work his garage would be a better paying proposition, and if our Accounting System has gone this far in getting you to pay more attention to the dollars and cents end of your business, then we feel that we have done you a service indeed.

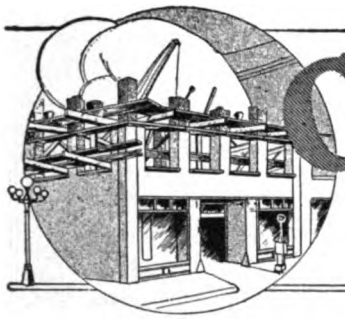
We have yet to advise any garageman to use the Motor World Simplified System of Accounting without first thoroughly investigating it and proving to himself that it will be adaptable to his particular business. We will say, however, that there are over 1000 of the systems in use to-day, all of which have been installed in a period of a little less than 8 months.

You speak of no one in Detroit being pleased with the system. The writer personally has in mind anywhere from twenty to thirty systems, each of which has in some one point or other been changed or altered simply by calling a certain department by a different name, or some particular expense a different name from that shown in the instruction book, which was done in order to suit the requirements of the particular business in which it was installed. The system was made to fit the business.

If your business is worth accounting at all, it is worth spending a small amount to see that it is accounted correctly, and while we cannot suggest any one in particular in the city of Detroit, we would suggest that you engage a a local accountant; for example, the young man that handles your account at your local bank, to come in once a month, open up your books and show you an Income and Expense statement. We

(Continued on page 40)

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

RAMP CONSTRUCTION

Figs. 1, 2 and 3

Editor Motor World:

We have a garage 75 ft. x 126 ft. deep and occupy the ground floor. We desire information as to how best, in your opinion, to construct a ramp from the first to the second floor, the grade best suited to reach the second floor, which is 13 ft. above the ground floor, the materials necessary to comply with building regulations, and the approximate cost of such an installation.

We would also like your suggestions as to what to do toward making the second floor suitable for storage of automobiles. This floor was built to sustain a weight of 75 lb. per square foot. By the addition of cement or concrete would it reduce the sustaining powers of the floor, and do you think the floor would sustain sixty cars safely? The floor is supported by ten 12 x 12 yellow pine posts.—Walter H. Price, Utility Garage Co., Brooklyn, N. Y.

Figs. 1 and 2 show the plan with a ramp. The ramp is about 85 ft. long and has a grade of 15 per cent.

The ramp may be constructed the same as a floor would be; that is, with longitudinal supporting beams on each side, the two being connected at intervals of about 18 in. by joists and the whole covered with concrete.

You might use the present floor joists for this construction. It is necessary to saw an opening in the second floor so that the ramp may be constructed, and the joists cut out can all be used for building the ramp.

The cost of constructing a concrete floor similar to the one described in Motor World for June 28 (page 25) would probably be about 25 cents per square foot. This is a conservative figure, and includes the removal of the present floor. This would bring the total cost to about $2,300. It is quite likely, however, that you can get a contractor to do the work for less than this.

Whether the building department will allow you to put in a concrete floor, in view of the fact that the present floor is only designed for a load of 75 lb. per square foot, is a question. A concrete floor consisting of 4 in. of cinder concrete with a 1-in. granolithic finish will weigh about 30 lb. per square foot. This will reduce the live-load capacity of your floor to 45 lb.; and while this is ample for the storage of touring cars, it may not suit the building department.

The cost of the ramp itself depends on just what method of construction is used; but if you follow the method described the cost will be anything from $250 up, depending on circumstances.

KAHN STEEL BUILDINGS FOR GARAGES

Figs. 4 and 5

Trussed Concrete Steel Co., Youngstown, Ohio.

Steel buildings for garages have been erected in many styles and sizes recently with complete satisfaction to their owners. The increasing popularity of this type of building is due, chiefly, to the fact that they make it possible to build a garage of fireproof construction and pleasing appearance at a reasonable cost. Composed of compact steel units, steel windows and roofs, specially designed hardware fittings, their construction makes for permanence and at the same time permits them to be readily taken down, moved to a new location, and re-erected without any deterioration to the building itself. Many are coming to realize the convenience afforded by this feature of steel portable garages.

The steel units composing these buildings, when put together with the patented locking device illustrated in Fig. 5, make the building absolutely weather-tight and substantial. This construction is not to be compared with the flimsy style assembled with wire and rivets, which have been attempted in the past. Each unit is connected with the others by means of lock and wedge, which make them absolutely permanent and substantial.



Fig. 4—The steel construction is readily adapted to the courtyard type of construction

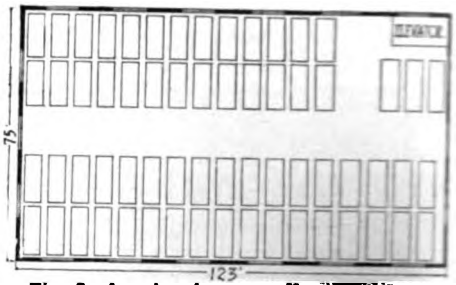


Fig. 3—An elevator permits [illegible] to be stored on the second [illegible] but is not as convenient

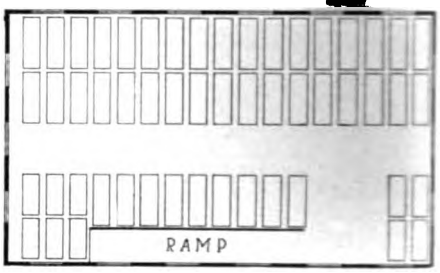


Fig. 2—Arrangement of cars on second floor when ramp is used

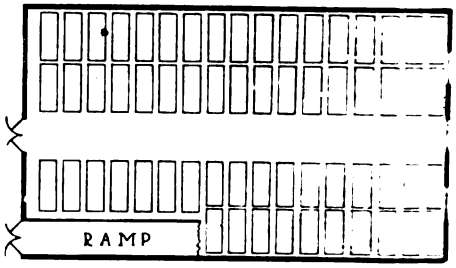


Fig. 1—First floor plan with ramp

The only tool necessary for assembling these buildings is a hammer, and the only engineering knowledge necessary is good common sense. They are

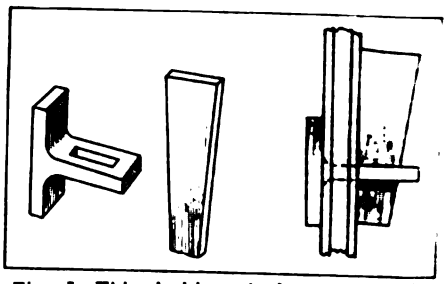
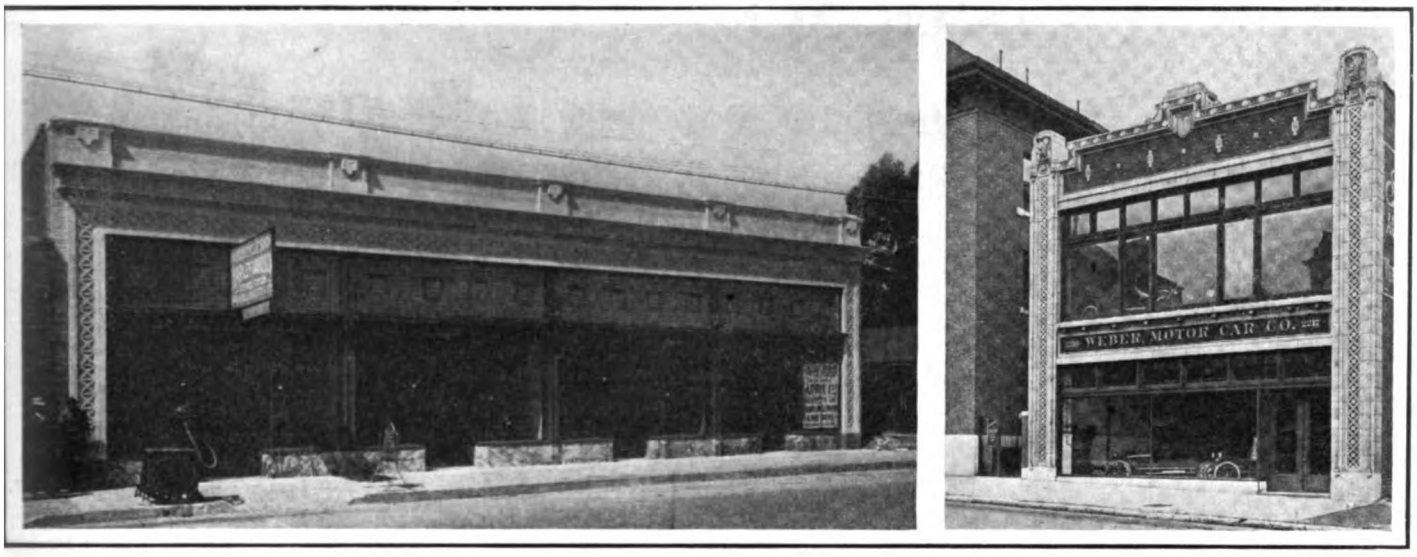


Fig. 5—This locking device makes the building weather-tight and substantial

shipped ready for assembling and can be had in various sizes to meet any reasonable requirements. The steel roofs present an appearance not unlike to the higher grade roofings now in vogue among better builders. The steel windows, with their specially made hardware fittings, afford perfect ventilation and protection. The steel doors, equipped with Yale cylinder locks, knobs and Stanley hinges, completes an absolutely fireproof, permanent building, which, with its panelled sides, makes a very sightly structure.

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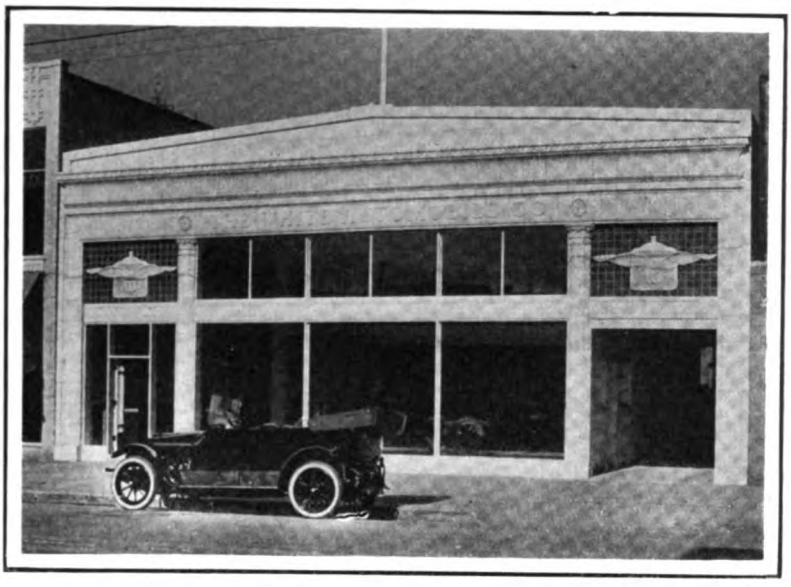
Distinction and Art in Terra-Cotta Construction

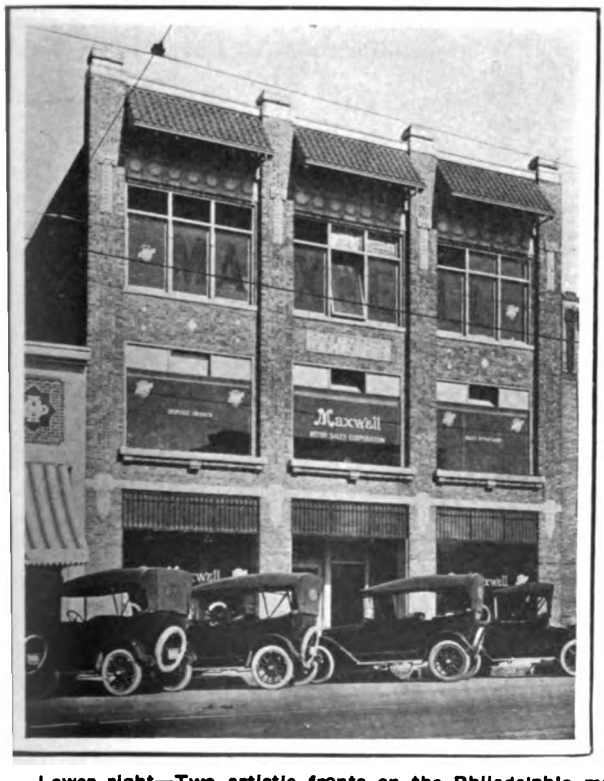


Upper right—Garage and salesroom of the Weber Motor Car Co., St. Louis. The side columns of the façade are glazed white and offer a pleasing contrast to the darker brickwork and window framing

Upper left—White matt enamel terra-cotta gives beauty to this Californian accessory store. It belongs to Samuel Kraemer, Anaheim, Cal.

Right—The White Automobile Co., Denver, is housed in this distinctive building. White matt glaze with blue matt glaze terra-cotta panels set off the White radiator emblems above the two doors







Lower right—Two artistic fronts on the Philadelphia motor row. Here the Lozier and Chalmers are effectively displayed. Lower left—The Maxwell Motor Co. occupy this entire building in Denver. It is built of light buff standard finish terra-cotta used with dark buff and brown stiff mud texture brick

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 852) TIME-CARD BOARD

A system whereby the foreman can see at a glance the amount of work before each man and assign a new job to the proper workman. As each car comes into the shop, the work to be done is noted and typewritten on a work-card. The foreman then snaps this card into the clamp of the workman that is to do the work. The workman, having finished his last job, comes to the board, gets his card and goes to the work without further instruction.—Charles Coon (Drenco Machine Co.), New York.

(No. 853) TORQUE TUBE REPAIR

It is difficult to re-rivet a torque tube to the flange holding it to the rear axle. A simple and effective repair may be made by removing the rivets, drilling the holes to take a ¼-in. plug tap, and screwing in a threaded rod in the manner shown. After sawing off the rod it should be headed over to prevent loosening. In the case of a badly abused tube, melted spelter should be poured in between the tube and the housing to give a good bearing.—Charles Coon (Drenco Machine Co.), New York.

(No. 854) TOOLROOM SYSTEM

The special tools for each make of car are kept together on the toolroom shelves and are marked and indexed so that they may be readily found when needed. Tools that may be used on several makes of cars are each listed in the column provided for each car. The list is fastened at the end of the shelf and is protected by a coat of shellac. The small insert shows the method of listing the tools.—Charles Coon (Drenco Machine Co.), New York.

(No. 855) BUMPER BAR

The strain provided by a puller is often insufficient to remove a stuck taper fit, such as that on a rear wheel or a drive sprocket. The removal is facilitated by the addition of a heavy blow to the strain of the puller. The bumper bar shown herewith has sufficient weight to give the blow required, and the brass heads prevent injury to the shaft end.—Charles Coon (Drenco Machine Co.), New York.

(No. 856) PARTS BOX

Repair work is accelerated by the isolation of relative parts, and the arrangement illustrated offers a convenient method. Three packing boxes of the same size are fastened one above the other by means of side strips and placed near the car being repaired. All motor parts, for example, are placed in the lower compartment, the transmission parts in the middle and the rear axle parts in the upper compartment.—Charles Coon (Drenco Machine Co.), New York.

(No. 857) FIXTURE FOR REBORING CYLINDERS

Any cylinder having a detachable head may be rebored while on the base by the fixture shown. A rigid upright, secured to the adjacent cylinder by means of taper plugs, carries the brackets and bearings that hold the boring spindle. Drive is effected through a spiral and spur gear train driven from an overhead shaft. This spindle is hollow and slotted to carry the boring head. A feed screw, controlled by a hand wheel at the top of the spindle, runs through the internal arm of the boring head, thus permitting the head to be fed up or down. To use, the cylinder head is removed, the pistons and connecting rods taken out, and the fixture clamped on in the manner illustrated. The boring spindle is lined up by careful adjustment and a very light cut taken, feeding from the top down. Too heavy a cut will cause the tool to chatter, though it must be deep enough to cut all the way around.—Charles Coon (Drenco Machine Co.), New York.

(No. 858) EXPANDING LAP FOR CYLINDERS

After reboring, the cylinders should be lapped to a perfect finish. The expanding lap shown offers a ready means for doing this. Four lead quadrants are held in an adjustable head with their inner surfaces tapered and resting on a tapered plug. Each of these quadrants is charged with an emery and oil mixture, forming an abrasive that quickly brings the cylinders to the required finish. By having several sets of quadrants the device may be used on almost any motor.—Charles Coon (Drenco Machine Co.), New York.

(No. 859) VALVE-CAP WRENCH

Removal of slotted valve caps is facilitated by the use of the device illustrated. It is very similar to a spanner wrench in form, except that it is made heavier and one arm is adjustable. The teeth are made from tool steel, hardened and ground to a screwdriver edge and threaded to fit the tapped holes in the arms.—Charles Coon (Drenco Machine Co.), New York.

(No. 860) WELDING TABLE

A welding table forms a valuable addition to an oxy-acetylene welding outfit, as the welding is made easier by its use. A cast-iron plate rests in an angle-iron frame supported on iron pipe standards. The joints of the frame and the connection with the standards are all welded. Slots are provided in the top for fastening the work to the plate.—Charles Coon (Drenco Machine Co.), New York.

(No. 861) SPRING LEAF SPREADER

The clamp illustrated renders the lubrication of the springs a comparatively simple matter. It may be made from the ordinary machinist's clamp by grinding down the fixed jaw to a sharp edge and fitting the screw end with a conical point. A stronger spreader, however, may be made by forging the frame from a steel bar.—Hudson Motor Car Co., Detroit.

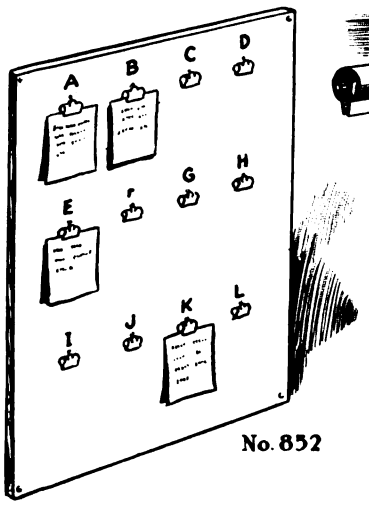
(No. 862) ADJUSTABLE ENGINE STAND

This engine stand, with the exception of the steel end-members, is constructed from 3 x 4 in. wooden joists bolted together. It is made about 30 in. high, as that is the most convenient height for working on the motor. An adjustment from 20 to 30 in. in width permits any motor to be handled. The stand is equally convenient in overhauling transmissions or rear axles.—Charles Coon (Drenco Machine Co.), New York.

Sell Advertised Goods

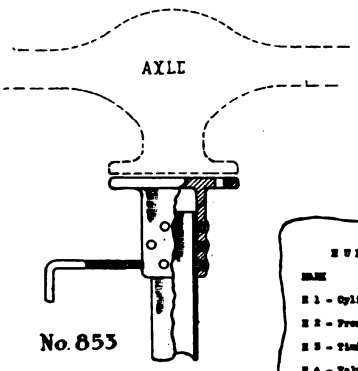
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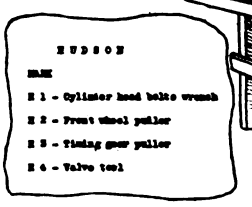


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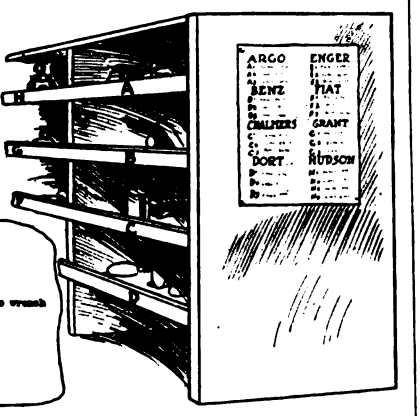




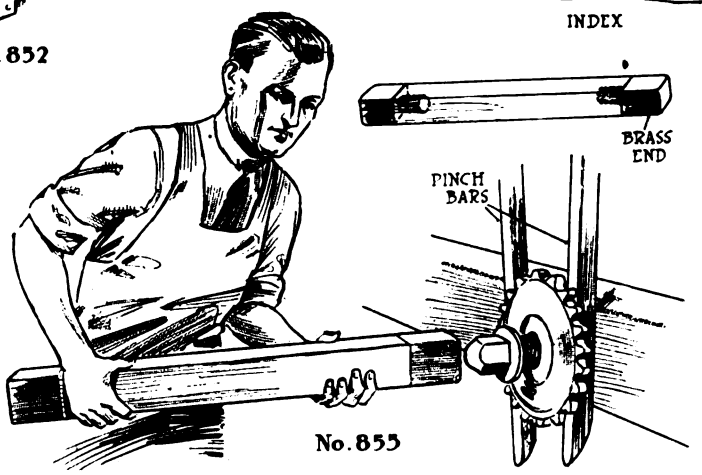
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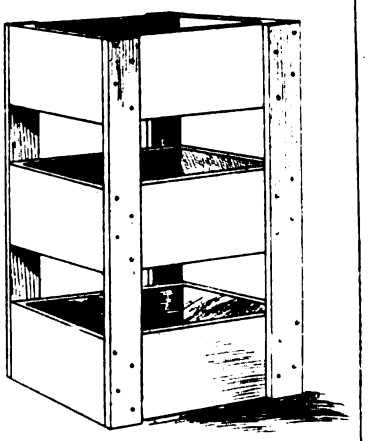
INDEX



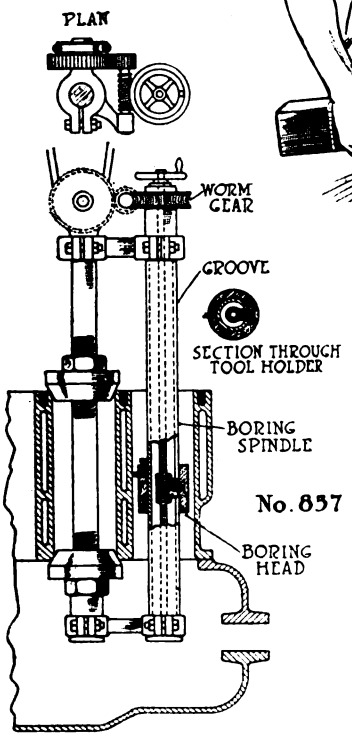
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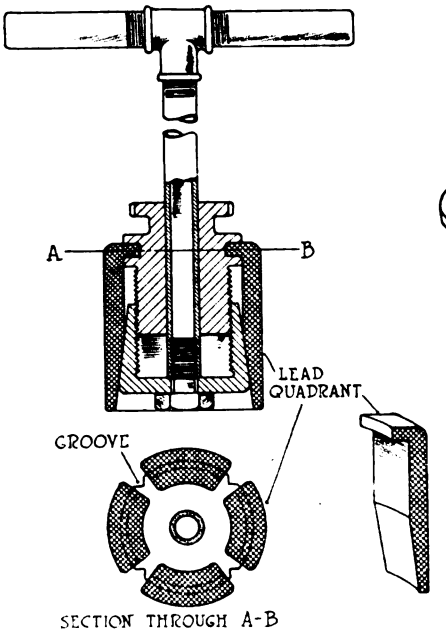
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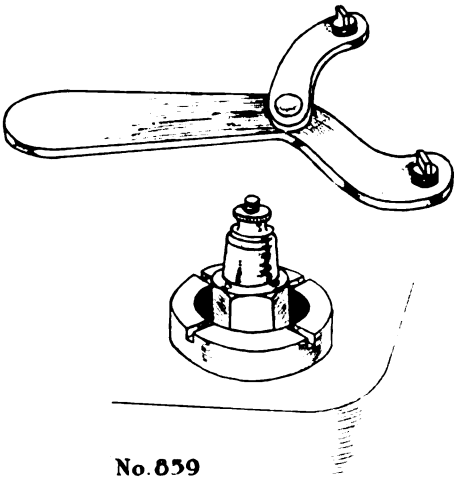
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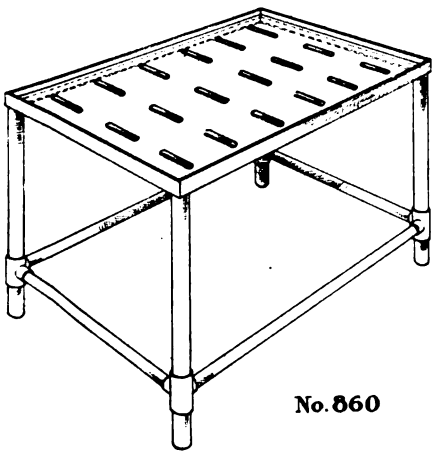
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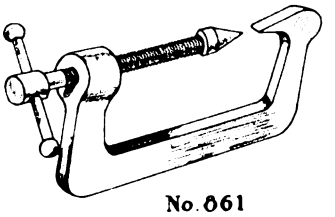
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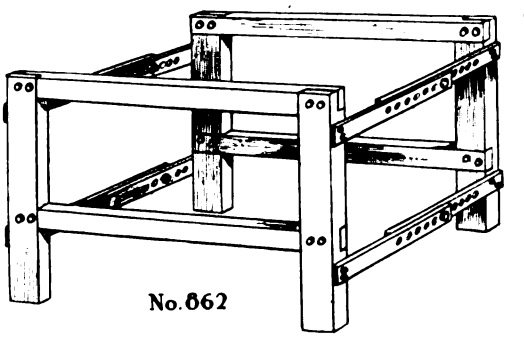
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No. 862

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Accessories & Supplies

THIEFOIL IGNITION LOCK

Caskey-Dupree Mfg. Co., Marietta, Ohio. PRICE, $3.50.

A combination ignition lock that is applied to the face of the standard Ford switch without making any changes in the wiring arrangement. Three buttons project from the top of the lock and each must be pressed the correct number of times to complete the circuit. Pressure on one of the buttons throws the switch off. Each of the buttons operates a notched disk that must be rotated until the notches come in line. A trip-pin then falls into the groove and the lock mechanism is released. More than a thousand working combinations are possible and the entire installation may be made by the purchaser.

PENNSYLVANIA BAR-CIRCLE TIRE

Pennsylvania Rubber Co., Jeannette, Pa. PRICE, 30 x 3, $10.35; 30 x 3½, $13.45; 32 x 3½, $15.45; 34 x 4, $22.50; 36 x 4½, $31.80.

A non-skid tire having a tread of tough black rubber formed into a combination of cross-bars and circles. This construction is claimed to put the rubber where it is most needed and to enable the tires to exceed their mileage guarantee under normal conditions.

THE AEROFRAM

Aerofram Co., Inc., 107 Massachusetts Ave., Boston. PRICE, $1.

An auxiliary air valve in the intake manifold, operated automatically by suction. A metal plug houses the valve, and is screwed into a ⅛-in. tapped hole in the manifold just below the spread.

PREMO TRANSMISSION COVER FLANGES

New York Motor Car Devices Co., 200 Eleventh Avenue, New York. PRICE, 75 cents per set.

A flange for the Ford transmission designed to facilitate the removal and replacement of the cover. It is fitted to the crankcase under the transmission and is tapped to receive the retaining bolts, which are screwed into it instead of into nuts. The retaining bolts are put in from the top and may be tightened up, making an even pressure the whole length of the gasket. The advantage of the flange is that no one is required to hold the nuts from below.

MISCELLANEOUS PARTS

Detroit Screw Works, Detroit. PRICE, $4 per 100-lb. assortment.

An assortment of parts for repairshop work that have been rejected because of some slight imperfection that in no way affects the strength and usefulness of the piece. It comprises set and cap screws, studs, taper pins, bolts, nuts and



all manner of special pieces, different shapes and sizes, and bar ends.

PARAMOUNT SPRINGS FOR FORDS

Detroit Engineering Products Co., Detroit. PRICE, $6.

Retards the upward motion of the body when recovering from a shock. One is installed on each end of the rear spring and consists of a resilient compression spring anchored in castings that are held in place by two cantilever springs. A strong webbing strap which buckles around the axle is fastened to the casting at the top of the compression spring. The lower casting is attached to the car spring by a tie-plate and two bolts. The installation requires that the snubber be bolted to the rear spring, and the strap fastened around the axle, which may be done in a few minutes.

HYTORK STARTING AND LIGHTING BATTERY

Heissler Storage Battery Co., Chicago. PRICE, 6L-80, 13 plates, $27; 12-40, 7 plates, $34; 18-40, 7 plates, $44; 24-27, 5 plates, $45. Dealers, 33 1/3 per cent.

The plates of this storage battery are designed and constructed for high efficiency and durability. The grids are an alloy of lead and antimony so proportioned as to produce a rigid and workable grid. After filling with the plate-composition, they are placed on an electrical charging board and given the positive or negative charge. It is claimed that the resulting plate may be bent until the grid breaks without disturbing the active material. Buckling, abnormal sulphating and the shedding of active material is eliminated by this construction, it is said.

TRUCKFORD ATTACHMENT FOR FORDS

Robinson Machine Co., Detroit. PRICE, $350.

Converts a Ford into a 1-ton truck, leaving the chassis intact. The Ford rear axle becomes the jackshaft and carries the sprockets for the chain drive, the attachment bolting on over the frame. The lengthened frame gives a loading space of 8½ to 11½ ft. back of the driver's seat, making the wheel-base 128 in. Solid rubber tires are used on the rear and carry almost the entire load. The Truckford may be attached by two men in a short time, and may as readily be removed and the original body replaced.

SEARCHLIGHT LITTLE GIANT TORCH

Searchlight Co., 415 Karpen Bldg., Chicago. PRICE, $1.50, complete, with hose and connection.

A brazing or soldering torch that may be attached to any acetylene tank. An extremely hot flame is produced immediately and may be regulated to suit the requirements of the work. The device is small, provided with a convenient handle and may be used in a limited space.

BATTLE CREEK VULCANIZER

Battle Creek Vulcanizing Equipment Co., Battle Creek, Mich. PRICE, Model B, $250, with all bench tools and special clamps. Boiler not included.

A large, light machine for the repair of casings or tubes. Steam is generated in a convenient boiler and circulated through the hot-plates in a manner that keeps it dry and live. Six casings and several tubes may be treated at one time, and though held so as to occupy a minimum of space are still accessible to the workman. The vulcanizer is capable of handling all general repair work. Each unit is controlled by a globe valve and one or all may be heated at the same time.

LUNKENHEIMER ENGINE PRIMER

Lunkenheimer Co., Cincinnati. PRICE, $6.

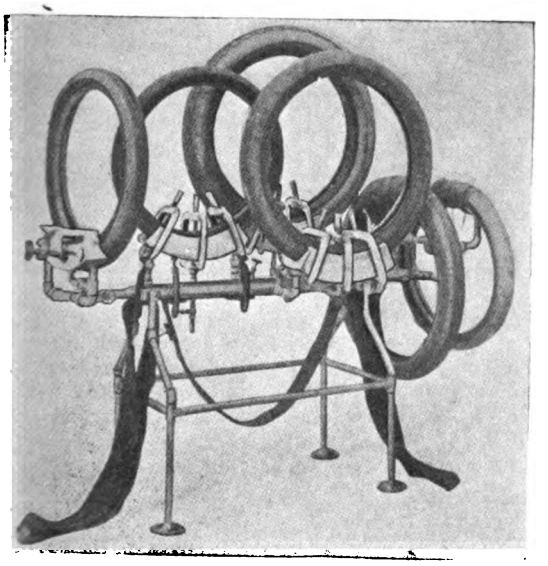
A pump located on the dash permits gasoline to be forced into the intake manifold. A ⅝-in. hole is drilled in the dash and the pump mounted, after which ⅛-in. holes are tapped in the manifolds as near to the valves as possible. These holes and the pump are connected by the tubing provided, and the pump is connected to the gasoline supply. If a vacuum system, this connection is made to the auxiliary reservoir, otherwise it is made directly to the supply pipe. A disk at the end of the plunger shuts the gasoline from the manifold when the motor is running.

SUPERLUSTRE POLISHES

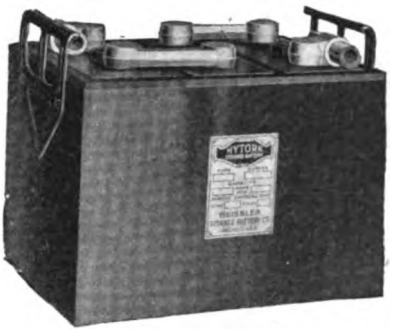
Jas. J. Ferro, Inc., 792 Seventh Avenue, New York. PRICE, per can of 20 oz., $1.50. Dealers, 35 per cent and 5 per cent for cash.

A polish for cleaning the surfaces of car bodies without injury, and is said to leave a glass-like finish upon which dirt and dust cannot accumulate. A scratch and stain remover is also supplied that is to be used only when the surface is such that no polish will give satisfactory results.

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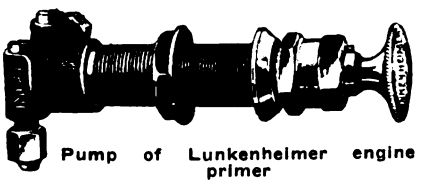
Battle Creek Vulcanizer



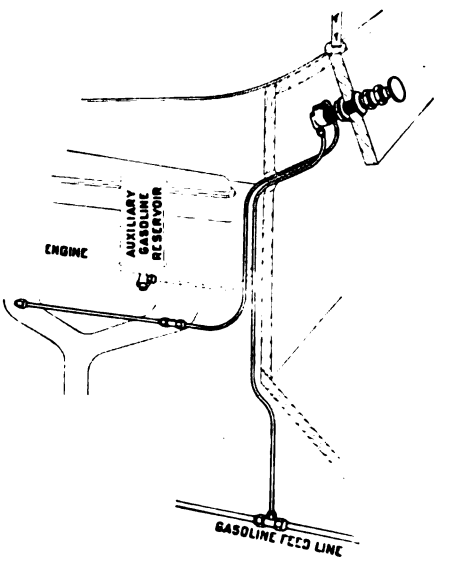
Hytork starting and lighting battery



Thiefoil ignition lock



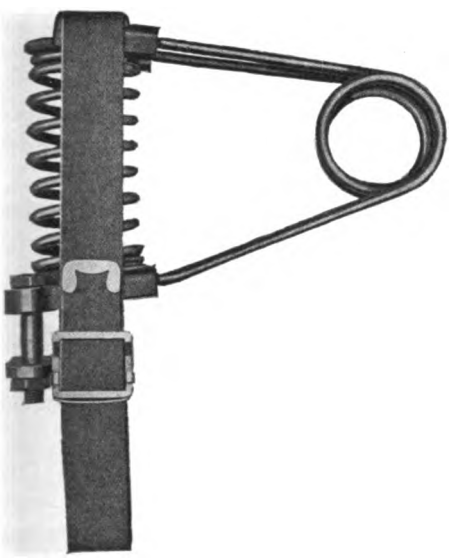
Pump of Lunkenheimer engine primer



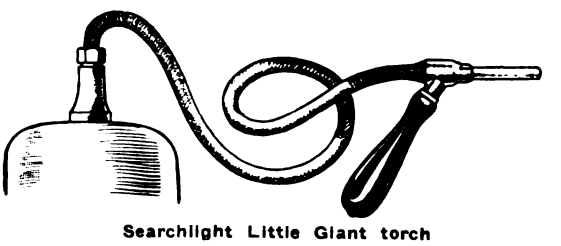
Lunkenheimer engine primer installed



Pennsylvania Bar-Circle Tire



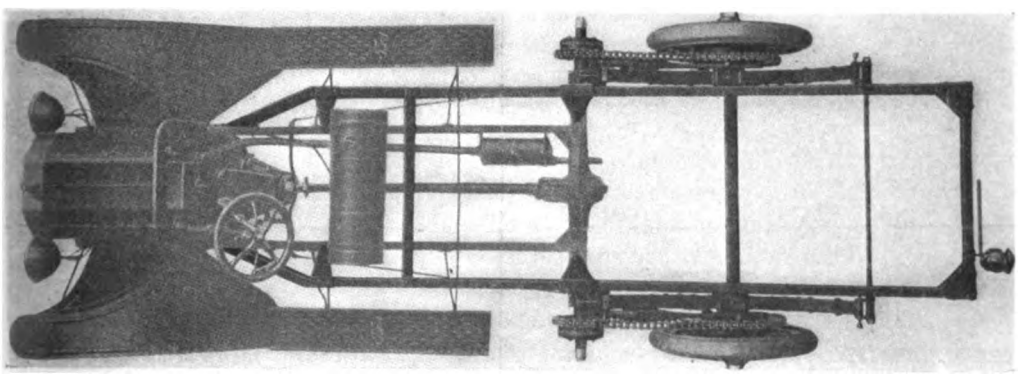
Paramount springs for Fords



Searchlight Little Giant torch



Aerofram air valve



Truckford attachment for Fords



Premo transmission cover flange for Fords

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A General Letter to a Certain Man

If any one wants to know if this is his garage and will ask for that information it will be given.

Mr. ———,
——— Avenue,
B———.
Dear Mr. ———

We are sending you this letter because we believe you want to improve the service that is given at your garage.

Your location, on one of the main arteries of travel in B——, is excellent. Your sign attracts trade.

It was because of your sign that we drove into your garage last Saturday evening at eight thirty. We wanted 5 gallons of gasoline.

We drove directly into the garage because we did not see either a curb pump or a portable gasoline tank.

Directly inside the door we noticed the portable tank, but before we could ask for gasoline your night man shouted to us that we could not stop there, that we would have to back out to the curb so as not to obstruct the entrance. This despite the fact that we might have driven in a little further and the portable tank was right handy.

So we backed down to the curb and your night man then trundled the portable tank out and pumped 5 gallons into our tank. In doing so, however, he slopped quite a little over the cushions. Our wife objects very strongly to this as it loosens dirt from the upholstery and it gets on her clothes.

We handed the night man a five dollar bill but he had no change. He sent someone to the saloon on the corner for change. He came back in 9 minutes by our watch, smoking a cigar. This led us to believe that he may have stopped for a friendly chat.

While he was gone, we inquired the location of the toilet. It was pointed out but it was impossible to get to it because there was a large car directly in front of it. The night man did not offer to move the car the few inches necessary.

So when the man came back with our change we drove away and you can't blame us, can you, if we feel a little bit sore?

We would suggest, Mr. ——, that the portable tank be at the curb because hundreds of transients pass your door all day and half the night.

It would also be a good idea if you were to provide your night man with change for five dollars and instruct him to see that he always has change instead of forcing your customers to wait for it.

It would also be well to have that big car about 2 feet from the rear wall—this would not obstruct your entrance—so that your customers can get at the toilet.

If you will do these things we believe that you will profit, that you will be able to give better service and that customers will continue to patronize your garage.

We hope you will find these few suggestions valuable, Mr. ——.

Advertise Your Fall Fair Show

IT is noticeable in connection with some of the fall shows at fairs that there seems to be a lessened attendance because the show is not properly brought to the attention of the public.

The fairs generally are advertised and mention oftentimes is made that "automobiles will be shown," but when it comes to a united boosting of the show itself by the car interests there is much that could be done.

If the show is run by a dealers' association this organization should take good space in the daily newspapers and give wide publicity to the fact that the show is a big part of the fair. Advertising can impress upon the public that the show is one of the biggest features of the fair—and such it should be if it is to be held at all.

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AN ANSWER TO THE "SERVICE" QUESTION

Editor Motor World:

One of our customers kicked on the charge of 20 cents for labor for placing a bolt in a fender and 5 cents for the bolt, saying that the same should be done gratis on account of the good feeling which it would engender. This customer was formerly in the hardware business and said, whenever anyone came to his place of business and asked for a small bolt, screw, or such, the same was given away and caused the people to have much respect for him and brought considerable business to his place.

I called his attention to the fact that this was a very bad practice and very expensive and asked him the following questions:

"When you entered the garage you called the foreman and told him that you wanted a bolt placed in the fender. He, in turn, called a workman, who was called to the car and ascertained the kind and size of the bolt wanted, went to the stock room and drew the same from the stock man and placed it in the car."

He admitted to me that it took the following time:

At least 5 min. of the foreman's time, valued at $6 per day, or 1 cent per minute, or 5 cents; at least 5 min. of the stock man's time, valued at 30 cents per hour, which would be 2½ cents, and at least 15 min. time of the workman at 70 cents per hour, including overhead cost, which would be 17½ cents.

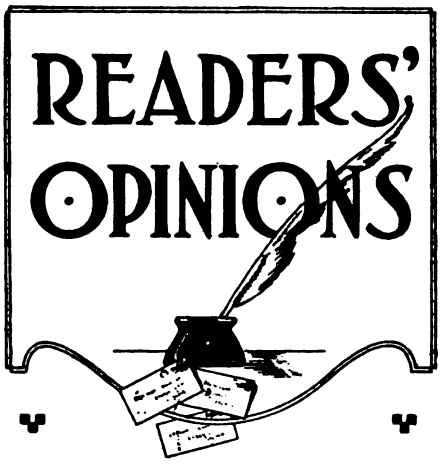
This would be a total labor cost of 25 cents, and with allowance of 5 cents for a bolt, would make a total cost of 30 cents, showing a loss.

When he saw these figures on paper he said he never realized what it costs to do these trifling little jobs, and said he could plainly see why it was that so many garagemen were not making any money and did not know where their profits were going.

He also stated that a garage doing any business at all would probably have fifty or sixty calls for little jobs of this kind every day, and said he did not realize that same would amount to what they do, which amount would be from $15 to $18 per day, or from $450 to $540 per month of 30 days.

Fifty jobs per day like the above would show a net loss of $2.50 per day, or $65 per month. Small jobs should be charged for at a rate of $1 per hour.

He could readily see from these figures, and from his past experience in the hardware business, how a garage having men and material for the use of the people should be entitled to receive pay for the actual cost of the labor and material used, plus a small profit, and said he was willing to stand his share of the burden whenever he called upon them. Service consists of having the material and men ready to serve, and should be paid for, and under paid-for conditions should produce the best feelings of satisfaction and friendship.—Joslyn Automobile Co., Herman L. Frohmader, Chief Accountant, Rockford, Ill.



Four-Cylinder Motor for Tractors

MILWAUKEE, Sept. 2—The four-cycle, four-cylinder motor, with the cylinders in one or two blocks and the valves at the side, is the most suitable type for agricultural tractors, according to H. L. Horning, engineer and general manager Waukesha Motor Co. Horning read a paper before the Midwest Section of the Society of Automobile Engineers in which he gave this as his opinion:

Piston pin—Hollow.

Material—0.20 carbon steel, case-hardened, ground and polished.

Type of bearings—Bronze.

Valve tappet—Mushroom or roller-type.

Timing gears—Crankshaft gear 0.30 carbon steel. All others, semi-steel. Teeth not less than 8 pitch helical.

Crankcase—Aluminum with 8 per cent copper.

Bearings—High-tin babbitt alloy.

Flywheel—Stored energy of 30 per cent.

Connecting rods — 0.35-0.45 carbon steel, heat treated for an elastic limit of 70,000 lb. per square inch.

Camshaft—0.20 carbon steeli, case-hardened and ground.

Give One-Year Service

INDIANAPOLIS, Sept. 11. — A novel service policy has been started by the Fisher Automobile Co., Reo dealer. This company has advertised that all parts broken in normal service within 1 year from delivery date will not only be replaced promptly free of charge for material and labor, but it will, in addition, pay to the customer an amount equal to the price of the new part as shown in the price list as compensation for the annoyance and loss of time caused by the breakage.

Help Straighten The Curve

Below are comments from Motor World Readers on the Winter Business Number that this paper will issue October 11

We think this is an excellent idea, as the accessory business is not evenly divided throughout the year. It is either too much in a few months or not enough in the balance of the year, that makes it anything but profitable as an average business.

If the trade can be educated to make this an all-year business it will be a very great benefit to the accessory business.

We hope you will be successful in your endeavor to stimulate the buying of accessories during the dull months of the year.—F. A. Hamilton, the Tracy-Wells Co., Columbus, Ohio.

We wish to express to you our appreciation of the great work you are doing in educating the garageman and dealer to go after the winter business.

We believe that you are on the right track and deserve the co-operation of every man in the business.

Any time that we can assist you we will do so with pleasure.—Talman Auto Supply Co., Inc., Richmond, Va.

We have received the article entitled "Help Straighten the Curve."

We have a force of twenty-five salesmen and we intend to carry this entire force through the winter and do our best to "straighten the curve" if we can.

It would assist us greatly in this work to have twenty-five copies of this article, and we'll hammer a little story into the heads of our boys that will give them some good reasons why the trade should buy in the winter months just as readily as they do in the summer months.—D. Levin, Benford Mfg. Co., Mount Vernon, N. Y.

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The RETAIL NEWS

SOUTHWEST

The Cogswell Garage, Kirwin, Kan., has been opened in a concrete building.

Lon Cave and son, Gail, Overland Park, Kan., have purchased the J. E. Wickoff garage.

Leo Washbon, Protection, Kan., has moved to Sublette to take the Ford agency there.

A. H. Stephens, Jefferson City, Mo., has opened a garage.

J. T. Zook, Louisiana, Mo., has opened a garage.

W. S. Laughridge, Clements, Kan., has purchased the Jackson garage.

Bernie Cleeton and Bruner Dobbs, Cleveland, Okla., have opened a repairshop.

Jim Cochran and Burleigh Hoover, Strawn, Kan., have opened a garage.

H. E. Lyman, Clay Center, Kan., has opened a vulcanizing shop.

Ray Hudson, Arkansas City, Kan., has purchased the O. J. Wilkinson garage.

Pete Holman, Alta Vista, Kan., has opened the Pete Holman garage.

E. E. Lipperd, Winfield, Kan., who formerly did motorcycle repairing, will do automobile repairing also.

Wm. Stretton, Downs, Kan., has leased the William Baker garage.

Clarence Ross, St. John, Kan., has secured the Ford agency for Stafford county and will locate at Stafford, Kan.

George Parke, Carthage, Mo., has bought out Bert Holcomb's interest in the Grieb & Sappington garage at Fourth and Maple Streets. The garage will move into new quarters at Fourth and Garrison shortly.

The Oklahoma City Auto Co., Oklahoma, City, Okla., is now located in its new quarters at 204-206 West Second Street.

J. Scott, Nortonville, Kan., will build a garage in the rear of the S. A. Miller building.

M. C. Wemmer, Milan, Mo., has opened a garage and repairshop in the Butler Building. V. E. Harmon, who has the agency for the Buick, will be connected with the garage.

Walter E. Moore, Manhattan, Kan., has secured the agency for the Ford in Manhattan and vicinity. He will open a Ford garage at 209 Poyntz Avenue.

John J. Intfen, Atchison, Kan., contemplates remodeling his livery barn into a garage and leasing it to a Kansas City firm.

R. W. Immasche, St. Louis, recently appointed distributer of the Jordan, will incorporate under the name of Jordan Motor Sales Co.

Wallace C. Capen, St. Louis, manager of the White branch in that city, has been transferred to an executive position at the factory in Cleveland. He will be succeeded in St. Louis by George E. Armstrong, his brother-in-law, who has been with the Locomobile Co. in New York City and at the factory.

The Ebbeler Motor Car Co., St. Louis, has taken the agency for the Mitchell, giving an initial order for 500. The agency was transferred from the Weber Implement and Auto Co. J. H. Little, in charge of Mitchell department for the Weber Co., goes to the Ebbeler Co. in the same capacity. A. F. Jacobsmeyer of the Mitchell factory is installing a service department for the Ebbeler Co. at 2942-44 Olive street.

The Panama Rubber & Equipment Co., St. Louis, has opened a storage battery and accessory department at 1423-25 Locust street. H. E. Spoeneman is in charge.

George H. Scott, Columbia, Mo., manager of the branch in that city of the Hudson-Phillips Motor Car Co., St. Louis, has been made manager of the company's wholesale department, succeeding L. T. Hudson, who resigned to accept a position in Memphis.

A. G. Cameron, Dallas, is the new manager of the St. Louis Goodyear branch. Cameron has been in the Goodyear service as Dallas manager three years. He succeeds W. E. Finney, transferred.

The Chevrolet Motor Co. of St. Louis, began Sunday, Sept. 3, an extensive advertising campaign, starting with double pages, featuring the new price on the Chevrolet, $490. The ad. features the electric starter and electric lights and the fact that the car is "made in St. Louis."

The Packard Missouri Motor Co., St. Louis, entertained all its employees at a picnic at Byrnes Mill on Labor Day.

A. P. Seigmund, St. Louis, has been appointed manager of the truck department of the Detroit Electric Car Co., Twentieth and Locust streets, that city.

The Gibson Motor Car Co., Webster Groves, Mo., a St. Louis suburb, is erecting a brick and tile showroom and service department on Lockwood avenue. The company distributes the Dodge.

The Locomobile Co. of Missouri, St. Louis, has appointed N. B. Shelby of New Orleans as a dealer.

Ralph Hirsch, St. Louis, recently of Hirsch & Spring, tire dealers, has joined the staff of the Bittel-Leftwich Tire Service Co. and will manage the Kelly-Springfield department.

The Greenlease Motor Car Co., Kansas City, will erect a building at Gillham road and McGee road which will cover 28,500 square feet and will cost $175,000. The building will be the new home of the Cadillac and Greenlease service.

The Hathaway Motor Co., Kansas City, has been incorporated at $15,000 with the following directors: C. E. Hathaway, M. A. Hathaway and H. C. Page. The Hathaway Motor Co. has taken the Monroe and Oldsmobile agencies. R. N. Burns, C. E. Pickens, Mark Bogart and O. H. Bowlan are salesmen for the Oldsmobile. E. C. Eads, W. A. Koch, Hal Lewis and J. A. Jordan are salesmen for the Monroe.

The Howard & Murphy Motor Co., Kansas City, has employed E. J. England, formerly sales manager of the Karshner Motor Car Co., as sales manager.

The Southwest Motor Co., Kansas City, Mo., has employed C. C. Tanner, formerly with the Halladay Motor Co., St. Joseph, Mo., as district manager for the Reo in Kansas and Missouri. C. B. Haycox, formerly district manager of the Velie Motor Car Co., Oklahoma City, and E. B. Baxter, formerly with the Buick and Studebaker companies of this city, have been added to the force.

The Marion-Handley Sales Co., Kansas City, recently incorporated, will have for its new secretary C. E. Stevens.

The Kirkland-Daley Motor Co., Kansas City, Studebaker dealer, has added J. Q. McFarland, formerly with the Bond Motor Co., to its territorial sales force.

B. A. Robinson, Independence, Kan., has discontinued his veterinary hospital and converted his infirmary into a Studebaker salesroom and service station. He has associated with him Charles Shultz. He will continue the practice of his profession without the hospital.

The Packard Missouri Motor Co., Kansas City, has added five city salesmen and two territorial salesmen in preparation for fall business.

The Grant Motor Co., St. Joseph, Mo., has been incorporated at $5,000, by L. R. Grant, John W. Broaddus and A. Leonard Guitan, all of St. Joseph.

The Farmer Auto Co., St. Joseph, Mo., formerly the Diamond Motor Co., Hudson and Dodge dealers, is incorporating. It is expected that S. R. Farmer, largest stockholder and president of the Farmer Auto and Supply Co., will be president.

C. L. Jarrett, Springfield, Mo., will distribute the Chevrolet in that territory. He will occupy part of the Schweitzer Building, new being erected. J. E. Hilton will have a repairshop in this building, where also will be the Rubber Tire and Supply Co.

The Martin Motor Co., Springfield, Mo., has been organized to handle the Maxwell. Thomas D. Martin, formerly of West Plains, and Charles K. Martin, of Springfield, are the organizers.

The Southwest Motor Co., Dodge City, Kan., has been incorporated to distribute the Paige. It will soon occupy a new salesroom. Cecil Newby, president of the First National Bank of Englewood, is president. Other officers are Ralph Pryor, of Dodge City, and Fred Jones, of Wichita; the latter will soon move to Dodge City.

The Hudson-Oakland Sales Co., Emporia, Kan., E. M. Hollister, manager, has opened a sales and service station for the Hudson and Oakland.

Gile & Francis, Caldwell, Kan., Ford dealers, have closed their business at South Haven.

The Hupmobile Agency, Bartlesville, Okla., has purchased the Hupmobile business in Bartlesville, and for Washington, Osage and Nowata counties of Jack Shaw and has opened new salesrooms and will install a repair department.

A. H. Stephens, Boonville, Mo., has employed F. C. Brickey as garage manager. A. H. Stephens, Jr., formerly of the firm of A. H. Stephens & Son, will travel for a Chicago supply house.

C. F. Mull, Great Bend, Kan., has purchased from Butler & Rogers the Santa Fe Trail Garage and will handle the Buick.

J. W. Haley, Grant City, Mo., has bought the B. Prugh & Sons Garage. John Prugh continues with Haley as salesman.

The Beatty & Son Motor Co., Maysville, Mo., has been established in the Wingate Building. It handles the Ford.

W. S. Leonard, Dodge City, Kan., has secured the agency for the Auburn and will soon open a salesroom.

The Hamlin Garage, Windsor, Mo., has been sold to S. R. Shinkles, of Russellville, a member of the Russellville Hardware and Implement Co. C. Hamlin, former owner, becomes a member of the Russellville firm.

Lester Keith, Council Grove, Kan., is contemplating the opening of a vulcanizing plant; he is now employed in such a plant in Kansas City.

N. B. Wall, Sedan, Kan., has opened a branch garage in Caney, putting Bert Frye and B. Lewis in charge.

The Humboldt Auto Co., Humboldt, Mo., has been sold by A. F. Wiley to C. R. McConnell, formerly of Iola, Kan., an engineer of the city water plant there. McConnell will add a repair department, accessories and a motor livery.

The Overland Sales and Service Co., Carthage, Mo., has opened a depot in the Middle West Building; E. E. Alexander, manager, and Willard Crawford, salesman.

Dr. F. H. Bryant, Cottonwood Falls, Kan., has secured the Maxwell agency for the east half of Chase county, F. O. Pracht, of Elk City, having the western half.

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The Kansas Motor Car Co.'s branch in Arkansas City, Kan., will be opened soon under A. J. Edwards, formerly of Wichita. The Studebaker is handled; A. B. Davis will be in charge of the tire department.

J. F. Pickford, Blue Mound, Kan., has taken Joy Musser as partner in his garage, the firm being known as Pickford & Musser.

Will Gerhart, Gaylord, Kan., has bought the interest of John Eller in the Main Street Garage.

Edward Amole, Lyons, Kan., proprietor of the Lyons Buick Agency, has bought property and will erect a garage and salesroom building, 25 x 75.

Herman Kueffer, McCracken, Kan., has resumed possession of the garage he formerly owned. It will be known as the Kueffer Garage.

Charles Wahl, McCracken, Kan., is planning the erection of a new garage.

E. B. Callender, Hutchinson, Kan., has sold his Cadillac agency for Hutchinson and Wichita to Floris Nagelvoort and Sam D. Stearns of Detroit, Mich., who will move to Wichita.

T. B. Mumma, Osceola, Mo., will erect a garage and repairshop.

A. F. Graves, King City, Mo., plans a large brick garage.

The Simon Tire and Repair Co., Kansas City, S. Simon, proprietor, has moved from 605 Grand avenue to 1935, the same street.

The Thomas Auto Repair Co., Kansas City, W. E. Thomas proprietor, has moved from 710 to 1229 McGee street; O. L. Allen, formerly with the Delco Company as traveling expert, does the electrical work.

Walter Stonum, Nevada, Mo., is now owner of the North Gulf Garage.

Arthur Howard, Tipton, Mo., is enlarging the Tipton Garage, formerly owned by Arthur Mayhew.

B. F. Ogden & Son, Wellsville, Mo., are new Maxwell dealers.

Fred H. Stout and B. G. Stout, Marion, Kan., have secured the Ford agency and will open a salesroom, repairshop, ladies' rest room and garage. They are formerly of Wichita.

Charles F. Travelute & Son, Clark, Marysville, Kan., are erecting a new garage.

F. W. Niedermayer, Jr., Columbia, Mo., has opened the Hudson Garage, taking on the agency for Hudson cars and Fisk tires. He succeeds the Hudson-Phillips Motor Co.

Moody & Elder, Mankato, Kan., have opened the Overland Garage.

James Cochran and B. L. Hoover, Burlington, Kan., have opened a new garage.

Walter Bollinger, Greenville, Mo., has taken the Ford agency and will open a salesroom.

Omer Lutes, Lutesville, Mo., has remodeled an old building which he owns and is opening a garage.

The A. A. Doerr Mercantile Co., Larned, Kan., is building a garage.

William Acker, Vermilion, Kan., has opened a fireproof garage.

The Independent Garage, Marysville, Kan., will build an addition, 32 x 44.

H. E. Morris, Hoxie, Kan., has secured the Sheridan county agency for the Overland and will locate it in Hoxie permanently.

Mart L. Cannon, Smith Center, Kan., has opened a new garage, with agencies for the Dodge, Oakland and Chalmers; Ray Cole is in charge of repairs.

Col. C. H. Morrow, Fort Scott, Kan., with his son, Harry Morrow, and his son-in-law, Ross Odell, has leased the Interstate livery barn and will remodel it for a garage and repairshop for the Overland and Ford.

Ira Bartz and Glen Johnson, Pearlville, Mo., have secured the agency for the Overland and will open salesrooms.

Francis Reeves, Tina, Mo., is closing out his garage business.

James Collins, Bennington, Kan., is about to erect a brick garage.

E. J. Barber and Walt Glasscock, Howard, Kan., have bought the North Side Garage from Dean Brothers, secured the Ford agency, and will call the establishment the Ford Service Station.

Chas. Dunn, Craig, Mo., formerly of Atlanta, Ga., has opened a repairshop.

The Peerless Garage, Lawrence, Kan., has been destroyed by fire caused by a short circuit. Five new cars belonging to Lawrence merchants were destroyed.

The Robidoux Auto Co., St. Joseph, Mo., has remodeled its interior and now has access to the garage both from the front and the rear of the building.

Fred Stump and Edgar Huff, Grain Valley, Mo., have bought the garage business of C. W. Childers. The sale includes the jitney buses running between Oak Grove and Independence, Mo.

Dave Hanson, Great Bend, Kan., has purchased the Scheufler Garage.

S. R. Shikles, Bunceton, Mo., is now running the garage formerly owned by C. Hamlin.

Chas. E. Thompson, Harper, Kan., is considering opening a service station and repairshop for Overland cars.

J. V. Carper, Minneapolis, Kan., has bought the Meridan Garage.

B. O. Czarnowsky, Herington, Kan., is building a garage.

Frank Chappel, Bowling Green, Mo., has opened up a new garage.

H. R. Kugler, Abilene, Kan., is the new county agent for the Buick.

MOUNTAIN

The Scully-Norris Motor Co., Denver, has opened a Ford agency and service station at Fourteenth and Lawrence streets, in the factory building formerly occupied by the Griffith Shoe Co.

Tom Botterill, Denver, Pierce-Arrow and Hudson distributer in Colorado, Wyoming and New Mexico, and Dodge dealer for Denver and vicinity, with headquarters at East Thirteenth avenue, Broadway to Lincoln street, has secured the Colorado, Wyoming and New Mexico distributing agency for the Pierce-Arrow truck.

The Clark-Gibson Motor Co., Denver, has opened a Ford agency and service station at East Colfax avenue and York street.

The New York Lubricating Oil Co., Denver, is the new name for the Monogram distributing agency for Colorado, Wyoming and New Mexico, at 1441 Wazee street, formerly called the Dickey Oil Co. George B. Hayward, a salesman for the former concern, is manager of the new Western branch, and W. G. Dickey, head of the former Denver agency, has gone to Kansas City to manage the branch there under the name of the New York Lubricating Oil Co.

The Texas Co., Denver, has built a $4,500 brick and tile filling station on a triangular site at Eighteenth and Welton streets and Glenarm place.

The Nell-Nohr Service, Denver, is the name of a new garage business at 1445 Cleveland place.

The J. S. Morrison Auto Co., Denver, Allen and Oakland distributer in Colorado and Wyoming, has given up the Oakland and is handling the Allen exclusively at 1528 Broadway.

The Turner-Deigle Motor Co., Denver, is the new name for the Turner Commercial Auto Equipment Co., formerly distributer of the Smith Form-a-Truck, at 455 Broadway, which has given up that business and taken one of the new Ford agencies.

Lee McGee, Denver, has opened a Stephens distributing agency for Colorado, Wyoming and New Mexico at 1908-1914 Broadway.

The Headington Auto Co., Denver, Metz, Inter-State, Enger and H. A. L. distributer in Colorado and Wyoming, with headquarters at 1636 Broadway, has added the Sun for the same territory.

The O'Meara-Green Motor Co., Denver, has opened a Ford agency and service station at 1439 Cleveland place.

The Tibbals-Anderson Motor Co., Denver, Jackson distributer in Colorado, Wyoming and New Mexico, with headquarters at 1188 Broadway, has added the Elcar distributing agency for the same territory.

The United Motor Sales Co., Denver, has opened a Ford agency and service station at 153-155 Broadway.

The Beardsley Electric Co., Denver, is the name of a Colorado distributing agency for the Beardsley recently opened at 1431-1433 Cleveland place. The business is in charge of George A. Showers and A. K. Ancker is sales manager.

The Ahl-Rice Machinery & Supply Co., Elizabeth, Col., Ford dealer for Elbert county, has secured the agency in that section for the Hart-Parr tractor. The company is building a $3,500 brick and concrete garage, 50 x 100, one story.

The McCarty-Sherman Motor Co., Denver, has opened a Ford agency in a new building at West Eighth avenue and Santa Fe Drive.

The Norton-Buick Co., Denver, Buick distributer in Colorado and southern Wyoming, has secured the G. M. C.

EAST

A. M. Butler & Sons, Jaffrey, N. H., have opened a garage near Shattuck Inn.

Parsons & Burleigh, Cliftondale, Mass., opened a new garage last week.

Wise & Small, Houlton, Me., have opened a garage, sub-leasing a part to F. F. Harrison, Overland dealer.

Green & Sibley, Lynn, Mass., have dissolved partnership and are succeeded as C. F. Green & Sons, Myron F. Sibley having sold his interest.

The Franklin Motor Car Co., Boston, has leased the Berkowitz garage, Worcester, Mass., where it will conduct a branch.

C. J. Rogers, Philadelphia, of the Rogers-Sargent Motor Co., 202-204 North Broad Street, has been appointed Eastern representative of Lexington sales in Pennsylvania, Delaware, New Jersey and Maryland. Rogers will have his office with the Rogers-Sargent Motor Co.

J. J. McCarthy, Boston, Ross and Abbott-Detroit dealer, has moved to 1191 Commonwealth avenue.

The Henshaw Motor Co., Boston, has placed C. A. Galloupe, G. E. Coates and O. F. Mussey in charge of the branch just opened at Lynn.

The Chandler Motor Co. of New England, Boston, has opened a branch in Springfield, in charge of F. A. Calderwood.

The Bradford Auto Sales Co., Springfield, Mass., has opened a new service station.

The Buick Motor Co., Providence, R. I., has added the agency for the Marmon.

The Metz Co., Waltham, Mass., has closed its Providence branch.

S. L. Rochette, Lowell, Mass., has added the Maxwell.

The Kenworthy-Clark Co., Providence, R. I., has taken the Studebaker agency.

William McOwen, Worcester, Mass., Reo dealer, has taken the Metz agency.

The Longley Motor Sales Co., Providence, R. I., has taken the Dort.

The Dimm-Semmons Co., Springfield, Mass., now has the Mercer agency.

The Harrington-Gifford Co., Springfield, Mass., Hudson dealers, is erecting the largest service station in that city.

Smith Bros. Taxi Co., Springfield, Mass., has opened the Baxter-Duckworth garage.

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The Overland Motor Co., Springfield, Mass., has opened salesrooms at 153 Chestnut Street.

Howard's Motor Livery, Newport, R. I., has taken out a charter under Rhode Island laws. Capital, $3,000. Incorporators: Daniel J. Healey, James F. Padien and James E. Brothers, all of Providence.

The Kenworthy-Clark Co., Providence, R. I., has been incorporated by Harry E. Kenworthy, Henry W. Tyas and Percival S. Clark, all of Providence, at $5,000.

Harry E. Kenworthy, Providence, president of the Kenworthy-Clark Co. and champion golf player of Rhode Island, is attending the National Golf Championship Tournament as the representative of the Metacomet Club of this city. His company has been appointed distributer of the Studebaker.

Arthur S. Lee, Providence, former secretary of the Rhode Island Automobile Dealers' Association and one-time dealer in this city, has returned to this city and began business under the name of the Union Motor Car Co. at 204 Broad Street. He is handling the Stearns-Knight and Mercer.

The Chevrolet Motor Co., Providence, is now located in its new home at 137 Broad Street, which is one of the finest salesrooms in New England. The rooms are furnished in old ivory and mahogany, with a complete glass front on one side, and, being located on the most important artery to the city, the location is ideal in every respect.

The Becker-Stutz Automobile Co., Boston, has opened a branch salesroom in Providence in charge of N. W. Rogers, who comes here from Boston. The new agency is the second established recently by this concern for the improvement of Stutz service. The company will include in its territory Maine, Vermont, New Hampshire, Massachusetts, Rhode Island and the territory east of and including New Haven and Hartford.

The Peckham Brothers Co., Inc., Providence, R. I., distributer of the Oldsmobile, will erect a sales and service station as soon as bids can be obtained. The building will be located at Elmwood Avenue and Warren Street, and is to be 100 x 140. It will front 100 ft. on Elmwood Avenue, a principal thoroughfare of the city. The showroom will be 30 ft. deep. Next to the showroom will be a used-car division, 50 x 100, and a service station adjoining of the same size.

A. Schiavina, Clinton, Mass., owner of the Main Street Garage, is making alterations and improvements, including a new office.

The Newport Auto Supply Co. of Newport is a new Rhode Island corporation. Capital stock, $10,000. Incorporators: James J. O'Connell, Thomas M. Dawley and Cornelius J. Sullivan, all of Newport.

The Waldron-Curtis Co., Revere, Mass., has been incorporated at $5,000. L. J. Waldron, president; Arthur H. Curtis, treasurer. S. R. Waldron and the two others are directors.

MIDDLE WEST

The Gibson Automobile Co., Indianapolis, has opened its sixth branch, in Lafayette, Ind. Others are located in Muncie, Logansport, Terre Haute and Vincennes, Ind., and Danville, Ill. All are modern sales and service stations. At the opening of the Lafayette branch this week 4000 carnations and roses were given away to visitors. A. W. Veerkamp will be manager.

Jacob Crapser, Aledo, Ill., has sold his interest in the Aledo Garage to Roy Lingafelter of Keithsburg, Ill., and has joined the Velie staff at the factory. Crapser left the Velie company several years ago to engage in business for himself in Aledo, forming a partnership with Gail Johnson. The latter will continue the garage in company with Lingafelter.

O. F. Langilier, Clinton, Ill., has opened a branch in Lincoln, Ill., and will sell the Ford. He will operate a garage and supply station in connection. J. L. Pettit has been engaged as manager of the branch in Lincoln.

E. R. Kratz, Detroit, has sold his interest in the Kratz & Knight Garage, 732 Woodward Avenue, to A. E. Knight.

The Elcar Motor Sales Co., Detroit, Mich., has been discontinued.

The Chandler Motor Sales Co., Grand Rapids, Mich., has been incorporated at $25,000 by George W. Van Every, Fred H. Peck and Amos Gezon.

The Kent State Garage & Supply Co., Grand Rapids, Mich., has contracted for a new garage on Ottawa Avenue, near the Empress Theater.

Richard Peterson, Brooklyn, Mich., has been appointed a Ford dealer.

Lou White has been appointed wholesale manager for H. A. Porter, Grand Rapids, Mich., distributer of the Paige in western Michigan.

The Ohio Metz-Elcar Co., Columbus, Ohio, located at 211 North Fourth Street, has taken the distribution of the Metz and Elcar in Ohio. W. A. Albaugh is general manager.

E. H. Huffman, 105 East Town Street, Columbus, Ohio, has been made central Ohio dealer in the Stephens, made by the Moline Plow Co.

Cruikshank, Son & Robinson, Columbus, Ohio, is a new retail concern at 402 Schultz Building to handle the Pathfinder and Argo in central Ohio.

Charles J. Borden & Son, Kaukauna, Wis., have been appointed distributers of the Chalmers in Outagamie County, Wis.

The Ditzel-Stratton Garage, Whitewater, Wis., is the new name of the former Ditzel-Gilbertson Co. Bert Gilbertson has sold his interest to Kenneth Stratton.

Edward Peterson and **Lorin Bacon**, Wild Rose, Wis., are new Partin-Palmer dealers.

Dorr & Drewry, Whitewater, Wis., have sold their garage and agency business to John Flagler.

The Raymond Garage, Crandon, Wis., a Ford dealer, has been purchased from Sidney Raymond by James A. McMillan.

Daniel Cram, Palmyra, Wis., has sold the Palmyra Garage to D. J. Williams & Son. The deal includes the garage building at West Main and Second Streets. Charles Lewis, Jr., is retained as mechanical superintendent.

Waters Bros., Whitewater, Wis., have purchased the interest of Fernley Zuill in the Waters Garage and become sole owners.

The Up-to-Date Garage Co., Prairie du Sac, Wis., has reorganized and enlarged its service station and repairshop. The business is owned by Edward and David Gray. The departments now established and the heads of each are: Sales and correspondence, Edward Gray; accessories, adjustments and top-floor service, David Gray; gasoline, oil, storage, washing, vulcanizing and tire work, Henry Grass; repair work, battery service, carbon burning, welding and cutting, Charles Haldeman; foremen, Albert Beltz and P. J. Excell; office, Mary Gray.

J. Steckart, Sr., De Pere, Wis., has taken occupancy of his new garage, 40 x 60.

The Holt Garage, Luck, Wis., has made F. L. Moar, Volga City, Iowa, manager of the repairshop.

Henry Olson, Dodgeville, Wis., is remodeling his livery stables into a modern garage and repairshop, and will build a 30 x 60 ft. concrete addition.

Thomas and **Levi James**, Delavan, Wis., are establishing a garage and repairshop in Sharon, Wis.

The Ford Garage Co., Waterloo, Wis., has purchased the Waterloo livery stables and will use the site for a new garage building 40 x 90.

COAST

The Conwell-Hathaway Co., Los Angeles with headquarters at 1026 South Olive street has taken the distribution of the Monroe for the entire Pacific Coast. The principals are W. S. Hathaway, formerly with the Maxw- and Chevrolet, and J. S. Conwell.

Lampshire's Garage, Burns, Ore., has been opened. It is located on the Pacific Highway.

The Saxon Motor Sales Co., Seattle, has moved into new quarters at 907 East Pike street. H. E. Hardesty is manager. George Farnsworth, distributer of Saxon cars in the state of Washington, will also make his headquarters at the new establishment.

Houck & Beesley, Portland, Ore., have opened headquarters at 490 Burnside street and will handle the Metz.

F. C. Atwell, Portland, Ore., Oregon distributer of the Sauer & Mack trucks, has opened quarters at Twenty-first and Washington streets.

H. E. Meads, Portland, Ore., has opened the "House of Speedy Service" at 328 Ankeny street.

FORD CHANGES

Detroit.—The following dealers have been appointed thus far in Detroit by the Ford Motor Co.; Dowey-Bergeron Motor Co., 57- Woodward avenue; Universal Car Co., 12 Buena Vista avenue, East; Maurice W. Fix & Co., 156 Milwaukee avenue, East; Highland Auto Sales & Repair Co., 2677 Woodward avenue; Northwestern Motor Sales & Service Co., 1299 Gratiot avenue; Platte-Chalmers Co., 2606 Jefferson avenue, East. Gratiot Motor Sales Co., 863 Gratiot avenue Cheasley & Beecher, 45 Charlotte avenue Murray-Kramer Co., 1467 Jefferson avenue National Auto Sales Co., 869 Jefferson avenue, East; Northwestern Motor Sales & Service Co., 1547 Grand River avenue; West Detroit Auto Sales Co., 1678 Fort street West; Boersig Motor Sales Co., 261 Jefferson avenue, East; Detroit Motor Sales Co., 98 West Grand Boulevard; Frank E. Benedict, 1547 Grand River avenue; American Motor Sales Co., 14 Alexandrine avenue, West; P. W. Schulte & Sons, 707 Grand River avenue Max O'Leary, 13 Lothrop avenue; McCarthy Motor Co., 70 Park boulevard.

Peoria, Ill.—A Ford sales agency and garage has been opened at 711-15 Main street by F. M. Mackemer, late at the head of the Mackemer Motor Co., Galesburg, Ill., and C. E. Kelly, for many years owner of garages at Brimfield, Princeville, Toulon, Wyoming, Bradford and other central Illinois cities. The firm will also operate branches in Galesburg, Knoxville, Abingdon, and Canton.

Seattle—Rothweiler & Co. have again taken the retail Ford agency, and opened a service station at Broadway and Denny Way. Stewart & Carpenter have taken the University District as authorized Ford dealers and will open headquarters at Fourteenth avenue, N. E. Homer Myers and Hugh Baird, Inc., have been named Ford dealers and their headquarters is known as the Authorized Downtown Agency.

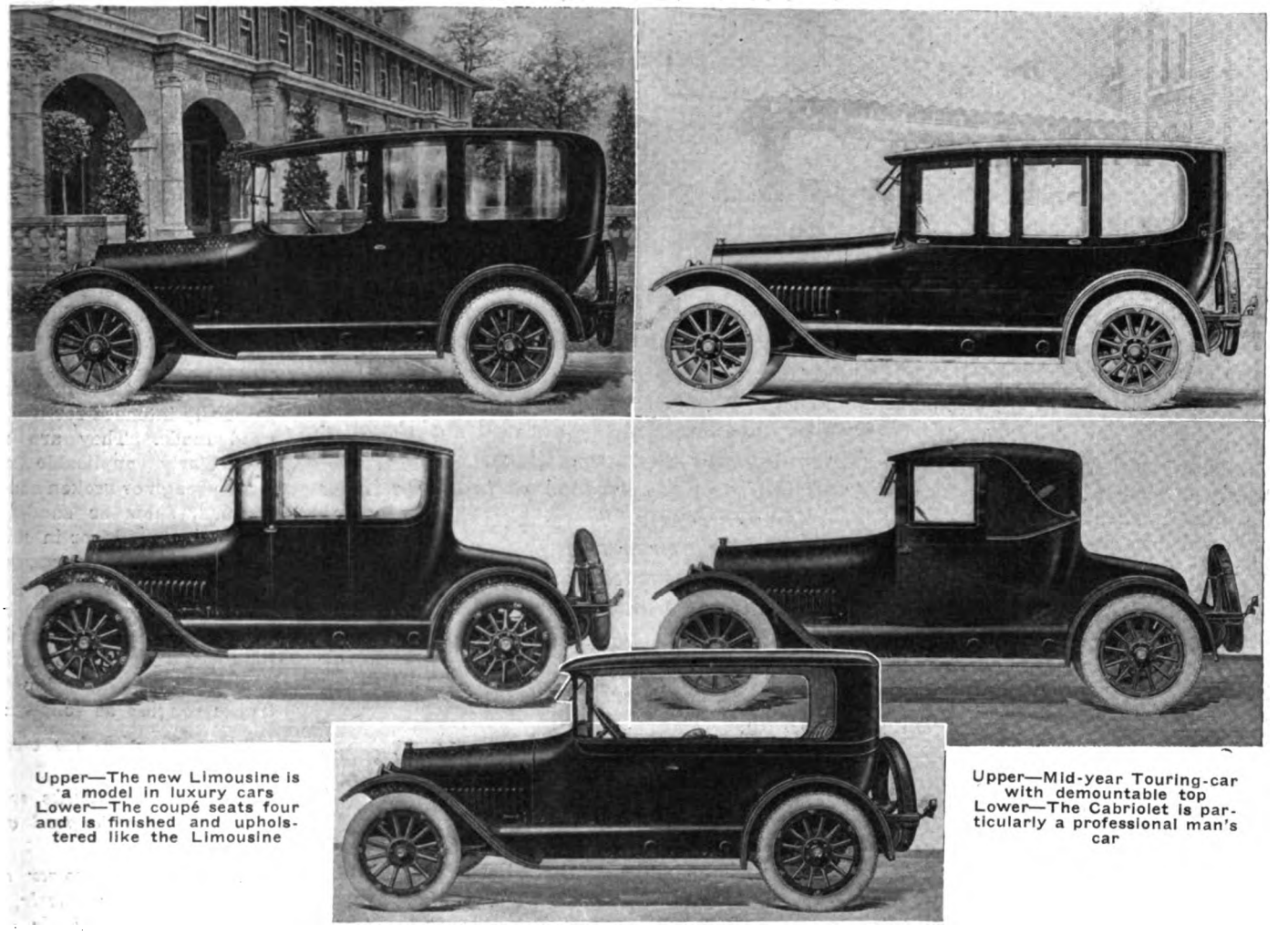
The Kempter Motor Co., Denver, has secured one of the new Ford agencies in the city territory, and has opened a temporary salesroom and service station at 1311 Glenarm. The new firm expects to put up a new building in the near future, constructed and equipped especially for extensive Ford service.

St. Louis—New Ford agencies: Broadway Motor Co., 1500 North Broadway. W. N. Morrison and A. M. Zerweck. Morrison best known as "Patsy," is one of the original car salesmen in St. Louis. Wiemeyer Motor Car Co., 3132 Park avenue.

Springfield, Mass.—The Ford Motor Co. has appointed four dealers in that city: The Elm Garage, Strong & Brady, Harry K. Smith and The Auto Parts and Repair Co.

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Smart Bodies for Mitchell's New Four-Season Cars



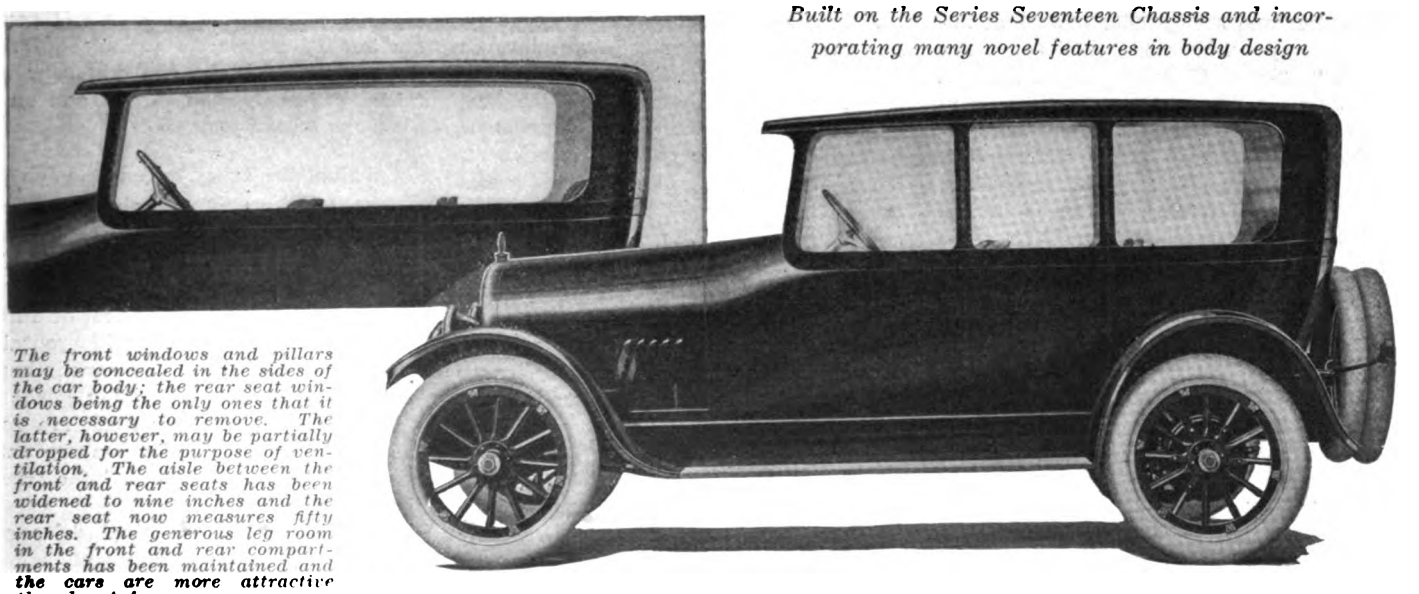
Upper—The new Limousine is a model in luxury cars
Lower—The coupé seats four and is finished and upholstered like the Limousine

Upper—Mid-year Touring-car with demountable top
Lower—The Cabriolet is particularly a professional man's car

The Mitchell Springfield type Touring Sedan with seats for seven passengers

Westcott Adds Springfield Touring-Sedan Body

Built on the Series Seventeen Chassis and incorporating many novel features in body design



The front windows and pillars may be concealed in the sides of the car body; the rear seat windows being the only ones that it is necessary to remove. The latter, however, may be partially dropped for the purpose of ventilation. The aisle between the front and rear seats has been widened to nine inches and the rear seat now measures fifty inches. The generous leg room in the front and rear compartments has been maintained and ***the cars are more attractive than heretofore***

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How Does the Truck You Sell Check Up on These Points?

By Henry Farrington
Of the Thomas B. Jeffery Co., Kenosha, Wis., read before the Mid-West Section of the Society of Automobile Engineers, at a recent meeting.

The business man who has made up his mind to adopt commercial motor vehicles for the first time, is confronted with a maze of conflicting practice in engineering, body design, load-carrying capacity and prices, as well as the more or less successful and seemingly contradictory experiences of the business man in general and of those in his own line in particular.

He is certain to meet a lot of motor-truck salesmen whose reasoning and arguments agree only on the advisability of using motor trucks, and differ largely on the other essentials. He will meet salesmen who will tell him the worm drive is the only thing. Others will insist that the double-side-chain drive has never been improved upon. The internal-gear drive and the double-reduction axle also have their champions. The men who are selling motor trucks with power applied to all four wheels will claim that the rear-drive truck is doomed and is already obsolescent. And here and there will pop up another type of final drive differing from any of the others and which will be stated in all apparent sincerity to be the last word in motor-truck design.

The merits and demerits of two, four and six cylinder motors of numerous types will receive their fair share of attention. Clutches, transmissions, differentials, brakes, wheels, tires, governors, radiators, and numerous other details of design will be freely discussed, and the various designs will be praised or condemned according to the beliefs of the contending salesmen, or their anxiety to make a sale.

Engineering Details Unessential

The truth of the matter is that these things are absolutely unessential except insofar as they may affect the applicability of the truck to the job in question, and the profit the machine can make in comparison with other modes of transportation it is intended to displace.

There is not an automobile engineer in the business who can prove definitely that in efficiency and operating economy, any one of the recognized and approved forms of final drive is appreciably better than any of the others. The best point he could make would be to show that the particular type he is advocating is more in accord with the general design of the rest of the machine than any of the others, or that it was cheaper to buy or manufacture, or weighed less, or had more ground clearance, or was easier to obtain under the present conditions, or was easier to inspect and repair, or had longer life, or was cheaper to replace, either in whole or in part, when worn out.

A Place for Each

Some of these things can undoubtedly be proved under many conditions. Others cannot be proved at all. All of the various types have or have had their place, and every one of them is fulfilling or has fulfilled a useful function in the development of motor truck practice.

Limitations of Certain Designs

The various types of worm and double-reduction axles undoubtedly have less ground clearance than the internal-gear axle or even the chain, and on the face of it, trucks using axles of these types are primarily intended for use on good roads. They are not particularly applicable for use on rough or broken roads, in mud, snow or sand, on high-crown roads, or in country where high axle clearance is necessary or desirable.

In the writer's experience considerations of this kind limit the field of application of the various types of motor trucks roughly as follows:

1. *Trucks with low clearance, to good roads.*
2. *Rear-drive trucks with high clearance, to good and fair roads.*
3. *Trucks with power applied to all four wheels, to good, fair and bad roads, and steep hills, where it is comparatively easy to obtain traction on all four wheels.*
4. *Trucks with power applied to all four wheels and a positive drive to each wheel (through the use of automatic locking differentials), to good, fair, bad and very bad roads, where traction can be had on at least one of the four wheels.*

Selling the Truck to Suit the Job

Considerations of this kind bring one back to the necessity for selling a motor truck to suit the job in question. The engineering features and design of a truck do not make a great deal of difference as long as the truck will profitably and uninterruptedly do the work in hand. If a business man is hauling goods in a territory where all the roads are good all the year around, he has an unrestrained choice of almost all the trucks that may be offered him.

The types of motor, final drive and other details are not so essential.

The Check-up

The buyer will be wise to check up one truck against another on each of the following points:

1. *Actual developed horsepower per pound of total weight carried at given maximum speed.*
2. *Total weight carried per inch of tire width.*
3. *Proved gasoline, tire, repair and maintenance costs per mile under given conditions.*
4. *Accessibility of the various parts of the truck for inspection and repair.*
5. *The cost of repair parts.*
6. *The capacity of the dealer or manufacturer for supplying repair parts indefinitely and without loss of time during the probable life of the truck.*
7. *Workmanship and quality of materials in the units of the truck, considered in regard to the work they have to do.*
8. *The total weight of the truck chassis to carry a given load, including the body weight allowance.*
9. *The type, design and quality of the body to carry the goods in question, including the effect these have on the safe carriage of the goods and the ease and quickness of loading and unloading.*
10. *The commercial worth and reputation of the truck manufacturer.*
11. *The price of the truck.*

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ANGLES OF THE LAW



By George F. Kaiser

Note Is No Good

Legal Editor:

We inclose herewith copy of a note on which we sell Ford cars on time payments. We would like you to advise whether we can still hold title to our machines with a note of this kind.

Republic Ford Agency,
Republic, Mo.

Republic Ford Agency,
Republic, Mo.

.....

$..... .....1916.

On or before.....1916, for value received, I, the Subscriber, of ..... P. O., residing in Township of..... County of..... promise to pay to the..... or order ..... Dollars, with interest at ..... per cent per annum from date until paid, payable at.....

The express condition of the sale and purchase of the ..... machine No. ..... for which this note is given is that the title or ownership to the same does not pass from the ..... until this note with interest is paid in full.

No..... .....

Due..... .....

(If name is foreign or illegible, write it out in plain English.)

.....

I have examined the note which you inclosed and have also looked carefully into the law of Missouri on this question.

I am of the opinion that your note is valueless for the purpose for which you used it.

Section 2887 of Chapter 30, Article 5, of Revised Statutes of Missouri provides:

> No sale of goods and chattels where possession is delivered to the vendee shall be subject to any condition whatever as against creditors of the vendee, or subsequent purchasers from such vendee in good faith, unless such condition shall be evidenced by writing, executed and acknowledged by the vendee, and recorded as now provided in cases of mortgages of personal property.

There is no doubt but what your lien note does not meet these requirements. Section 2889 of the same further provides that:

In all cases where any personal property shall be sold to any person to be paid for in whole or in part, in installments, or shall be leased, rented, hired or delivered to another on condition that the same shall belong to the person purchasing, leasing, renting, hiring or receiving the same whenever the amount paid shall be a certain sum, or the value of such property, the title to the same to remain to the vendor, lessor, renter or deliverer of the same until such sum or the value of such property or any part thereof shall have been paid, such condition in regard to the title so remaining until such payment shall be void as to all subsequent purchasers in good faith and creditors unless such conditions shall be evidenced by writing executed, acknowledged and recorded, as provided in cases of mortgages of personal property.

Under this section your lien note would be void as to people who bought the motor car from the persons to whom you sold it. Section 2890 of the same further provides that:

Whenever such property is so sold or leased, rented, hired or delivered, it shall be unlawful for the vendor, lessor, renter, hirer or deliverer, or his or their agent, or servant, to take possession of said property without tendering or refunding to the purchaser, lessee, renter or hirer thereof, or any party receiving the same, the sum or sums of money so paid after deducting therefrom a reasonable compensation for the use of such property, which shall in no case exceed 25 per cent of the amount so paid, anything in the contract to the contrary notwithstanding, and whether such condition be expressed in such contract or not, unless such property has been broken or actually damaged, and then a reasonable compensation for such breakage or damage shall be allowed.

Under this section the rights of a conditional vendor are set out clearly and need no further explanation.

The best thing for you to do would seem to be to sell your cars and take chattel mortgages on them. You must remember, however, that chattel mortgages are invalid UNLESS THEY ARE RECORDED, and they must be acknowledged in the county where the mortgagor resides.

The property must be given into his possession. The mortgage must then be filed in the office of the Recorder where the mortgagor resides. Chattel mortgages in Missouri hold good for 5 years and if any mortgaged property is done away with it is a misdemeanor if it is less than $50 in value and a felony if it exceeds $50 in value. The first is punishable by not more than 5 years imprisonment and a fine of not less than $100, while the latter is punishable by imprisonment for not more than 6 months and a fine of not more than $100.

Devising "Stop" Signals

ST. LOUIS, Sept. 9.—Director Talbot of the City Streets Department is drafting specifications for devices that may be used on the front and back of automobiles to show the words "stop," "straight ahead," "right," "left" and "back." The use of such devices recently was authorized in an ordinance that amends the traffic signal ordinance. The use of signs is not compulsory, but such as are used must meet with certain requirements and must be illuminated at night and be visible for 100 feet. Talbot will insist that the "stop" signal be operated automatically with the foot brake.

K. C. Tour Starts Oct. 9

KANSAS CITY, Sept. 11—The fourth annual Trade and Road Booster Tour of the Kansas City Motor Car Dealers Association will be held during the week of Oct. 9. There will be at least forty cars in the tour and the route will include northeastern Kansas, returning through central Kansas, and arriving at Kansas City Saturday evening, Oct. 14. The tour will include a truck division with about six light motor wagons entered. These will carry supplies, baggage, etc. There will be a twenty-piece brass band.

Findlay Dealers Get Together

FINDLAY, OHIO, Sept. 11—An organization of garagemen, repairmen and dealers was organized here at an enthusiastic meeting last week, when twenty members pledged themselves to aid in the organization. The organization did not adopt a name, debating whether it is to be called the Findlay Automobile Trade Association or the Hancock County Automobile Trade Association. The association was immediately affiliated with the Ohio Automobile Trade Association. Frank J. Collingwood was elected president; Dr. W. G. Cook, vice-president; Earl Rummell, secretary-treasurer, and Pearl Rice and W. C. Treece, members of the board of directors. All of the officers are also members of the board of directors.

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Do It This Way—

QUERIES ANSWERED

LOCATING RATTLES

Editor Motor World:

1. What is the easiest method of locating rattles and squeaks on a new car? I have oiled and tightened everything that seems to need it and still the trouble persists.

2. What is best to put on a copper cylinder-head gasket to prevent it from leaking?

3. Can I charge any kind of storage battery with a Gray & Davis generator? What will I need to do this, and how long, about, will it take?—Charles Neuson, Augusta, Ga.

1. A road test on a rough road, with one man driving and another watching and listening, is the common method of locating rattles and squeaks. This, however, subjects the car to unnecessary abuse and is often inexpedient.

Many repairshops have a bump about 6 in. high in the floor and the rattle or squeak is located by running the car back and forth over the bump. Squeaks may also be found by having one man stand on the running-board and sway the car while the other listens. We would suggest that you force the leaves of the springs apart and lubricate them thoroughly with graphite and grease.

2. Heavy steam engine oil, thin white lead, or shellac, are the three substances best suited for a setting for copper cylinder-head gaskets and are to be recommended in the order given. The oil and the white lead, although preventing leakage, do not stick the gasket to the head so that it will be injured in removing.

3. A Gray & Davis generator can be used for charging storage batteries in the manner you suggest. It is not, however, a very efficient proposition. The connections should be made the same as on the car, and only one battery may be charged at a time. If the generator is of the new type it should be run at 600 r.p.m.; if of the old, at 1000 r.p.m., and should give 10 amp. current. It should be driven in the same direction as it was on the car. To properly charge a battery will require from 12 to 16 hr.

FLASHING ELECTRIC SIGN

Figs. 1 and 2

The construction of a flashing electric garage sign is not difficult nor particularly expensive, outside of the cost of the sign itself. Various lighting combinations may be obtained and a good one is that in which the letters in the word "Garage" light one after another, until the whole sign can be read, and then it goes out for a few seconds before the cycle is repeated. Assume that the total time of the cycle is 16 sec. and that it is entirely dark for one-fourth of this time, or 4 sec., and that the six letters are lit at equal intervals during three-fourths of the period. Thus, the first one is lit during the whole time, or 12 sec., and the others light at intervals of one-sixth or 2 sec.; thus the letter "G" has been lit for 2 sec. before the first "A" shines, and 2 sec. later the "R" flashes up, etc. Such a flashing sign may be controlled by a simple switch mounted on a drum which is rotated by a small water motor or an electric motor. Each letter is on a separate circuit and is connected to the drum by a copper brush, as shown. A sheet of copper is then cut so that at one end its height is three-quarters of the circumference of the drum, and then six steps are cut, as shown, each step representing a distance on the circumference of the drum equal to three-sixty-fourths of the circumference; thus the rotation of the drum will cause the completion of these circuits as described.—Carl Muller, Hexamer Auto Co., Hoboken, N. J.

Did You Know?

That a reamer a few thousandths too small may be made to cut the desired size by laying a narrow strip of cloth on one of the cutting edges?

That a wire scratch wheel mounted on one end of the grinder is excellent for cleaning carbon from valves and valve cages?

That a tap can be made to cut larger by placing a V-shaped piece of tin in the hole and making a second pass with the tap?

That paint remover facilitates the removal of rusted brake levers or steering gear parts?

That a broken spring leaf about 18 in. long makes a very good tire tool?

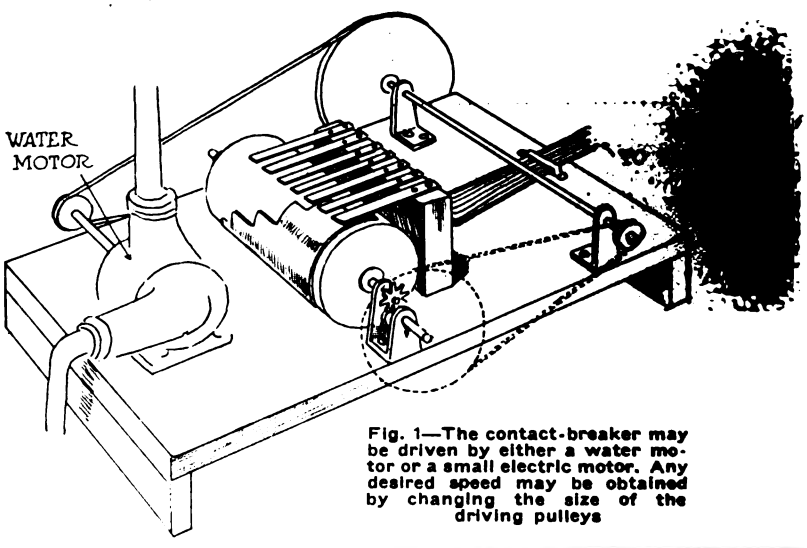


Fig. 1—The contact-breaker may be driven by either a water motor or a small electric motor. Any desired speed may be obtained by changing the size of the driving pulleys

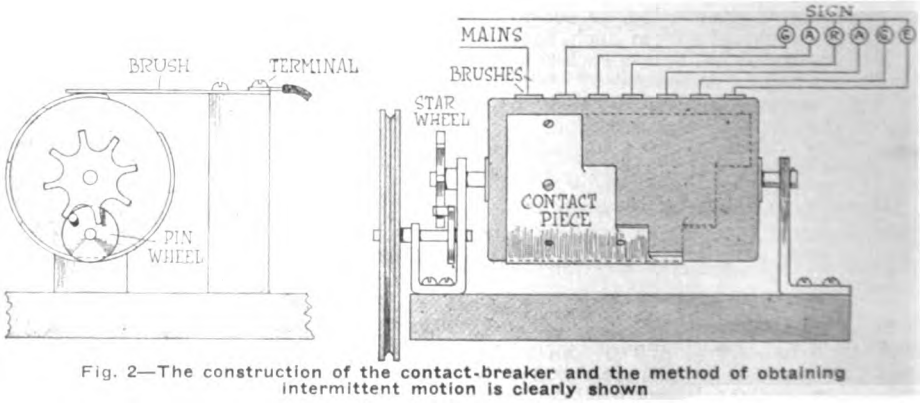


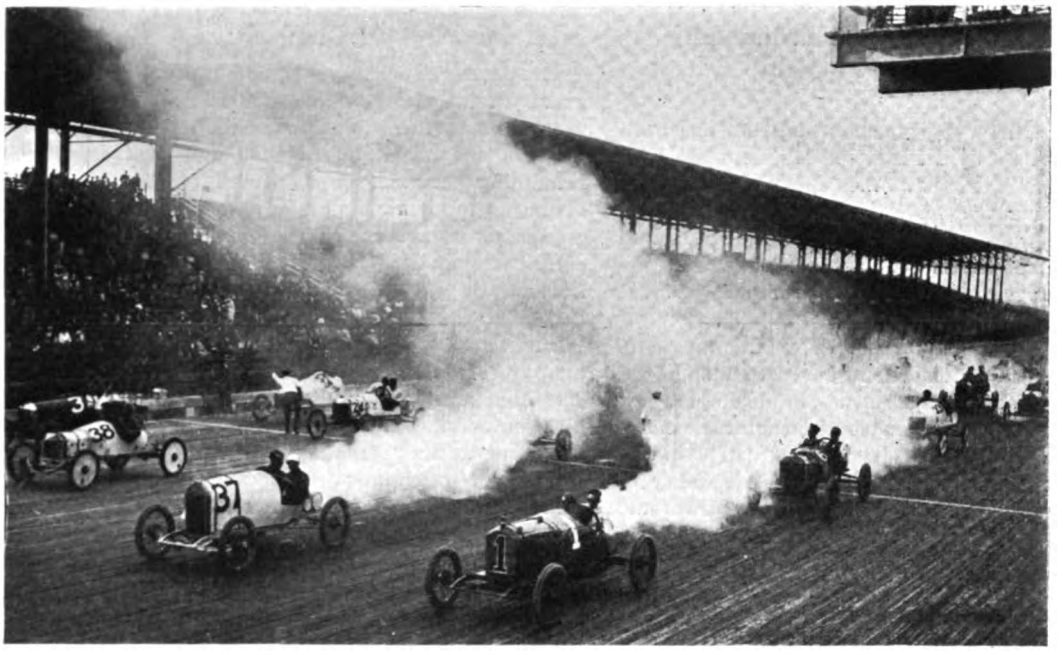
Fig. 2—The construction of the contact-breaker and the method of obtaining intermittent motion is clearly shown

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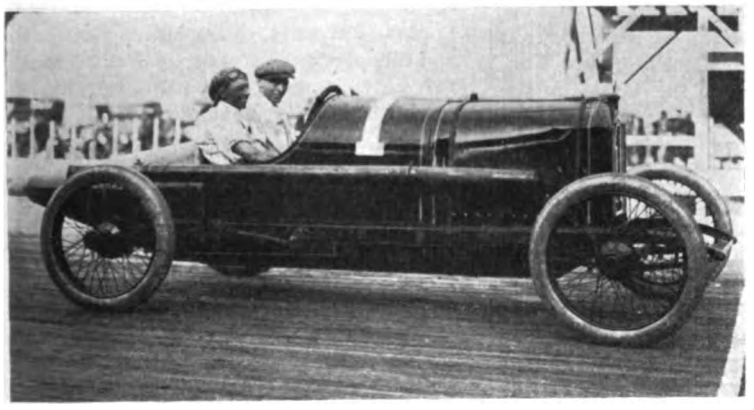
Ford Cars Battle in Speed Test at Chicago

Some Had Few Ford Parts—But All Were Fast

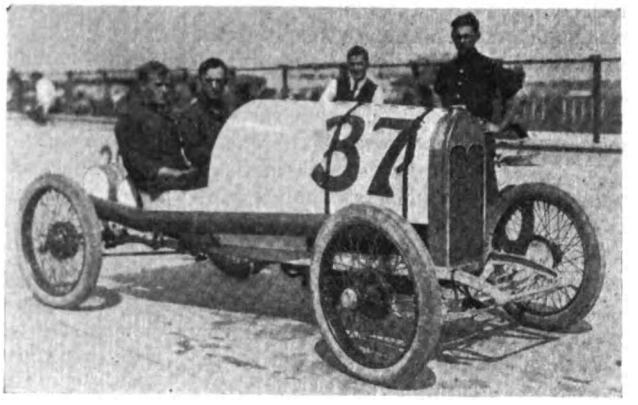
CHICAGO SPEEDWAY, Sept. 10—Hay wire, binding twine, trunk straps, junk parts and mechanical ingenuity, combined with more-or-less semblances of Ford cars, went to make up the creations which took part in the Ford race to-day, and a more motley assortment of reconstruction has never been seen. The springs were underslung and overslung—two cars were entirely without springs. There were distributors, special magnetos and ordinary Ford magnetos, cast-iron pistons and aluminum pistons, skeleton bodies and streamline racing types. Even that which was previously considered impossible



The start of the preliminary of the Interstate Championship Ford race on the Chicago Speedway, Sunday. No. 1 won.



PAUL HARVEY in his No. 1 Ford, who won the Interstate and Chicago Championships. The car as it stands cost $2,000 and the late Bob Burman helped design it



B. F. DAVIS won the Illinois Championship of 30 miles with a Ford that comes nearer being a remodeled Ford than many of the others

was accomplished. Fords were disguised so that all evidences of their birthright was effaced.

The greatest interest hinged on car No. 1, which took first money in two of the races and showed close to 80 miles an hour in practice. It is a Bob-Burman-and-Jack-Gable-designed replica of a Peugeot, built in his father's garage at Oak Park, Ill., by Paul Harvey, the driver. It was this garage in which Burman and Gable kept their cars prior to the 1915 Chicago race and credit is given them for much of the car's design. The car got into the race because it has a Ford block, gearset and axle. Otherwise it was a special racing job all the way through. A sum amounting to well over $1,500 is said to have been spent on its construction. More credit should be given the entries who had limited capital and spent their sums on alterations which gave their Fords the most speed.

Harvey's car was a masterpiece of workmanship and is prophetic of what may come in cars with small motors capable of attaining high speeds. In action it was like a Schubert symphony—smooth and harmonious. The block bore the Ford stamp. Internally, however, the motor had more bore and stroke, larger valves, racing camshaft—in fact, is so altered there was little Ford left.

The frame is hung low on heavy cantilevers. The exhaust is carried out through four straight pipes into a exhaust tube on the side which is large enough to take care of a 300-cu. in. motor. The magneto is Bosch, there is a Master carbureter, Rudge Whitworth racing wheels and Goodyear cord tires.

If any of the 10,000 spectators came with any doubt as to Fords doing a mile in a minute or less, they went away with rebuilt minds, relieved of that feeling. They saw 20 miles run at an average of 63.83 m.p.h., 30 miles at 60.4, and 50 miles at 62.5 m.p.h.

The first race, 20 miles, was for the Chicago championship and was won by Harvey in 19 min., 6 sec., an average of 62.83. The second race, 30 miles, was for the Illinois State championship and was won by B. F. Davis, 29 min., 47.3 sec., an average of 60.4. The Interstate championship, 50 miles, was won by Harvey in 48.10, an average of 62.5. The prizes were: 50-mile, $500, $100, $50; 30-mile, $125, $75, $50; 20-mile, $125, $75, $35.

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New Simplex Magneto of High-tension Type

Frame Die-Cast in Single Unit Accessibility and Simplicity Are Features

A new high-tension magneto has been put out by the Simplex Magneto Co., Inc., New York. The men making up this organization have been connected with the manufacture of parts for European and American magnetos and have now organized to produce a complete instrument.

One of the features of the magneto, which in general is designed along conventional lines, is the simple interrupter which is so constructed that the centrifugal force of its moving parts is absorbed, thus maintaining an equality of pressure between the contact points and giving the same working conditions at high and low speeds. Another feature of the instrument is the ready accessibility of its vital parts, and the ease of disassembling to make minor repairs.

An additional point of originality is the cast-in-pole piece which is a laminated structure but so arranged that it does not have to be pierced by pins or bolts which would tend to increase the magnetic reluctance. The pole pieces and housing being integral, the air gap between the armature and field poles is very small. This tends to increase the intensity of the spark at low speeds, and furthermore since the poles and housing are integral they can be bored together to insure their alignment, and also renders the construction inherently waterproof.

As an example of accessibility, in removing the armature it is only necessary to turn a check nut and unscrew the armature ball-bearing cage. This allows the armature to be taken out of the frame without removing any of the parts. In connection with the armature an interesting feature is the construction of the condenser which is arranged with specially prepared insulating sheets between the individual foil laminations. This permits of a large number of sheets of useful foil as the insulating sheets are very thin, giving an efficient indenture which tends to prolong the life of the points.

The low and high-tension windings are carried upon the armature. The core is of laminated iron and on each side is a pole piece of the same quality of iron as is used in the armature. Holding this whole construction together are two bars which are firmly riveted into the pole pieces.

The details of wiring, etc., do not differ greatly from standard practice in high-tension magnetos. The low-tension winding has one terminal grounded and the remaining terminal is connected to an insulating plug allowing the path of the circuit to pass through the interrupter contact. The cam plate allows the spark advance to travel through an arc of 30 deg. and the interrupter mechanism is spring actuated, giving a quick and snappy break of the primary circuit. The high-tension wire is attached to the distributor ring on one terminal and on the other to the ground by a brush. The distributor mechanism is arranged for either four or six contact pieces, depending on the number of cylinders.

Show Space on Sale

NEW YORK, Sept. 12—Application blanks for space and floor diagrams for the Seventeenth Annual National Automobile Shows have been issued by the National Automobile Chamber of Commerce, Inc. The shows of 1917 are to be held in Grand Central Palace, New York, Jan. 6 to 13, and in the Coliseum and First Regiment Armory, Chicago, Jan. 27 to Feb. 3.

Applications to be considered in the first allotment must be received at the Chamber of Commerce headquarters, 7 East Forty-second Street, New York City, not later than Sept. 30, and must be accompanied by a deposit of 25 per cent of the value of the maximum quantity of space applied for. Separate checks must be drawn for each show application and made payable to S. A. Miles, manager.

The price of space per square foot, including equipment, is as follows: At New York—Section A, $1.50; Sections B and C, $1.35; Section D, $1.10. At Chicago—Coliseum and armory main floor center, $1.25; Coliseum annex basement, 75 cents; all other space, 90 cents.

Gasoline Still Keeps on Its Downward Path

Drops of a Cent Are Recorded in Many Sections—Independents Generally Meet Standard

CHICAGO, Sept. 9—The Texas Co. and other independent oil concerns met the Standard Oil Co. of Indiana's 1-cent reduction in gasoline throughout the West by making Chicago tank wagon basis 16½ cents a gallon.

The Standard Oil Co. in Kansas City, Mo., has reduced gasoline 1 cent a gallon, to 15.8 cents tank wagon basis, and independents have cut prices 1 cent to 16.8 cents tank wagon basis.

The Texas Co. has met the 1-cent reduction of the Standard Oil Co. in the East, covering New York State, Connecticut and New Jersey. Texas gasoline in New York and Connecticut is quoting at 22 cents tank wagon basis and in New Jersey at 20 cents. The Standard Oil Co. brought its price down to 22 cents on Sept. 7.

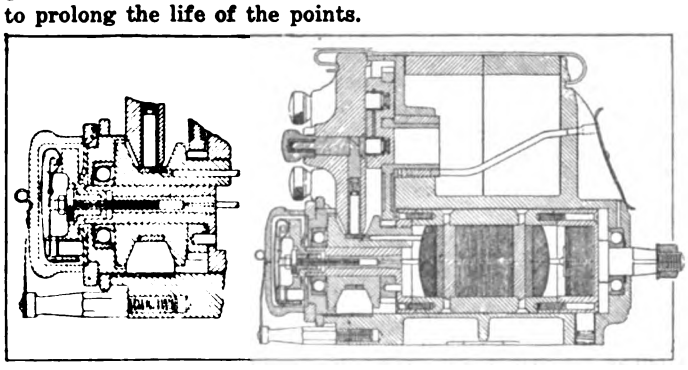
Other reductions are: Colorado, Montana, Wyoming and New Mexico, 1 cent, range 21 to 25 cents; St. Louis, Standard oil, 1 cent, 15.9 cents; Detroit, Standard, 1 cent, 17 cents; Milwaukee, Standard and independents, 1 cent, 16.6 to 26 cents for varying tests; Minneapolis and St. Paul, 1 cent, 17½ cents.

Bland to Get New Eyes

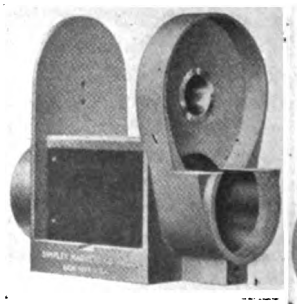
EVANSTON, ILL., Sept. 11—Robert Bland, president of the National Automobile Trade Association, hopes to receive improved eyesight through operations now being performed. For several years Bland has been troubled with cataracts, which have made it extremely difficult for him to read or recognize persons at any distance. The surgeons performing the operations state that there is every possibility of success.

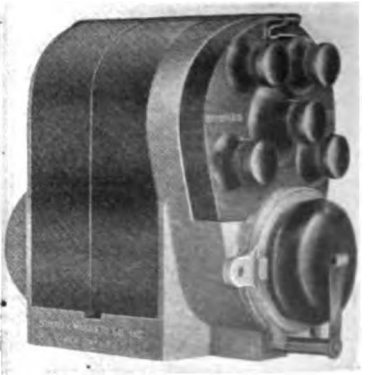
Dallas State Fair Show Oct. 14-29

DALLAS, Sept. 11—Signed reservations for more than 55,000 ft. of floor space at the Dallas, Tex., automobile show, Oct. 14 to 29, have been placed.



Section through the Simplex high-tension magneto





Unit frame casting and exterior view

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Hupmobile on Its Way to All State Capitals

Has Been Over Atlantic Seaboard and New England, and Now Is on Way West

DETROIT, Sept. 8—The capital-to-capital Hupmobile, which is making a "United America tour in the interests of good roads," has now covered the North Atlantic seaboard and is heading west.

Good weather and fair road conditions so far have been encountered, and, although much time is taken up by conferences with governors, receptions and the taking of motion pictures, the tenth day found the party well on its way, having reached the tenth capital, Montpelier, Vt.

Bearing credentials from the National Highway Association, and with L. W. Page, United States Good Roads Commissioner, acting as official starter, the tour left Washington Aug. 28. Annapolis, Md., was the first capital visited, and after covering the New England States the party proceeded to Albany, now being on its journey across New York State to Buffalo, and thence to Cleveland on the way to Charleston, W. Va. After visiting the capitals of Kentucky and Indiana, the tour car will come to Detroit by way of Toledo, Ohio. At Detroit a reception has been planned to bid the party Godspeed on the Far Western lap of its long run.

Through the courtesy of the Department of the Interior the capital-to-capital pilots carry permits to enter and take motion pictures in all national parks. On the route are the Yosemite and Yellowstone parks, and a detour will be made to include the Grand Canyon.

The tour is so planned that by cold weather the tourists will be on the Pacific Slope, from which they will return to Washington, D. C., by a southerly route.

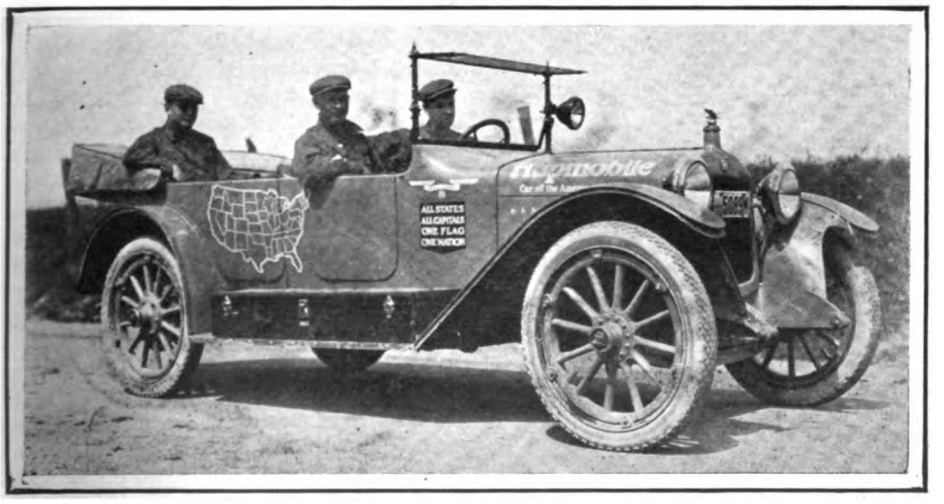
Owen Magnetic Makes Tour

NEW YORK, Sept. 12—The 5-day tour of Owen magnetic cars through New England was a most successful and unique tour. R. M. Owen invited approximately fifty of his friends, including dealers, private owners and newspaper men, to be his guests on this 5-day trip. Eleven Owen Magnetic cars were employed and the route selected through New England was one of the most attractive, embracing a circuit through the Berkshires, the trip over the famous Mohawk Trail, one of the greatest mountain roads in New England, and a run to the White Mountains and thence to Boston and New York.

Owen has for years been a great enthusiast of motor touring, and the object of this invitation tour, as well as three shorter ones a year ago, at all of which he played the rôle of host to the entire party, was to create renewed interest in touring. The Owen Magnetic car, with its electric gearshift and its consequent freedom from gearshifting and clutch operation, adds a simplicity to car driving that affords an opportunity of greater enjoyment in a country trip. No better means could have been taken for demonstrating the real merits of the car than a 5-day personally conducted tour of this nature. During the tour many of the invited guests were given the opportunity of driving the different cars.

Picard and Stern Ford Dealers

NEW YORK, Sept. 12—A. J. Picard and E. Joseph Stern have opened a Ford agency at 1659 Broadway. Picard is the principal in A. J. Picard & Co., an accessory jobber and dealer and distributer of the Genemotor electric system for Fords. Stern is associated with Picard in the Picard company.



The Capital Hupmobile that is making a tour of the United States, visiting all the capitals. It is now on its way West

Milwaukee State Fair Show Has 76 Exhibits

Event Staged on an Elaborate Scale —Decorations Rival Midwinter Show Season

MILWAUKEE, Sept. 11 — Fifty-two dealers are exhibiting pleasure and commercial cars and twenty-four accessory houses are showing supplies, accessories, oils and parts at the Second Annual State Fair Motor Show conducted by the Milwaukee Automobile Dealers, Inc., in Machinery Hall, State Fair Park, West Allis, Milwaukee County, this week. The show opened promptly at 10.30 o'clock this morning and will close with the fair on Saturday afternoon, Sept. 16.

The motor show, as well as the fair, is being conducted on the most elaborate scale ever known. Although the M. A. D. systematized its exposition at the fair last year and handled it in much the same manner as its big winter show in the Auditorium, this year's fair show is much more elaborate in every way from number of displays to decorations. A lot of money has been expended in dressing up the gaunt concrete walls and pillars of Machinery Hall, and the autumnal effect has been carried out to an exact nicety.

An admission fee of 10 cents is charged to keep out undesirables and children. To-day, the opening day of the fair, was Children's Day, and all school children were admitted to the fair grounds free. While many of the pupils paid 10 cents to see the motor show, there was an absence of those "kids" who love to do damage in a spirit of fun.

As already noted, the state fair and the show were advertised this year, as last, when a monster booster tour, covering nearly 600 miles, during the week of Aug. 28 to Sept. 2. The M. A. D. sent out thirty-seven cars and nearly 175 "boosters," who talked nothing but state fair and motor show for a solid week.

The building in which the show is housed is 140 x 340 ft. in size, of solid concrete and entirely fireproof. It is advantageously located near the grandstands and easy of access from the main gate. The state fair board, taking further cognizance of the importance of the motor car, has provided ten times the usual parking space and special gates for cars and the jitney buses. There will be motor-car racing on the last 2 days of the fair, when motor cars will be admitted free.

Bube Wins $100

ST. LOUIS, MO., Sept. 11.—E. H. Bube won $100 for selling the most Chandler cars during August for the Lewis Automobile Co.

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Indiana Association Soon to Be Organized

Schedule Meeting for September 25 and 26 in Indianapolis—Will Join N. A. T. A.

INDIANAPOLIS, Sept. 11—The organization convention of the Indiana Automobile Trade Association will be held at the Hotel Claypool, Sept. 25 and 26. The body probably will affiliate with the National Automobile Trade Association. Following are the subjects outlined for discussion by men who are prominent in the trade: Organization, Purposes, Plans and Results; Cost Keeping: an Aid to Better Business; Price Maintenance and the Stevens Bill; a Garage Lien Law; the Used-Car Problem; a Standard Service Policy; Commercial Reports, Collections and Credits. Indianapolis factories will co-operate with the association in entertaining delegates; several of the factories will be inspected.

K. C. Dealers Resume Luncheons

KANSAS CITY, Sept. 11—The Kansas City Motor Car Dealers Association has resumed its fall luncheons with a large attendance and interest that promises strong co-operation this winter. Luncheons will be held at the Baltimore Hotel every Wednesday. The association is making its final preparations for its trade trip. The annual meeting and election of officers will take place Sept. 18. Several new members were elected at the last meeting, the association continuing to maintain its nearly 100 per cent organization of the dealers of Kansas City.

Allen County Association Formed

LIMA, OHIO, Sept. 11—The Allen County Automobile Trade Association was organized at a meeting of a score of garagemen, dealers and repairmen, held Sept. 6. Much enthusiasm was shown in the meeting and many of the dealers in the country towns attended. It is the intention to secure dealers and garage owners in all parts of the county as members. The organization has taken steps to affiliate with the Ohio Automobile Trade Association.

Oakland County (Mich.) Organizes

PONTIAC, MICH., Sept. 11—A number of dealers and garagemen of Oakland County met at the Board of Commerce in Pontiac last week for the purpose of forming a local organization under the direction of L. C. Steers, secretary of the Michigan Automobile Trade Association. The Oakland County Automobile Trade Association was organized and affiliated with the Michigan association. The following officers were elected:

President, G. R. Williams; vice-president, H. M. Fawcett; secretary, Chas. Grossbeck; treasurer, F. S. Milman. Directors: J. A. Boughner, J. H. Collins, C. W. Harris, A. S. Widrig.

The association proposes to hold its charter open for a few days so as to give the special committee an opportunity to get every eligible garageman and dealer in Oakland County to join. The association now has twenty names on its membership roll.

Truck Makers Draw Together

NEW YORK, Sept. 11—The Cook Attachment Patents, Inc., has been formed here with $10,000 capital for the purpose of bringing into closer relationship the various manufacturers of attachments for converting pleasure cars into commercial vehicles. Albert E. Cook, whose patent on such devices now is in process of litigation in Chicago, heads the company, the other officers elected so far being, president and treasurer, Mark W. Norman, a New York lawyer, and secretary, B. H. Barber. The organization will issue manufacturing licenses under the Cook patents, the Redden Motor Truck Co. at present being the sole licensee. It is stated that six manufacturers are preparing to become affiliated with the organization.

Is the Motor World System too Simple?

(Continued from page 21)

suggest this, Mr. ——, because we believe you will find it will be well worth the money spent.

We note the last paragraph of your letter, in which you state that many garagemen in Detroit will not buy the system owing to the advice of others who have purchased it. In this connection, Mr. ——, of your city, not being quite satisfied with the forms as laid out in our system, worked up a set of forms, using the basic idea of our system for his own particular garage.

His knowledge of accountancy is a little further advanced than that of the ordinary layman and he has altered our system considerably, but in order to understand such a system, as I have said before, he needs to know accountancy. I simply give you this example to show you that where you complain that the system is not simple enough, there are others who complain that it is too simple.

However, if there is any point that we can help you on, or if we can assist you in any way in getting started right, please feel free to call upon us at any time.

They're Going to Give Party to "3400 R.P.M."

All the Chalmers Dealers Are Going to Hold Open House All Day September 30

DETROIT, Sept. 12—A nation-wide birthday celebration, in which over 1500 Chalmers distributers and dealers will act as hosts, will be held Sept. 30. The occasion for the celebration is the first anniversary of the announcement of the 3400 r.p.m. Chalmers Six-30. Just a year ago, Chief Engineer Hinkley turned over the thoroughly tested model car to the Chalmers manufacturing department. Since that time, 25,000 Chalmers Six-30's have been delivered.

On Saturday, Sept. 30, Chalmers salesrooms will be decorated and open house for Chalmers owners and the public will be the order of the day. Music, refreshments and other features of a regulation birthday party will take place.

In addition to the reception, the visitors in the larger cities will have their first opportunity to inspect the latest Chalmers closed car models, which have just been announced, including the touring sedan, limousine, town car and cabriolet, all fitted to the 3400-r.p.m. chassis.

Kissel Dealers to Have "All-Year Car Show Week"

NEW YORK, Sept. 11—The Kissel Motor Car Co., Hartford, Wis., has scheduled an "All-Year Car Show Week" for its dealers during the period from Sept. 23 to Oct. 1, inclusive. During these days new models of the All-Year car will be especially displayed at the various salesrooms throughout the United States. Special invitations will be sent out, and a concerted effort made to induce as many prospects as possible to visit the showrooms during the special show week.

Let Rivals Into Salesroom

ST. LOUIS, Sept. 9.—A spirit of unusual co-operation is being shown by dealers of this city in dividing their salesrooms with other dealers for the "automobile open week" which will be held some time in October.

It is desired to have the show on Locust Street, but not all the dealers are located on that thoroughfare, wherefore their brother members in the association have agreed to divide the space with non-competing lines. The showrooms will be kept open until 10.30 at night. Dealers not on Locust Street will maintain transportation service from Locust Street to their salesrooms to show models that cannot find room on Locust Street. A parade and decorated places of business will be features.

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Klaxon Becomes Part of the United Motors

Plant to Be Doubled—Lovell To Give up Active Connection—Big Overland Contract

NEW YORK, Sept. 12—The Klaxon horn business has been taken over by the United Motors Corp., which was formed several weeks ago as a merger of five parts companies. The Lovell-McConnell Mfg. Co. of Newark, N. J., which built the horn business, will become the Klaxon Co., and F. Hallett Lovell, Jr., president and principal owner, will retire from active connection with the company, although he will remain a director.

The Lovell-McConnell plant will be doubled at once to provide for increased production. Simultaneously with the consummation of this merger comes a statement from the Willys-Overland Co. that it will discontinue the manufacture of horns and will close a contract with Klaxon for its output for a term of years.

Contracts are also being executed for the use of the Klaxon horn on the Cadillac, Buick, Oldsmobile, Oakland, Scripps-Booth and Chevrolet. It is used on many other cars.

D. A. McConnell, who has been vice-president since the concern was organized, about 9 years ago, will become president; Otis C. Friend, who recently retired from the Mitchell to join the United Motors, will be the new vice-president, and Walter P. Coghlan, who has been secretary, will become secretary and treasurer. While Lovell will remain a director, his time will be chiefly devoted to other concerns in which he is interested, among them F. H. Lovell & Co., Arlington, N. J., makers of marine and railway supplies, of which he is president and principal owner.

The history of the Klaxon horn is one of the interesting chapters in the story of the motor car industry. Nine years ago, when Lovell was a manufacturer of electrical and railway supplies, an inventor approached with a primitive noise-making device which he had covered by patent. It operated from the flywheel of the engine. Its distinctiveness was that it created a terrific shriek, from which has developed the Klaxon warning sound.

Against the advice of his friends, Lovell took over the crude device, changed its motor power to electricity, and started to market it. When sales had reached a few thousands adverse legislation set in. States and cities refused to allow the use of the "diabolical noise-maker." A long campaign of advertising and publicity, with demonstrations before automobile associations and officials, was necessary to break down this opposition, and in the end legislation was enacted which, instead of prohibiting a loud and abrupt signal, required this type of warning.

Patent litigation played an important part. One of the bitterest fights of the Klaxon company was against the Automobile Supply Mfg. Co., Brooklyn, which makes the Newtone horn. This terminated not entirely favorably to Klaxon, despite the fact that it won a great many preliminary victories. There was other litigation, practically all of which has now been settled, and the horn industry has begun to move more smoothly and regularly.

The Klaxon is recognized as the pioneer in its type of horn, and now makes both electrically and manually operated models.

The capitalization remains $1,000,000 preferred and $1,000,000 common.

The United Motors Corp. includes, besides Klaxon, the Perlman Rim Corp., Remy Electric Co., New Departure Mfg. Co., Hyatt Roller Bearing Co. and Dayton Engineering Laboratories Co.

100,000 at Indianapolis Show

INDIANAPOLIS, Sept. 12—More than 100,000 persons attended the annual fall show of the Indianapolis Automobile Trade Association, which was held in conjunction with the Indiana State Fair Sept. 3-8. The exhibit, which was free, was held in a large tent which occupied a prominent location on the fair grounds. Despite the fact that the exhibit place was inconvenient, the display was about the most attractive that has ever been given by the association.

Excellent weather conditions prevailed during the entire week, and a majority of the persons who visited the show were from small Indiana towns and rural communities. The farming population being the heaviest buyers of motor cars at the present time, the fact that the attendance was limited greatly to this class gave the different agencies an opportunity to get in touch with live prospects.

The show was notable for the absence of exhibits pertaining to mechanical construction. "Style" was the dominating note of the show, and it was style that the visitors seemed to want to see. All the latest models of about seventy different makes were on display.

It was the belief of Indianapolis agencies following the show that excellent business prospects await the opening of the winter season. Many of the agencies have announced that the displays they had at the show will be continued at their city salesrooms during the current week.

300,000 Overlands the Plan for Next Season

Plant Expanded and Everything Is Ready for Enormous Output—Expansion Now Ended

TOLEDO, Sept. 12—By the end of the present year the Willys-Overland Co. will be in position to manufacture 300,000 cars annually, according to a statement by John N. Willys, president of the company.

The total outlay for this construction and additional equipment will be less than $5,000,000 and will terminate, temporarily at least, the company's policy of expansion which has made Overland the second largest car manufacturer in the world.

From this time on, Mr. Willys states, the energies of the organization will be devoted to reducing costs, increasing efficiency and improving production.

The recent sale of 600,000 shares of common stock has placed the company in such financial position that no further increase in preferred or common will be required for its expansion. The statement of assets and liabilities as applied to the balance sheets of June 30 last shows that upon payment for the new stock the company will have more than $20,000,000 cash on hand and more than $25,000,000 of other quick assets.

Mr. Willys owns a majority of the common, and states that it is his intention to continue personally to control and direct the affairs of the company.

Connell & McKone Open New Salesrooms

BOSTON, Sept. 12—One of the largest salesrooms ever opened for the retail sale of motor cars was thrown open to the public this morning when the Connell & McKone Co., eastern Massachusetts, New Hampshire and Vermont distributer of the Overland and Willys-Knight lines, welcomed the public to their new building. It is located at the corner of Massachusetts Avenue and Beacon Street. The frontage is 60 ft. and the depth 125 ft. There is not a post in the building.

More than 5000 invitations were sent out for the opening. At 10 o'clock everything was in readiness. An orchestra played and the place was decorated with flowers and flags. The salesrooms were kept open until 10 this evening. The opening is to continue throughout Wednesday and Thursday until 10 each night. John N. Willys inspected the building a few days ago and he pronounced it one of the finest motor salesrooms that he had ever seen.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Put Workers in New Places

A. G. Cameron, Dallas, for several years manager for Goodyear Tire & Rubber Co., has been transferred to the Kansas City branch. He is succeeded by R. S. Brace of the Oklahoma City branch.

Charles Potter, Dallas, formerly with Sacksteder Potter Co., has been appointed assistant sales manager for the Rose Fosdick Co., distributers in Texas of Hudson cars.

W. E. Finney, St. Louis, manager of the Goodyear Tire & Rubber Co. agency, has been notified that he will be assigned within a few days to a western point in charge of the mechanical goods department. W. G. Cameron, recently branch manager at Dallas for the Goodyear company, has succeeded Finney as manager in St. Louis.

C. F. Batcheider has been appointed assistant general sales manager for the Dort Motor Car Co., Flint. He was for 10 years general sales manager of the John Deere Plow Co.

W. H. Kirkpatrick, for 9 years head of the sales department of the Peerless Motor Car Co., Cleveland, has been elected vice-president of the Wallace C. Hood Service Bureau, Detroit.

Wm. J. Davidson, of the engineering department of the Cadillac Motor Car Co., has resigned to take up other lines of activity in the industry not announced as yet.

Thomas Bradley, for 5½ years with the Paige-Detroit Motor Car Co., as assistant in the purchasing department, has been elevated to the position of purchasing agent, following the resignation of P. E. Stroup, former purchasing manager.

Harold Hemenway, East Moline, Ill., has been appointed general superintendent at Beloit for the Stewart-Warner Speedometer Corp., to succeed A. E. Moon, who is promoted to an executive position in Chicago.

C. S. Pike has been appointed manager of the efficiency and sales promotion department of the Paige-Detroit Motor Car Co. He was formerly connected with the Burrough Adding Machine Co.

C. C. Cook succeeds Elliott Higgins as sales manager of the Wright Truck Attachment Co., Seattle. U. S. G. Cundy and F. A. Hawks have joined the sales force.

C. A. Gilbert has resigned as general sales manager of the Gibney Tire & Rubber Co., Philadelphia.

E. E. Arnold has been appointed manager of the automobile accessories department of the H. W. Johns Manville Co., New York.

C. H. Dunlap, export manager of the Hupp Motor Car Corp., has resigned to become interested in another enterprise. He has headed the Hupp export business for several years.

Greenfield Gives Up Detroit Office

GREENFIELD, Mass., Sept. 11—The Greenfield Tap & Die Corp. has discontinued its Detroit office. All business hereafter will be handled directly from the main offices here.

Elcar Now in Two Styles

ELKHART, IND., Sept. 8—The 1917 Elcar, selling at $795, has been announced by the Elkhart Carriage & Motor Car Co., Elkhart, Ind. There are two body types, the clover leaf roadster, seating four passengers, and a five-passenger touring car. The specifications include a 3½ x 5 unit power plant, three-point suspension, 114-in. wheelbase, full-floating rear axle, Delco ignition, Turkish style upholstering.

Mutual Takes Imperial Plant

JACKSON, MICH., Sept. 11—The Mutual Motors Co. has taken over the plant formerly owned by the Imperial Auto Co. The buildings are brick, 900 x 440 ft., mostly two stories; included in the purchase is a plot of land of about 17 acres. This gives the company facilities and room to produce 100 cars a day.

Four More in M. & A. M.

NEW YORK, Sept. 11—At a meeting of the executive committee of the Motor and Accessory Manufacturers, held Sept. 8, the following were elected to membership: Dann Products Co., Chicago; Master Carbureter Corp., Detroit; Otis Elevator Co., New York; Parry Mfg. Co., Indianapolis.

Reo Truck and Reo Car to Be Merged Into One Unit

LANSING, Sept. 11—The Reo Motor Truck Co. and the Reo Motor Car Co. are to be formally consolidated by an exchange of the shares of the truck company for an equal number of shares of the car company. According to an announcement sent out to stockholders, the directors of the Reo Motor Car Co., who are also directors of the truck company, after careful consideration believe the interests of both corporations will be best served by such a move. The same executive, selling and office organizations have endeavored to handle the business of both, and up to this time the same motors and many parts manufactured by the Reo car company have been used by both companies. However, changes in design and further development of the business will make such an arrangement impractical, it is stated.

Increased business, it is pointed out, has correspondingly increased the difficulties in handling the affairs of the two corporations separately, and makes it impossible to secure the results that the directors are convinced can be obtained through one well-organized corporation.

Accordingly, the Reo Motor Car Co. will purchase all Reo Truck stock delivered to the Capital National Bank, Lansing, or to Secretary D. E. Bates of the Reo Motor Car Co. on or before Sept. 20, and pay for these shares with car stock.

Ralph De Palma to Make Racers

DETROIT, Sept. 8—The DePalma Mfg. Co., composed of Ralph DePalma and Frank Book, the latter a Detroit capitalist, have acquired a factory building on East Woodbridge Street for about $23,000, it is stated. The plant will be utilized for the manufacture of racing automobiles under the direction of DePalma.

Aitken Wins Three on Indianapolis Speedway

Takes 20-, 50- and 100-mile Events —Rickenbacher Has Bit of Hard Luck

100-MILE EVENT

Car and Driver	Time	Speed	Prize
Peugeot, Aitken	1:07:05.04	89.44	$2,500
Hoskins, Hughes	1:07:24.96	89.01	1,000
Duesenberg, D'Alene	1:07:43.73	88.60	1,200
Duesenberg, Buzane	1:08:37.66	87.44	1,000
Premier, Lewis	1:09:07.30	86.81	600
Omar, Toft	1:12:40.80	82.56	400
Maxwell, Henderson	1:12:43.45	82.51	300
Peugeot, De Palma	1:13:12.62	81.96	
Maxwell, Rickenbacher	Wrecked 38th lap		
Ostewig, McNey	Flagged 36th lap		
Premier, Wilcox	Out 8th lap; quit		
Duesenberg, Milton	Out 8th lap; ignition tr.		

50-MILE EVENT

Car and Driver	Time	Speed	Prize
Peugeot, Aitken	32:40.33	91.83	$700
Hoskins, Hughes	32:40.61	91.81	500
Sunbeam, Chevrolet	32:41.10	91.79	400
Duesenberg, D'Alene	33:25.85	89.75	300
Premier, Lewis	34:05.46	87.99	100
Premier, Wilcox	35:24.89		
Duesenberg, Buzane	35:32.87		
Peugeot, De Palma	Out, dirty plugs, 7th lap		
Duesenberg, Klein	Out, dirty plugs, 7th lap		

20-MILE EVENT

Car and Driver	Time	Speed	Prize
Peugeot, Aitken	12:37.35	95.08	$400
Premier, Wilcox	12:37.68	95.03	200
Sunbeam, Chevrolet	13:12.88		200
Hoskins, Hughes	13:36.90		100
Premier, Lewis	14:03.85		
Peugeot, De Palma	14:04.62		
Duesenberg, Buzane	14:11.34		
Ostewig, McNey	15:52.18		
Henderson and Klein both out early.			

INDIANAPOLIS SPEEDWAY, Sept. 8—Johnnie Aitken won the 20-mile, 50-mile and 100-mile races to-day in a Peugeot. His average speed in the three races respectively was 95.08, 91.83 and 89.44. His prizes total $4,600.

In the 100-mile, Rickenbacher in a Maxwell gave Aitken a close run, but his right rear wheel collapsed on the thirty-eighth lap, and while he escaped injury and succeeded in keeping his car upright, he was put out of the run entirely. In the 100-mile, another interesting contest was between D'Alene in a Duesenberg and Hughes in a Hoskins, the latter winning out by 19 sec.

Despite the fact that the races were good and the finishes close, the attendance did not seem to be over 12,000, the public apparently wearied by the State Fair, which closed yesterday.

Ralph de Palma made a poor showing with Mertz's Peugeot, his Mercedes having been badly damaged Monday at Cincinnati. Christaens did not start his Sunbeam because of a crankshaft broken in practice.

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Lozier Motor Plant Is Sold to Motor Products

Deal Said to Involve Consideration of $1,000,000—Lozier to Use Rands Plant

DETROIT, Sept. 8—A deal said to involve a $1,000,000 consideration has been closed here between the Motor Products Corp. and the Lozier Motor Co., whereby the large modern plant of the Lozier company comes into the possession of the Motor Products Corp. The Lozier company does not go out of existence by this move, however, for it will take over the plant now used by the Rands Mfg. Co., one of the subsidiaries of the Motor Products combine.

The Lozier plant is a large group of up-to-date factory buildings located on Mack Avenue on the west side of the city and covering about 62 acres of ground. There is a very attractive administrative building in front of the factory structures, and a power plant for supplying ample power for all machinery. It was occupied by the old Lozier company prior to the reorganization and has since been used for the manufacture of Lozier cars by the new Lozier concern.

Motor Products Corp. was organized in May of this year with a capitalization of 100,000 shares of no par value, as a holding company for several large parts manufacturers located in Detroit and vicinity. The Rands Mfg. Co., maker of windshields, tops and steering wheels; the Vanguard Mfg. Co., specialist in windshield manufacture; the Diamond Mfg. Co., producer of automobile metal stampings, and the Universal Metal Co., maker of metal parts and possessing a large tube mill, are all parts of the Motor Products Co. and located in Detroit. Besides these, the combine includes the Superior Mfg. Co., Ann Arbor, Mich., which is also a windshield and metal parts producer.

The acquisition of the large Lozier works is the first step towards the concentration of the activities of the consolidation, and it is pointed out by one of the officials that the new plant will allow Motor Products to realize at once the fundamental purposes for which the company was formed. By means of this concentration in one plant it will not only enable the concern to put in effect some great economies in manufacturing, but will also enable the securing of managerial co-operation such as could not be attained while a number of plants were operating as separate units.

Motor Products is headed by well-known men in the industry. W. C. Rands is president; C. F. Jensen, vice-president; H. H. Seeley, vice-president; D. B. Lee, treasurer and general manager; M. L. Brown, secretary, and R. R. Seeley, director and production manager.

In addition to concentration in the new property, it is the intention to make large additions to the tube mill to keep pace with a growing business and to continue the Ann Arbor plant on special work, besides the expanding of the Walkerville, Ont., plant to care for an increasing Canadian business.

The plant that goes to Lozier, and up to this time has been occupied by the Rands subsidiary, was formerly the home of the Warren Motor Car Co., now out of business. Being constructed primarily for the making of automobiles, the Lozier people expect to effect economies in manufacture of their car. The buildings are of brick and occupy a site covering 6 acres. This property is said to be valued at $300,000. The cash received from the sale of the Lozier plant will be utilized as working capital by the Lozier concern, and plans for refinancing will bring new money into the business, according to Samuel Frank, secretary of the concern.

Morgan Heads the Abbott

CLEVELAND, Sept. 8—The Abbott Corp., which was formerly the Consolidated Car Co. prior to the moving of the concern to this city from Detroit, has elected G. W. Morgan to the presidency, succeeding C. L. Lewis, who retired at the time of the reorganization to head the General Engineering Co. in Detroit. Morgan was formerly connected with the Mitchell-Lewis Motor Co., having charge of the purchasing.

Vail, Formerly of Maxwell, Goes Into Tractor Business

With Others Will Make and Market a Small Tractor to Run on Either Kerosene or Gasoline

HAMILTON, OHIO, Sept. 9—The Vail-Rentschler Tractor Co. has been organized with an authorized capital of $100,000 to build and market a medium-weight tractor which will operate with gasoline or kerosene. The incorporators and stockholders are: G. A. Rentschler, chairman of the Hooven, Owens, Rentschler Co.; Col. C. B. Wing, of Cincinnati; J. A. Vail, formerly chairman of the board of directors of the Maxwell Motor Co.; Gordon S. Rentschler, vice-president of the Hamilton Foundry & Machine Co., and Samuel C. Vail, of Chicago.

The Vail tractor will be manufactured by this company as a specialty. A plant is now being equipped in Hamilton, Ohio.

W. Miller Is Wanted

Motor World has a letter from the trenches in Europe for W. Miller, formerly sales manager of the Pullman Motor Car Co., York, Pa. The letter for Miller is from Lieutenant Spencer Freedman. If Miller will let us know where he is the letter will be forwarded at once.

Fall Tractor Show for Dallas

DALLAS, Sept. 11—Indications are that the tractor demonstration during the Texas State Fair will be of greater interest than even the National demonstration in July. Ten acres of land within the State Fair Grounds has been secured for the October demonstration. There probably will be more than fifty demonstrators on the ground.

H.A.L. Plans to Build 2000 Cars Next Year

Merchandise Orders Already Placed —Foote Made President and Plans Are Reorganized

CLEVELAND, Sept. 11—Following the elevation of A. Ward Foote to the presidency of the H. A. Lozier Co., plans have been made for an increased production. The company was formed last winter, made first deliveries of the H. A. L. in May, and plans to have delivered 1000 by the end of the present year. Merchandise orders have been placed for material for 2000 cars for the 1917 calendar year. A change in the corporate name is contemplated. The company as now constituted includes:

President, A. Ward Foote, president of the Foote-Burt Co., machinery makers; vice-president, Charles C. Homan, former Overland purchasing agent; secretary, Frank H. Ginn, attorney; treasurer, E. G. Tillotson, of Tillotson & Walcott, bankers. The directors are the officers and the following: George E. Randles, vice-president Foote-Burt Co.; Amos N. Baron, general manager National Carbon Co.; Morris Towson, president Elwell-Parker Co., machinery maker, and also director in Anderson Electric Car Co. George H. Bowler is general sales manager. Jay Lee Cross has gone with the company as manager of the advertising department. Practically all of the stock is owned in Cleveland. The capitalization now is $700,000.

Studebaker Plans Big Expansion

DETROIT, Sept. 8—Plant expansion to cost $1,500,000 will be made by the Studebaker Corp. at the factories here and in South Bend, Ind.

Contracts have been let for a large foundry and machine shop to be erected in South Bend. The foundry will be 1100 x 150, with four cupolas and 250 tons daily melting capacity, and it is to be completed by July 1 next. The machine shop is to be about 900 x 300 and will double the present machine shop facilities at South Bend.

Detroit contracts are now being let for a one-story building with about 25,000 sq. ft. of floor, adjoining plant No. 3. It will be devoted to final assembly work. Another floor, 50 x 300, is to be built on one of the three-story buildings now used as a warehouse for materials.

Few persons really realize the extent of the automobile operations now carried on at the South Bend factories, the public generally regarding this part of the big corporation as being devoted to carriage, wagon and harness business entirely. Prior to 1912, the South Bend works were devoted exclusively to the manufacture of horse-drawn vehicles and harness, but in the latter part of that year the making of automobile springs and some castings was commenced. In 1914 the automobile body factory was installed, and last year some light stampings were first manufactured in South Bend. Now the plants in that city are manufacturing automobile parts for the Detroit plants to the value of over $10,000,000 per year, and the average number of employees has increased from 2701 in 1912 to 5023 at the present time.

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Orr Enters Tractor Trade

DETROIT, Sept. 11—Glenn L. Orr, prominent in the garage trade here and first president of the Michigan Automobile Trade Association, has invaded the tractor field. The Wayne Tractor Co. has been formed, with a capital stock of $300,000, and has acquired a factory 260 x 60 ft. The company will produce a light-weight tractor designed to be entirely dust-proof. It will have a four-cylinder, 4 x 6 valve-in-head motor, and all working parts will be completely inclosed. The machine is also to be entirely rust-proof. A feature will be a new type of duck-foot wheel, which can be substituted easily and quickly for the ordinary wheel for use on soft ground. Alfred Violette of Edmundton, Canada, land owner, is president and general manager of the company; Peter Wiederhold, for 10 years with Michigan Sugar Co., is vice-president; George I. Wicks, formerly engineer in charge of the Buick Motor Co.'s No. 12 plant, is treasurer. Executive offices are at 221 Stevens Building, Detroit.

Five Bid for Four Wheel Drive

CLINTONVILLE, WIS., Sept. 9—The Four Wheel Drive Tractor Co., originally organized at Antigo, Wis., and later by Clintonville (Wis.) capital, is considering propositions from six large Wisconsin cities for the location of the works, which is about to be undertaken. Among the bidders for the industry are Oshkosh, Appleton, Green Bay, Wausau and Fond du Lac. The Clintonville Commercial Club, however, does not intend to lose the industry and has put under way a strong campaign to raise sufficient funds to induce the tractor company, already financed by local capital, to build in Clintonville.

To Make Armstrong Red Tube

NEWARK, N. J., Sept. 7—The Armstrong Rubber Co., this city, is equipping its factory for the manufacture of the Armstrong red inner tube equipped with the Kahn valve. This company will manufacture specialties for the trade and also tubes under special brands.

Earle and Boggs Set Up

NEW YORK, Sept. 7—L. H. Earle and G. A. Boggs, who resigned from the Continental Motors Co. last July, have incorporated as Earle & Boggs, to act as manufacturers' representatives for materials. Offices have been taken at 1790 Broadway, and accounts have been opened with the Pierce Governor Co. and the Blood Bros. Machine Co.

Marathon Men to Meet

CUYAHOGA FALLS, OHIO, Sept. 8—The Marathon Tire & Rubber Co., this city, will hold its annual sales convention at its factory during the week commencing Sept. 11, under the direction of H. H. Replogle, sales manager.

Dividends Declared

Electric Storage Battery Co., quarterly of 1 per cent on preferred and common, payable Oct. 2 to holders of record Sept. 18.

Allis-Chalmers Mfg. Co., quarterly of 1½ per cent on preferred, payable Oct. 16 to holders of record Sept. 30.

Coming Events

General Events

Sept. 25-26.....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association, Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12.....Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Oct. 16-17.....Rockford, Ill., Semi-annual Convention Garage Owners' Assn. of Ill.

Feb. .....Convention Minnesota Retail Automobile Dealers Association.

Races, Contests and Tours

Sept. 18.....North Yakima, Wash.; track race, Washington State Fair.

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 9-14.....Annual Trade and Good Roads Tour of the Kansas City Motor Car Dealers Assn.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Shows

Sept. 11-16.....Milwaukee, Wis., Second Annual Fall Show, State Fair, Machinery Hall, Milwaukee Automobile Dealers, Inc.

Sept. 11-16.....Topeka, Kan., Show; State Fair; Topeka Motor Car Dealers Assn.

Sept. 18-22.....Grand Rapids, Mich., First Annual Fall Show, West Michigan State Fair, Automobile Business Assn. of Grand Rapids.

Sept. 18-23.....Sioux City, Ia., Show, State Fair, Sioux City Automobile Dealers Trade Assn.

Sept. 23-30.....Oklahoma City, Okla., Show, State Fair.

Sept. 25-30.....Salem, Ore., Show, State Fair.

*Indicates sanc... by A. A. A.

Sept. 26-29.....La Crosse, Wis., Show, Inter-State Fair Grounds.

Oct. 11-21.....New York, Electrical Exposition, Grand Central Palace.

Oct. 14-21.....Atlanta, Ga., Show, Southeastern Fair, Atlanta Automobile and Accessory Assn.

Oct. 14-21.....Chattanooga, Tenn., Show, Chattanooga Automobile Dealers Assn.

Oct. 14-29.....Dallas, Tex., Show, State Fair, Dallas Auto and Accessories Dealers.

Oct. 14-31.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 9-10.....Fort Dodge, Iowa, Iowa Automobile Dealers Association.

Jan. 20-27.....Montreal, Can. Montreal Automobile Trade Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb.....St. Louis, Mo., Show, Automobile Manufacturers & Dealers Assn.

Feb. 3-10.....Minneapolis, Minn., Annual Show, Minneapolis Automobile Trade Assn.

Feb. 11-16.....Kansas City, Mo., Show, Kansas City Motor Car Dealers Assn.

Feb. 12-17.....Kansas City, Mo., Show, Kansas City Motor Car Dealers Assn.

Feb. 19-24.....Duluth, Minn., Show, New Armory Bldg., Duluth Automobile Dealers Assn.

Feb. 19-24.....Des Moines, Iowa, Eighth Annual Show, Des Moines Auto. Dealers' Assn. C. G. Van Vliet, manager.

Feb. 26-Mar. 3....Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn., Clarke G. Powell, manager.

Mar. 3-10.....Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers Assn., C. I. Campbell, Gen. Mgr.

Mar. 6-10.....Fort Dodge, Iowa, Sixth Annual Show, New Terminal Warehouse.

Motor Car Securities Quotations

	Sept. 9, 1915 Bid	Asked	Sept. 8, 1916 Bid	Asked
Ajax Rubber Co. (new)	..	..	62	65
J. I. Case T. M. Co., pfd	..	..	87½	89½
Chalmers Motor Co., com	105	..	130	140
Chalmers Motor Co., pfd	95	100	95	98
*Chandler Motor Car Co	..	..	100	110
Chevrolet Motor Co	..	..	195	200
Fisk Rubber Co., com	..	..	95	100
Fisk Rubber Co., 1st pfd	..	..	110	115
Fisk Rubber Co., 2nd pfd	..	..	115	125
Firestone Tire & Rubber Co., com	530	535	..	1000
Firestone Tire & Rubber Co., pfd	111	..	110	112
*General Motors Co., com	255	258	535	545
*General Motors Co., pfd	113	115	126	127½
*B. F. Goodrich Co., com	61	63	72	73½
*B. F. Goodrich Co., pfd	106	108	113½	115½
Goodyear Tire & Rubber Co., com	284	288	248	250
Goodyear Tire & Rubber Co., pfd	106½	109½	107½	108
Grant Motor Car Co	..	..	7	8
Hupp Motor Car Co., com	..	..	6	6½
Hupp Motor Car Co., pfd	..	..	80	100
International Motor Co., com	27	30	6	10
International Motor Co., pfd	56	58	15	20
*Kelly-Sprfld. T. & R. Co., com	204	206½	69½	85½
*Kelly-Sprfld. T. & R. Co., 1st pfd.	89	91	99	100
*Lee Rubber & Tire Corp	..	..	47½	48
*Maxwell Motor Co., com	42	43	84½	85½
*Maxwell Motor Co., 1st pfd	96	97	98	99
*Maxwell Motor Co., 2nd pfd	26	27	55	56
Miller Rubber Co., com	190	194	223	227
Miller Rubber Co., pfd	167½	..	164	165
Packard Motor Car Co., com	128	130	165	175
Packard Motor Car Co., pfd	100	..	..	100
Paige-Detroit Motor Car Co	..	450	53	55
Peerless Truck & Motor Corp	..	..	33½	36½
Portage Rubber Co., com	46	48	146	160
Portage Rubber Co., pfd	93	94	146	165
Regal Motor Car Co., pfd	..	21	50	55
†Reo Motor Truck Co	17	17⅝	44	46
†Reo Motor Car Co	32	33½	45	46½
Saxon Motor Car Co	..	..	72	73
Standard Motor Co	..	..	6	7
Stewart-Warner Speed. Corp., com	65	66	114	115
Stewart-Warner Speed. Corp., pfd	105	107	..	..
*Studebaker Corp., com	114	116	154⅜	154⅝
*Studebaker Corp., pfd	105	106	109	110
Swinehart Tire & Rubber Co	88	90	92	95
United Motor Corp	..	..	61¾	61⅞
*U. S. Rubber Co., com	48¾	50	59¼	59½
*U. S. Rubber Co., pfd	103¾	105	111¾	112
White Motor Co. (new)	110	..	53	54
*Willys-Overland Co., com	137	139	47	47¼
*Willys-Overland Co., pfd	167½	168	165¾	164

*At close Sept. 9, 1916—Listed N. Y. Stock Exchange
†Par value $10; others $100.

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MICHELIN TIRES

Success Assured!

"First give more for the money than any one else and then let people know about it." That was a great merchant's formula for success.

And it's the Michelin Proposition to a "T"—for

Michelin dealers offer *unequalled values*—tires of the highest quality at prices way below the market—and the Michelin Tire Company, through its advertising in magazines and in the dealers' newspapers, sees to it that the public *knows about these values.*

You know Michelin Quality. Study Michelin's prices; look at these Michelin advertisements; notice also the cut-outs and other Free selling helps—emblems of Michelin's Dealer Co-operation. Then write or wire for details of Michelin's proposition.

UNIVERSAL TREAD CASINGS AND RED TUBES			
Inch Sizes	Q. D. Straight Side	Q. D. Clincher	Red Inner Tubes
32x3½	$18.30	.....	$3.55
32x4	24.90	$24.90	4.65
33	25.65	25.65	4.25
34	25.95	25.95	5.00
36	27.95	27.95	5.30
34x4½	33.00	33.00	6.55
35	34.75	34.75	5.90
36	35.70	35.70	6.90
37	.....	36.60	6.30
35x5	40.50	40.50	6.55
37	41.90	41.90	8.35

Also made in soft bead clincher size 31x4, price $22.25

MICHELIN, Milltown, N. J.

MICHELIN UNIVERSAL TREAD

A STEP FORWARD IN TIRE MAKING

BUY ONE HERE

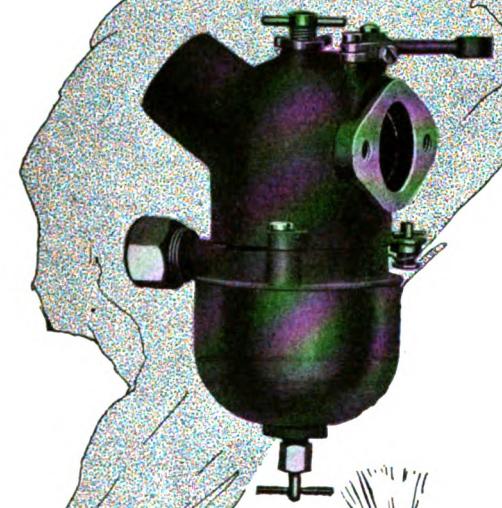
MICHELIN
Universal Tread—
BUY ONE HERE!
This Is The New Tire Every One Is Talking About

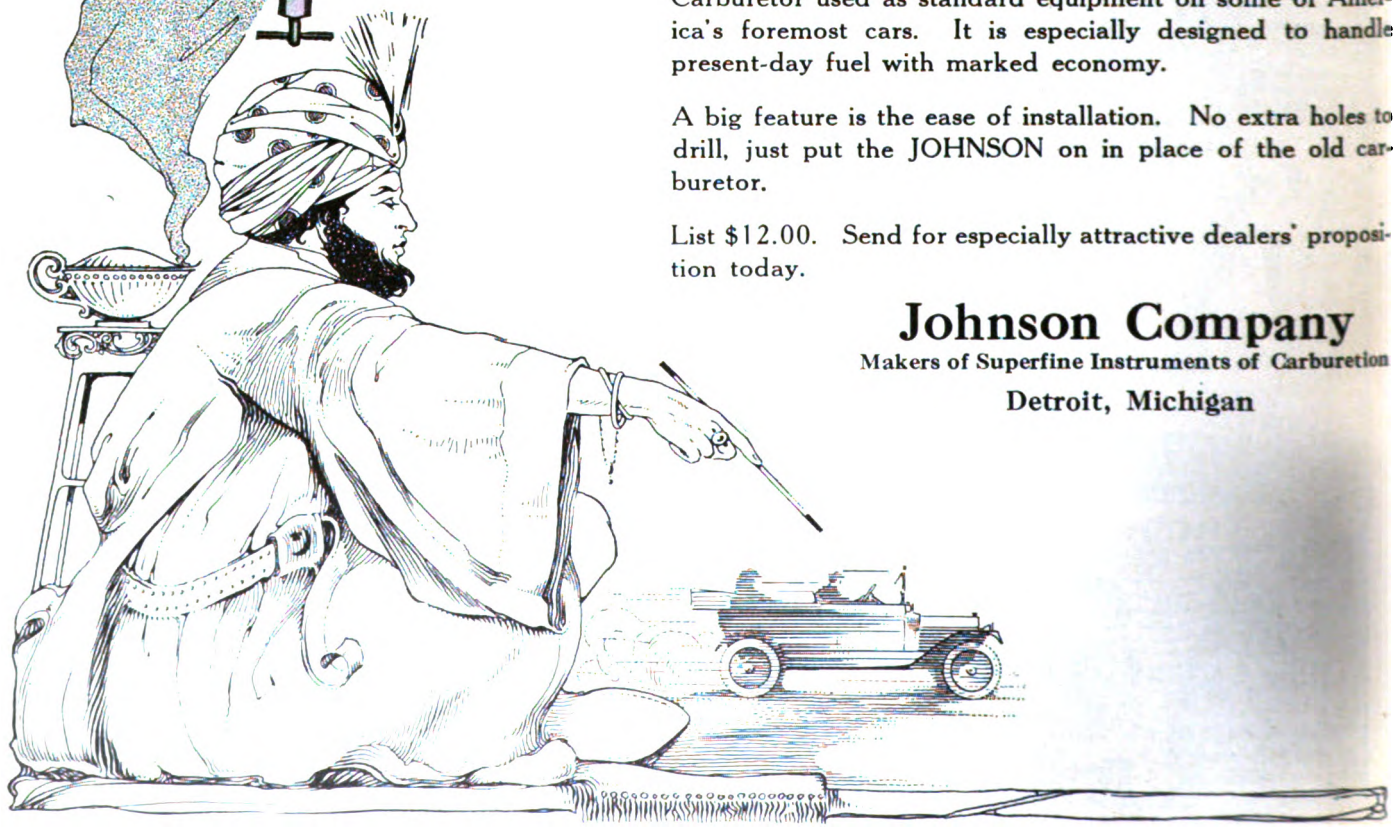
Have you tried the *NEW*
MICHELIN UNIVERSAL TREAD?
IF NOT—BUY ONE HERE

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JOHNSON CARBURETOR *for Fords*

Works a Magical Transformation in the Operation *of* Any Ford Car





Dealers in every part of the country are finding this out to their everlasting PROFIT.

Such power, economy and quick pickup Ford owners never before experienced. The change a JOHNSON makes is nothing short of a revelation, so superior, in fact, that the JOHNSON dealer is in position to control practically the entire carburetor business for Fords in his locality.

This really wonderful little JOHNSON instrument for Fords is built along the same lines as the remarkable JOHNSON Carburetor used as standard equipment on some of America's foremost cars. It is especially designed to handle present-day fuel with marked economy.

A big feature is the ease of installation. No extra holes to drill, just put the JOHNSON on in place of the old carburetor.

List $12.00. Send for especially attractive dealers' proposition today.

Johnson Company
Makers of Superfine Instruments of Carburetion
Detroit, Michigan

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Approved by the Police everywhere



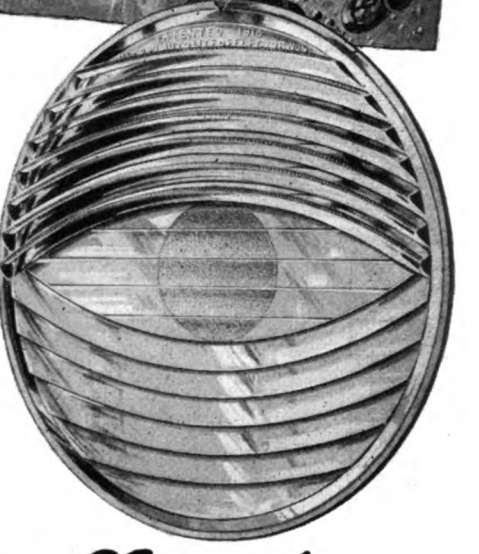
The last element of danger removed from

Night Auto Driving

The solution of the problem of safe driving at night is finally found in the Osgood Deflector Lens. Not a dimmer—not a diffuser, but a prismatic glass lens that fits into your lamps in place of plain lenses and deflects the light downward.

It accomplishes the vital functions of automobile illumination, to wit: Lights ample distance ahead for highest speed—no blinding glare—places light where needed—avoids necessity of dimmers.

The Osgood Lens—because of its deflecting power due to its prismatic principle—casts the light rays exactly where you need them—along the ground far ahead, and to both sides.



OSGOOD Deflector LENS

Lights the Ground-Not the Air

The Osgood Deflector Lens is the only lens made on scientific principles.

Light experts found that the prismatic principle was the correct way to deflect the rays downward without loss of light and without causing a dazzling glare.

Instead of seriously diminishing the light, the Osgood Lens gives you light of full intensity along the ground where you want it most. With rays only 3½ feet high, they are below the eye level of approaching drivers and pedestrians.

Light cast from an Osgood Deflector Lens will penetrate the densest fog—the heaviest mist or thickest smoke, and is an ideal light for city driving in crowded thoroughfares.

For country driving this wonderful deflecting lens lights the road far ahead for greatest speed and avoids the need of constantly switching dimmers on and off when passing other cars.

It makes night driving absolutely safe anywhere, any time and under any conditions. Every road obstruction and depression is visible for 500 feet. No need to fear holes, rocks or other road obstacles when your lamps are equipped with Osgood Lenses.

If you meet a car at night and the driver ignores your signal and does not dim his lights, yet the lights do not dazzle you, do not accuse him of discourtesy—his lamps are equipped with Osgood Lenses.

On a Packard Twin Six, the lamps, equipped with the Osgood Deflector Lenses, threw the rays close to the ground and lit the road over 500 feet ahead.

Another night test—with two Packard Twin Sixes, both equipped with Osgood Lenses, passed each other on a narrow country road in opposite directions, each going 30 miles an hour, without hesitation or inconvenience on the part of the drivers.

The Osgood Deflector Lens can easily be attached in a few minutes. Simply remove the plain glass lenses and insert the Osgood Lenses in place and focus and point the headlights properly—no trouble—no bother and nothing complicated.

Good accessory and garage dealers sell them at $2.50 to $5.25 a pair, according to size.

Dealers, write to us or nearest distributor below for very attractive offer.

The Osgood Lens & Supply Co., Dept. 5, 1241 Michigan Ave., Chicago, Ill.

DISTRIBUTORS:

New York, N. Y.
Whittemore-Sim Co.
Chicago, Ill.
Motor Car Supply Co.
Philadelphia, Pa.
Gaul, Derr & Shearer Co.
Pittsburgh, Pa.
The Consumers Auto Sup. Co.
Boston, Mass.
Atwood Auto Lamp Co.
Baltimore, Md.
The Tire Mart.
Greensboro, N. C.
Greensboro Motor Car Co.
Richmond, Va.
Talman Auto Supply Co.
Cleveland, O.
Pennsylvania Rub. & Sup. Co.
Dayton, O.
The I. J. Cooper Rubber Co.
Cincinnati, O.
The I. J. Cooper Rubber Co.
Detroit, Mich.
General Sales Co.
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Kansas City, Mo.
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Cedar Rapids Pump Co.
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Schultz Auto Supply Co.
Wichita, Kans.
Hackaday Auto Supply Co.
Oklahoma City, Okla.
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Portland, Ore.
Eccles & Smith Co.
CANADA
Montreal, Toronto, Winnipeg, Vancouver
John Millen & Son, Ltd.



This advertisement appeared in Saturday Evening Post early in August and sold thousands of Osgood Lens. Another page will appear soon.

When writing advertisers please mention Motor World

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Endurance

In addition to producing balanced bearings—that is, bearings in which the load carrying capacity of the balls is identical with the load carrying capacity of the raceways in which the balls revolve—

U. S. BALL BEARINGS possess great endurance properties because of the design and material used in the construction of the separators.

These separators which are produced over our own patented design are made solely of steel.

So ingenious and novel is the construction of these separators that U. S. BALL BEARINGS contain one less than the full type, or 95% balls in the races. This balanced construction provides exceedingly high carrying capacity combined with extreme endurance and, of course, with the inherent low co-efficient of friction to be found in all high-grade ball bearings.

U. S. Ball Bearing Manufacturing Co.
(Conrad Patent Licensee)
Palmer St. and Kolmar Avenue, Chicago

Inserted photo shows new U. S. Ball Bearing factory
General view shows one corner of punch press department

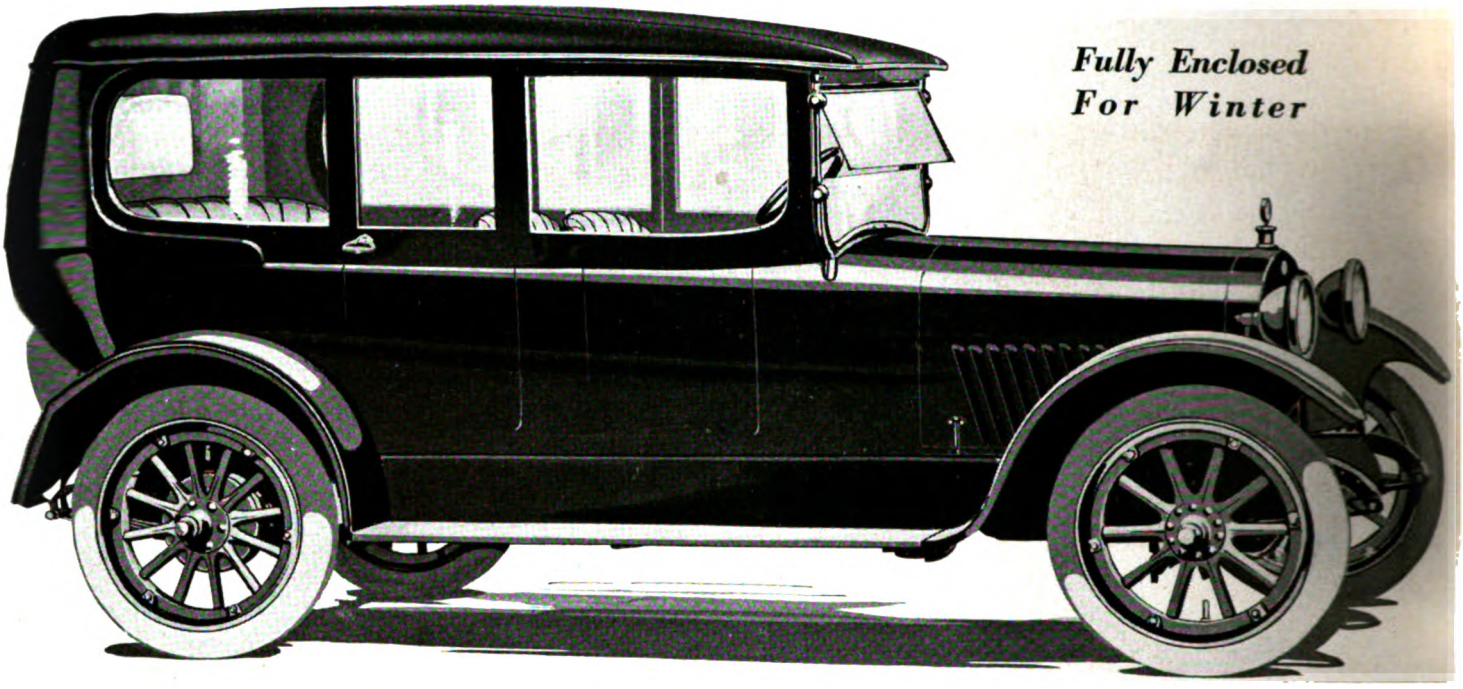
U. S.

BALL BEARINGS

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Lexington

MINUTE-MAN SIX CONVERTIBLE TOURING CAR $1350

A CAR that sells—and cars to sell—That's the LEXINGTON proposition in a nutshell. The best car that ever ran on wheels will not make money for the dealer if he cannot get cars *when he wants them.*

And he wants them when people are buying—in the fall, spring, and early summer.

LEXINGTON facilities—ten big factories all related by a common interest—work together to deliver cars when the dealer can sell them.

The LEXINGTON season—August to June—does not leave the dealer high and dry by closing the production year at the very crest of the spring buying season. In other words, LEXINGTON policy is not based on what the dealer can be made to do by main strength, but is shaped *to give the dealer a square deal* and allow him to make *a satisfactory profit.*

A splendid car which gives a full dollar's worth of automobile value for every dollar of its cost—a car that makes an instant appeal to the discriminating buyer—backed by a broad-gauged selling policy that insures success—this is what the LEXINGTON dealership offers you.

The LEXINGTON contract is a contract with a future. LEXINGTON facilities, both manufacturing and financial, are an assurance of this, and the quality of the car itself makes every LEXINGTON owner an enthusiastic booster.

Where do you stand? Are you looking for a car that sells—and cars to sell? Are you looking for a car behind which you can put your whole heart, knowing that the business you build is a permanently profitable business? If so get in touch with us at once.

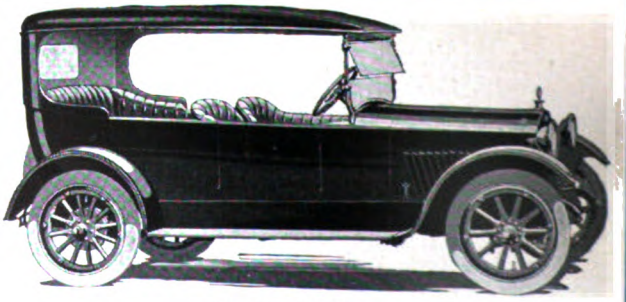
Let us reveal to you the real size of the LEXINGTON proposition, let us give you facts that will open your eyes. Come to the factory and see for yourself—and the more you know about automobile factories the better the LEXINGTON will look to you.

BUT ACT NOW!

LEXINGTON SALIENT SUPERIORITIES

- **Lexington-Continental Engine**
- **Moore Multiple Exhaust System**
- **Cut Steel Starting Gear on Flywheel**
- **Independent Ignition, Lighting, and Starting Circuits**
- **Double Universal Joints**
- **Full-Floating Rear Axle with Spiral Bevel Gears**
- **Wick Feed Oil Cups**
- **Engine-Driven Tire Pump**
- **Double-Bulb Adjustable Headlamps, rigidly mounted on Radiator**
- **Largest Size Motometer**
- **Bolted-on Tire Rack and Spare Demountable Rim**
- **Oil Pressure Gauge**
- **Convex Mud Guards**
- **Genuine Leather Trimming Throughout**

In addition, the regular equipment includes full ventilating weather-stripped windshield, speedometer, electric horn, ammeter, and trouble lamp.



Fully Open For Summer

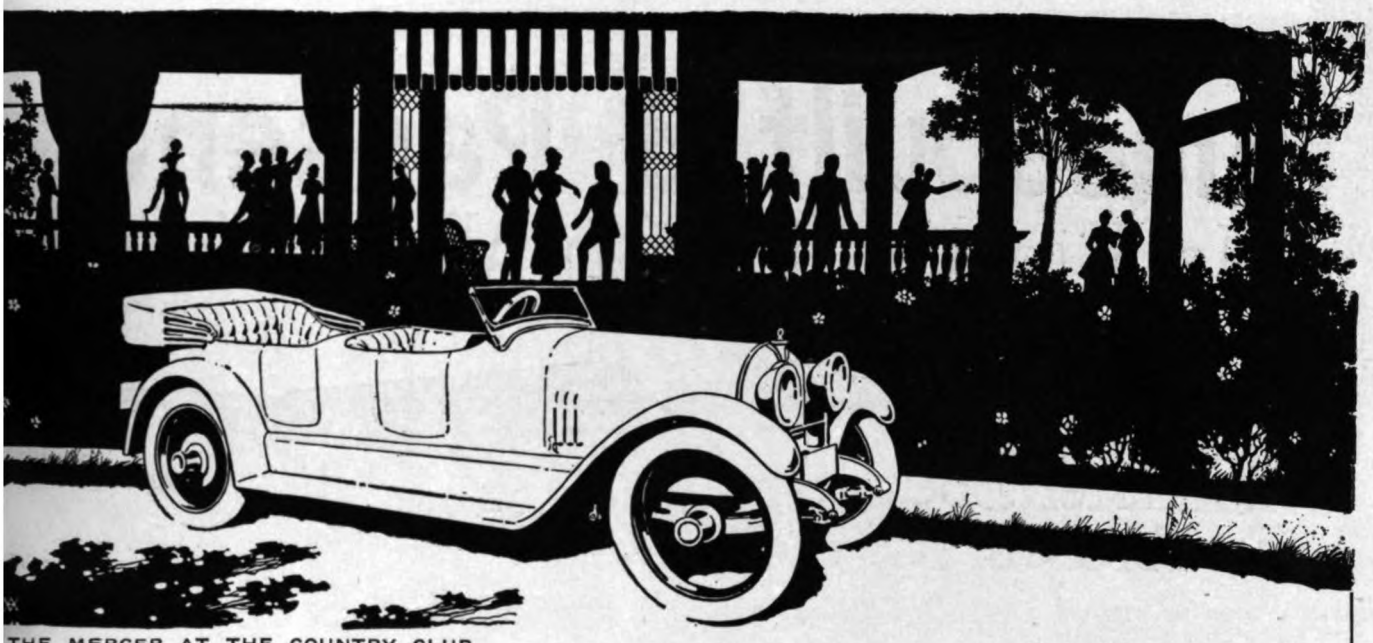
THE LEXINGTON-HOWARD CO.

(Lexington is enjoying its tenth successful season)

Offices and Works: 1950 Columbia Ave.

CONNERSVILLE, IND., U. S. A.

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THE MERCER AT THE COUNTRY CLUB

BOSCH

THE IGNITION SYSTEM ALWAYS FOUND ON THE CARS OF THE MORE PARTICULAR

BOSCH MAGNETO IGNITION is always good because Bosch Magnetos are the perfected product of more than a quarter of a century of untiring effort.

Bosch Magnetos owe their world-wide popularity, not so much to the printed word as to their demonstrable and remarkable superiority, a superiority which is apparent to all who investigate intelligently.

Whether you make, sell or use cars, choose between the "standard ignition system" and the "good enough kind" —it's advisable and worth while.

Be Satisfied

For that feeling of confidence
For that extra ounce of power
For that vim, vigor and snap

Specify Bosch

Service Stations in Every State

Magneto Catalogue on Request

BOSCH MAGNETO COMPANY

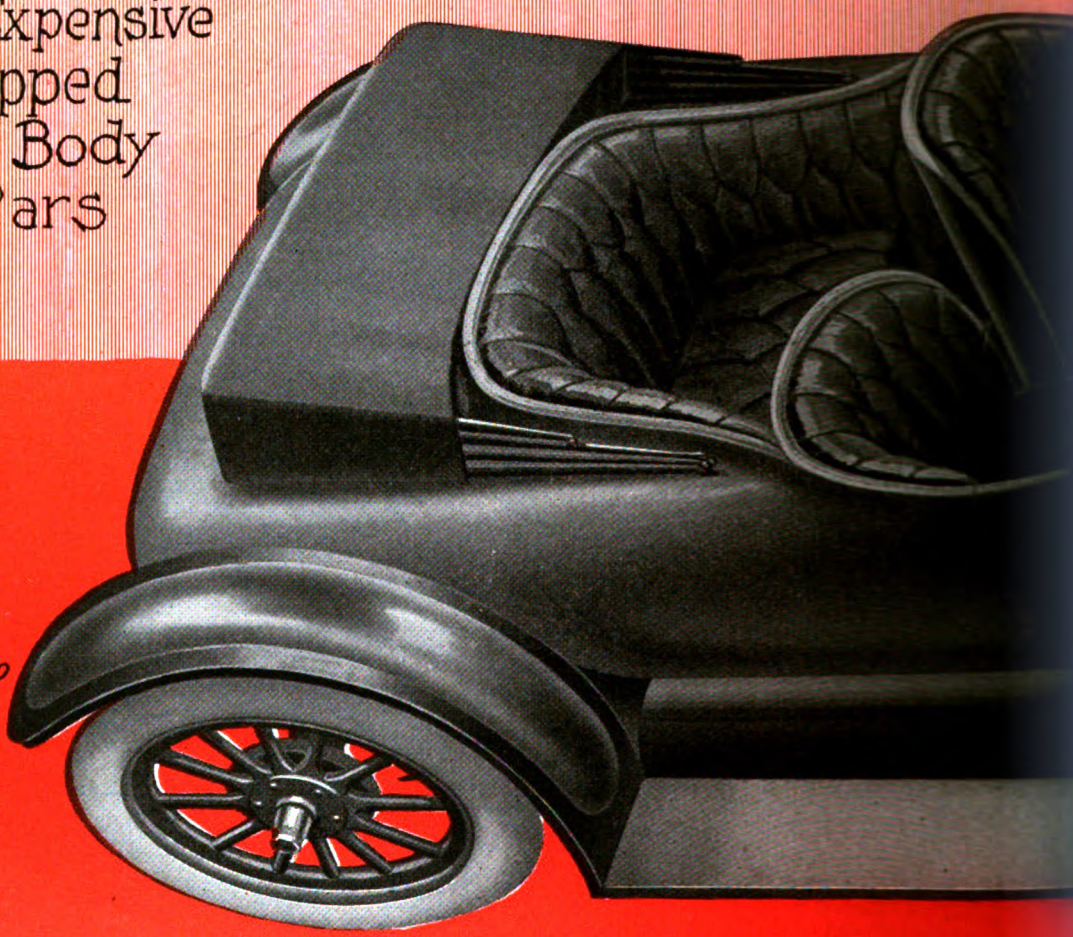
224 WEST 46th STREET **NEW YORK CITY, N. Y.**

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Amesbuilt 3 Passenger

Is Finished With All the Appoint

The Least Expensive
Best Equipped
Roadster Body
For Ford Cars



Complete
Only
$200
f.o.b. Owensboro Kentucky

Amesbuilt Bodies Dress Your

For refined elegance—real class—for compelling admiration on every hand, this beautiful streamline Amesbuilt Cloverleaf Body for the Ford is unsurpassed. It at once dresses the Ford in $1000 style. It is beauty, service, satisfaction, plus Ford reliability and simplicity. It is the forerunner of the greatest line of Passenger and Commercial bodies ever created for Fords. Price $200 f.o.b. Owensboro. Order now. Very attractive dealer's proposition.

The F. A. Ames Co.
INC

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Cloverleaf Body for Fords

...nts of the Most Expensive Cars



Furnished with All Necessary Parts Interchangeable

For Immediate Attachment To Your Car

Ford Car in Correct 1917 Style

Brief Specifications

Heavy Crown fenders and fender irons; skirt in rear hiding Rear Axle; Rubber Mat and Carpet; Streamline hood and Bull nose Radiator shell; Clear Vision Divided Windshield; Silk Mohair Top and Dust cover; Linoleum covered Aluminum bound Running board; special Gas Tank filler cap.

Owensboro, Ky.

TED

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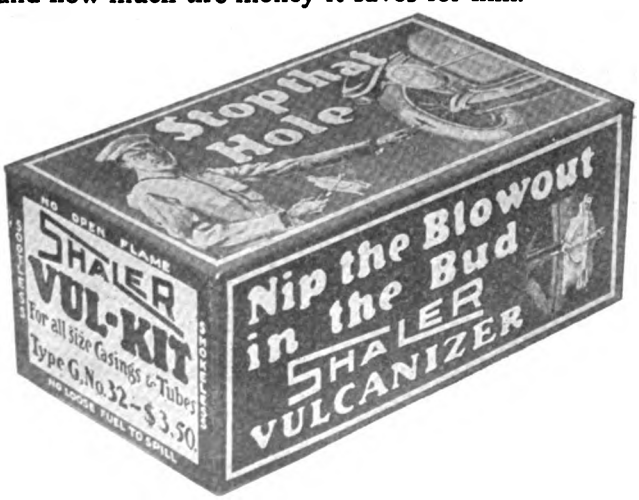


EVERY car owner needs and wants this handy Shaler Tire Repair Kit to eliminate tire trouble on the road and double his mileage. It means many additional accessory sales and profits because the motorist is compelled to buy one from his dealer, as no car comes equipped with a tire-saving device. Every one of your customers is a likely prospect.

SHALER

Each sale gives you a liberal profit on the kit itself and besides gives you a continuous permanent profit on the sale of repair material and supplies that the motorist must buy from time to time, for use on the road.

Every Shaler user praises this handy Shaler outfit when he discovers how easily and safely it works and how much tire money it saves for him.



Tire Repair Kits

For motorists to carry in their tool boxes

He will praise it to his friends, which will result in more sales for you.

Because the Shaler Tire Repair Kit is such a practical, necessary accessory—especially in view of the increasing tire prices—every motorist is eventually going to buy one. And some dealer is going to make the sale. You might as well get the profit as let the next fellow have it.

The Shaler is advertised regularly throughout the season in the Saturday Evening Post and more than fifty other magazines. Motor car owners know the Shaler and call for it by name.

Write on Your Letter Head for Catalog and Dealers' Prices

Write today for complete catalog of Shaler Tire Repair Kits—dealers' discounts and full information about Dealers' Helps we furnish, including Counter Stands—Posters, Wall Hangers—Window Displays—Booklets, Circulars, Signs and Window Cards.

C. A. SHALER COMPANY

431 Fourth Street, Waupun, Wisconsin

Oldest and Largest Manufacturers of Vulcanizers

Canadian Distributors: John Millen & Son, Limited, Toronto, Winnipeg Montreal, Vancouver

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MAXFER



TON TRUCK MAKER

$350

IMMEDIATE DELIVERIES!

We can make deliveries—*right now.* And **Maxfer** deliveries are *bona fide* deliveries of **Maxfer** truck units *complete* —ready to put right on.

This important advantage of **Maxfer** service counts big with dealers who appreciate that they cannot expect to make sales unless they can deliver the goods—and do it promptly. Delays spell lost sales—lost customers—lost prestige.

The **Maxfer** factory has the capacity for meeting the full requirements of all its dealers all the time. It ships on the dates specified. It makes no promises it cannot keep.

Among other things, consider that

We Require No Deposits On Axles

The **Maxfer** salvage system is as liberal as it is simple. There is nothing complicated about it. Dealers have no capital tied up in it at any time.

Another noteworthy **Maxfer** feature is ease of attachment. The **Maxfer** dealers save considerable time and labor on every installation, due to the fact that the

Maxfer Is Shipped Assembled

There is no time lost trying to figure out how **Maxfer** installations are to be made. It is impossible to go wrong. Attachment is simple as A-B-C. Any one who can use a wrench can easily attach **Maxfer** in from two to three hours—a remarkably short time for converting a Ford car into a one-ton truck.

Here is another important feature—the **Maxfer** uses the Ford rear axle *just as it comes, full width and unchanged.* The Ford axle does not have to be shortened or a substitute provided—as our own invention, the Offset Bell Sprocket, makes change unnecessary.

Wide-awake dealers realize that today the opportunities in this remarkable, prosperous truck unit field are greater than ever. Make no mistake. Start right. Handle the **Maxfer** with the assurance that you have the best truck unit for Fords on the market, backed by a Company of unquestionable soundness.

If you want exclusive territory rights, show us you mean business. Wire or write today for the most liberal selling contract ever offered. Territory going fast. Immediate action necessary.

Use the Coupon for Dealer's Proposition and Full Information

Maxfer Truck & Tractor Co.

5035 S. Wabash Avenue **Chicago, Illinois**

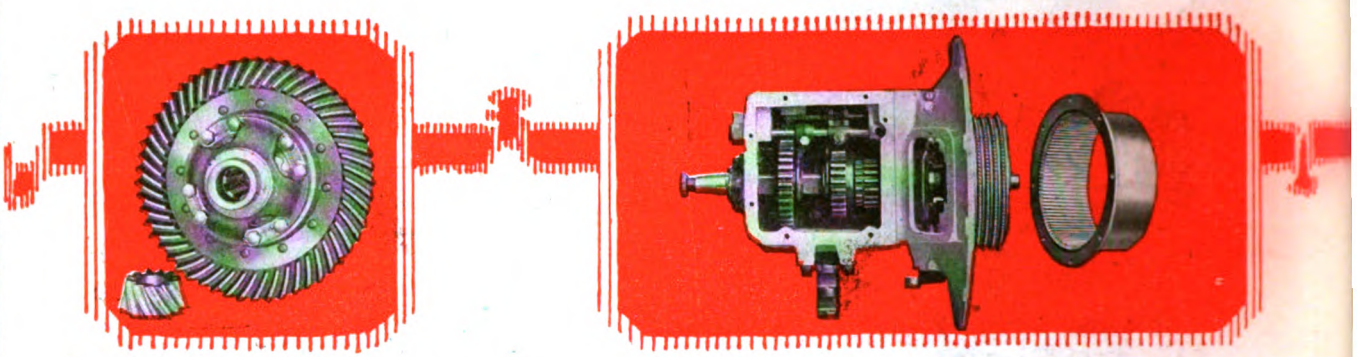
Maxfer Truck & Tractor Co.
5035 S. Wabash Ave.
Chicago, Ill.

Send full particulars about **Maxfer** Ton Truck Makers and exclusive proposition to one dealer in each town.

Name .....

Address .....

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HERE IS THE LIST OF USERS OF BROWN-LIPE PRODUCTS WHICH TELLS THE BROWN-LIPE STORY BETTER AND MORE FORCIBLY THAN WORDS.

THIS SPLENDID ARRAY OF MOTOR CAR AND MOTOR TRUCK

BROWN

Abbott Motor Car Co.
Acason Motor Truck Co.
Acme Wagon Co.
Ahrens Fox Eng. Co.
Amboy Motor Truck Co.
American Express Co.
Anderson Elec. Car Co.
Armleder, O. Co.
Atlantic Elec. Vehicle Co.
Atlantic Refining Co.
Atterbury Motor Car Co.
Auburn Automobile Co.
Auto Car Co.
Auto Construction & Eng. Co.
Available Truck Co.

Baker, R. & L. Co.
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Bowling Green Motor Truck Co.
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Cadillac Motor Car Co.
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Chandler Motor Car Co.
Chase Motor Truck Co.
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Chevrolet Motor Co.
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Coleman Carriage Co.
Columbia Taxi Cab Co.
Commerce Motor Car Co.
Corbitt Automobile Co.
Crawford Automobile Co.
Croce Auto Co.
Crossley Motors, Ltd.
Crow Motor Car Co.
Cunningham, Jas. & Son Co.

Daniels Motor Car Co.
Dart Motor Truck Co.
Davis Car Co.
De Kalb Automobile Co.
Detroiter Motor Car Co.
Detroit-Wyandotte Motor Co.
Diamond Motor Car Co.
Doane Motor Truck Co.
Dorris Motor Car Co.
Dort Motor Car Co.
Duplex Power Car Co.

Eclipse Motor Truck Co.
Empire Automobile Co.
Enger Motor Car Co.

Federal Motor Truck Co.
Fiat Co.
Fifth Ave. Coach Co.
Four Wheel Drive Auto Co.

Gabriel C. & W. Co.
Garford Motor Truck Co.
General Motors Truck Co.
General Vehicle Co.
Gramm-Bernstein Co.
Gramm Motor Truck Co.
Grant Motor Co.

Hahn Motor Truck Co.
Harding Motor Truck Co.
Harvey Motor Truck Works
Harwood Barley Mfg. Co.
Haynes Automobile Co.
Henderson Bros.
Hendrickson Motor Truck Co.
Hudson Motor Car Co.
Holmes Motor Truck Co.
Hurlburt Motor Truck Co.
Hupp Motor Car Co.

International Harvester Co.
International Motor Co.

Jackson Auto Co.
Jordan Motor Car Co.

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Kissel Motor Car Co.
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Krebs Commercial Car Co.

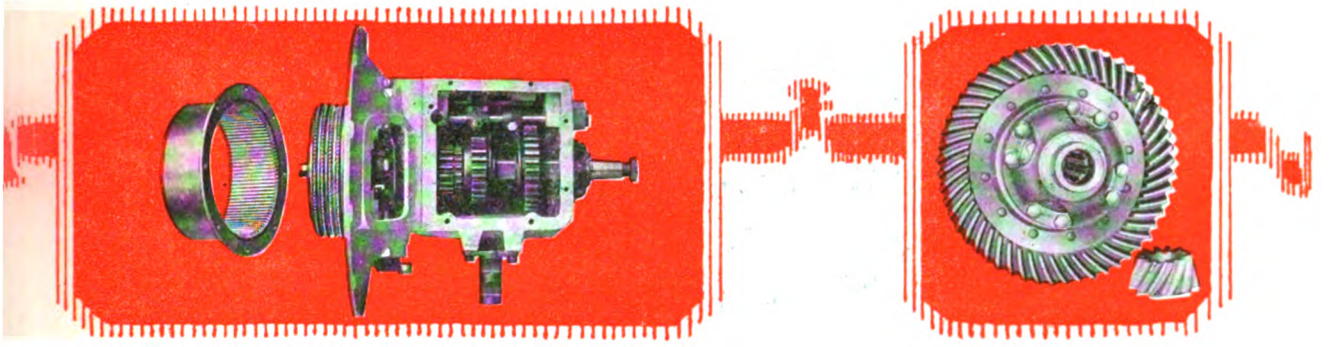
Landshaft Motor Truck Co.
Lewis-Hall Iron Wks.
Lexington-Howard Co.
Lippard-Stewart Motor Car Co.

BROWN-LIPE GEAR CO. Syracuse, N.

Transmissions

NEW YORK, Thos. L. Wetzel, 29 West 42d St.
SAN FRANCISCO, A. H. Coates, 444 Market St.
CHICAGO, K. Franklin Peterson, 122 S. Michigan Ave.
DETROIT, L. D. Bolton, 2215 Dime Savings Bank Bldg.
Foreign Agent, Benjamin Whittaker, 2, Norfolk Street, Strand, LONDON, W. C.

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MANUFACTURERS USE BROWN-LIPE PRODUCTS BECAUSE OF THEIR QUALITY, FREQUENTLY PAYING HIGHER PRICES FOR IN THE LONG RUN HIGHER FIRST COST REPRESENTS ACTUAL ECONOMY.

LIPE

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McFarland Motor Co.
Maccar Truck Company
Martin Carriage Wks.
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Trabold Truck Mfg. Co.
Trafford Eng. Co.
Transport Tractor Co.
Tower Iron Wks. R. J.

U. S. Carriage Co.
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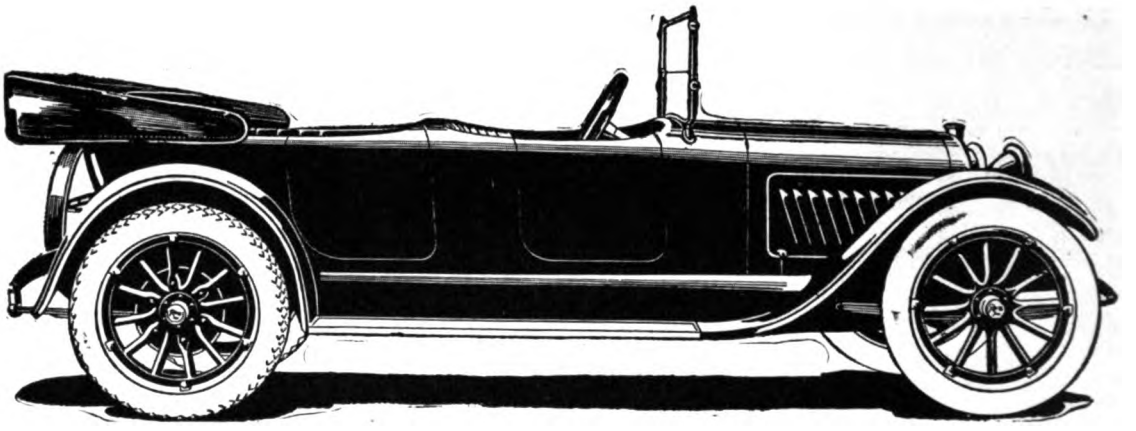
U. S. A. BROWN-LIPE CHAPIN CO.

Differentials

NEW YORK, Thos. J. Wetzel, 29 West 42d St.
SAN FRANCISCO, A. H. Coates, 444 Market St.
CHICAGO, K. Franklin Peterson, 122 S. Michigan Ave.
DETROIT, L. D. Bolton, 2215 Dime Savings Bank Bldg.
Foreign Agent, Benjamin Whittaker, 2, Norfolk Street, Strand, LONDON, W. C.

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ROSS EIGHT



WHEN you know that the Ross Eight is drawing to its standard many of the ablest dealers in the country who formerly sold cars of much higher price, you will appreciate why we urge an early acquaintance with the Ross Eight.

80 H. P. Herschell-Spillman motor,
130-inch wheelbase. Weight, 3250 pounds

Price $1550 f. o. b. Detroit

Ross Automobile Company, Detroit, Michigan

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FEDDERS RADIATORS

A Logical Result

The Quality of FEDDERS "Is Not Strained"

It is not the result of miracles, or genius, or luck. It is the result of study, experimentation, elimination of the bad, segregation and preservation of the good.

You can be CERTAIN of your FEDDERS RADIATOR, for you know that we took no "chances" with it. Owing to increased demand, we have again doubled the capacity of our plant, but we have never sent out a "rush job" or overlooked one single precaution in the manufacture of our products.

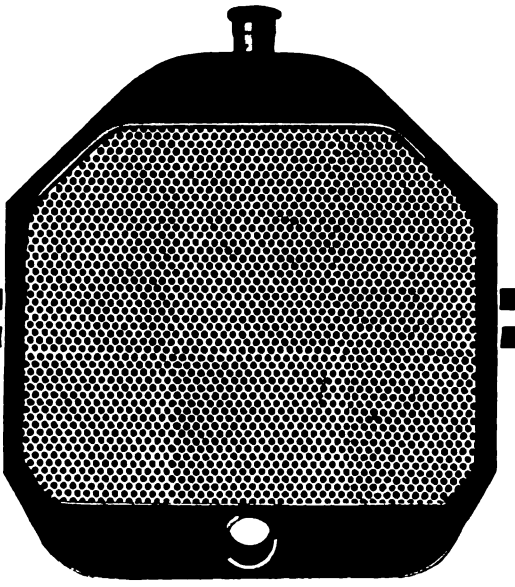
The **PROOF** of **FEDDERS QUALITY** lies in the continued use of FEDDERS RADIATORS for many years by the makers of the very highest grade of cars.

The **REASON** for FEDDERS QUALITY lies in the selection of proper materials, the proper blending of metals, the painstaking care with which the parts are assembled, the checking up of each step as it is taken, and the DOUBLE TEST of EVERY RADIATOR before it leaves the shop.

The **RESULT** of **FEDDERS QUALITY** is your **COMPLETE SATISFACTION** in the CERTAINTY of your radiator's standing up and performing its functions perfectly **ALL THE TIME!**

Fedders Manufacturing Co.

BUFFALO, N. Y.

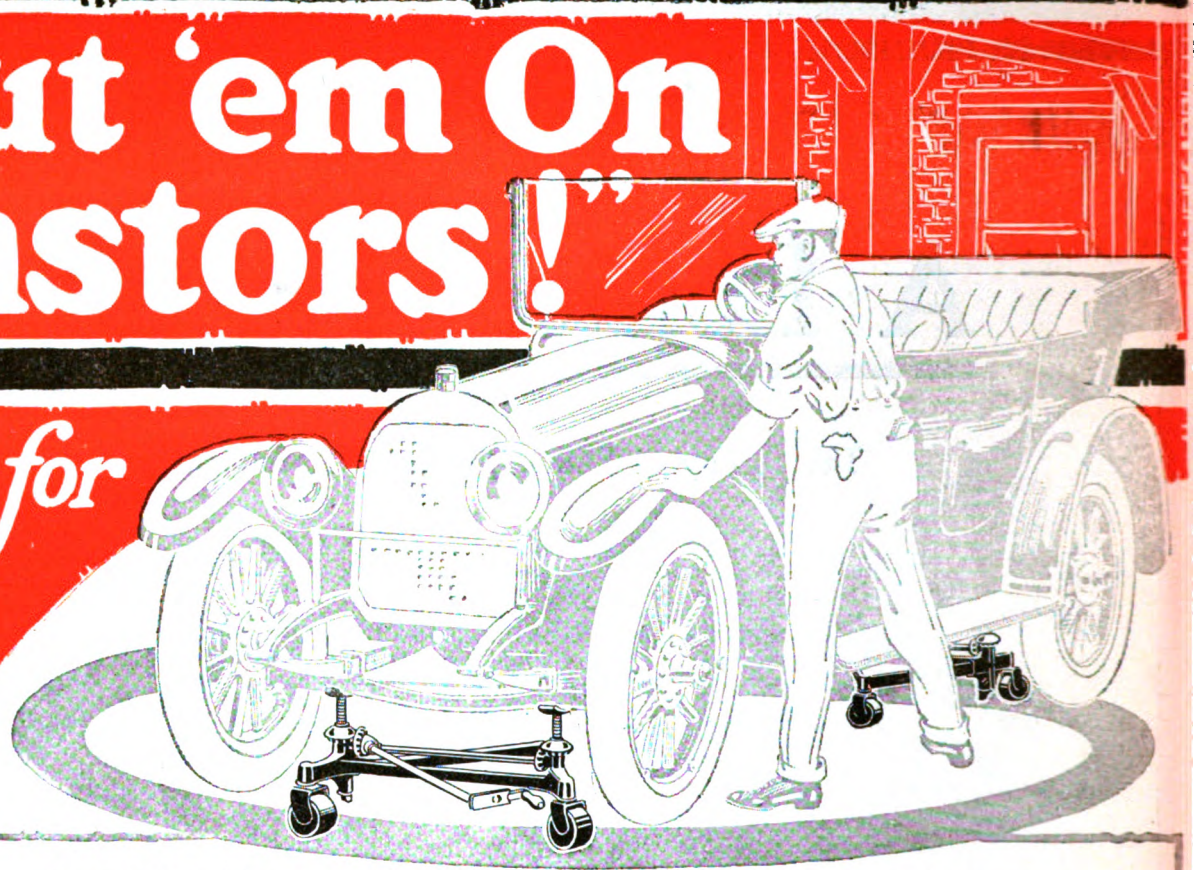


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"Put 'em On Castors!"

send for



Don't let big cars that you are repairing or storing occupy valuable floor-space in your garage when a small investment will enable you to easily place them exactly where you want them even if all four wheels are off.



Weaver 20-Ton Press $56.00

Weaver Bucket Pump $12

WEAVER Auto Twin Jacks

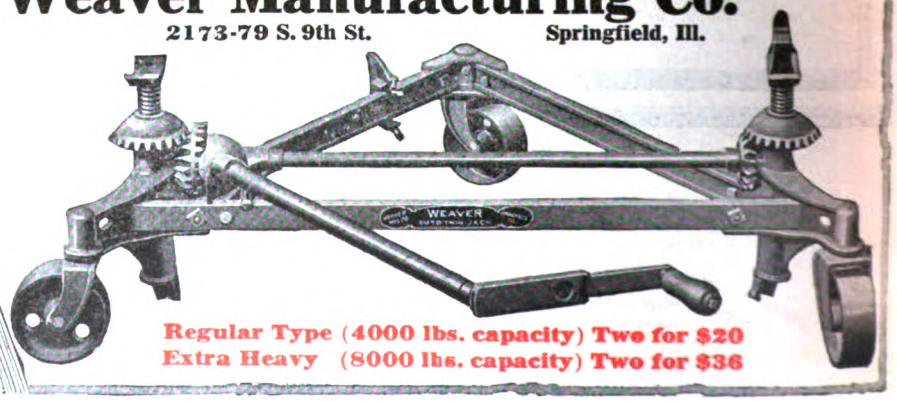
put motor cars on castors. They make a 5,000-lb. touring car as easy to roll around as a dining room table. Think what this means to you in handling a dismantled car in your shop! Think what it means to you in storage space saved! Think what a help in unloading closely packed cars! You simply can't afford to be without an equipment of Weaver Auto Twin Jacks from a "dollars and cents" point of view.

Write us *today—at once*—for the Weaver Garage Equipment catalog. It gives full construction details of the Twin Jacks and the other garage *necessities* of the Weaver line—every one a money saver for you—every one built for *practical* use by men who know your needs. Ask for booklet 651.

Weaver Manufacturing Co.

2173-79 S. 9th St. Springfield, Ill.

WEAVER Garage Equipment



Regular Type (4000 lbs. capacity) Two for $20

Extra Heavy (8000 lbs. capacity) Two for $36

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FREE INTRODUCTORY OFFER ON

JOHNSON'S CARBON REMOVER

OUR new preparation — Johnson's Carbon Remover—is ready for the market. We have made exhaustive tests under all conditions and pronounce it "Perfect"—which it must be before it can go out under the name of "Johnson".

If you will sign and mail us the coupon—we will send you a **pint free by prepaid express**—this is enough for thoroughly cleaning a six cylinder car.

YOU CAN DO IT YOURSELF

Why pay from $3.00 to $5.00 for having the carbon burned out of your cylinders — when you can easily do it yourself for 85 cents—without laying up your machine—without even soiling your hands.

No matter how choked up your motor may be — Johnson's Carbon Remover penetrates, and softens the carbon so that it blows out of the exhaust as you operate your car.

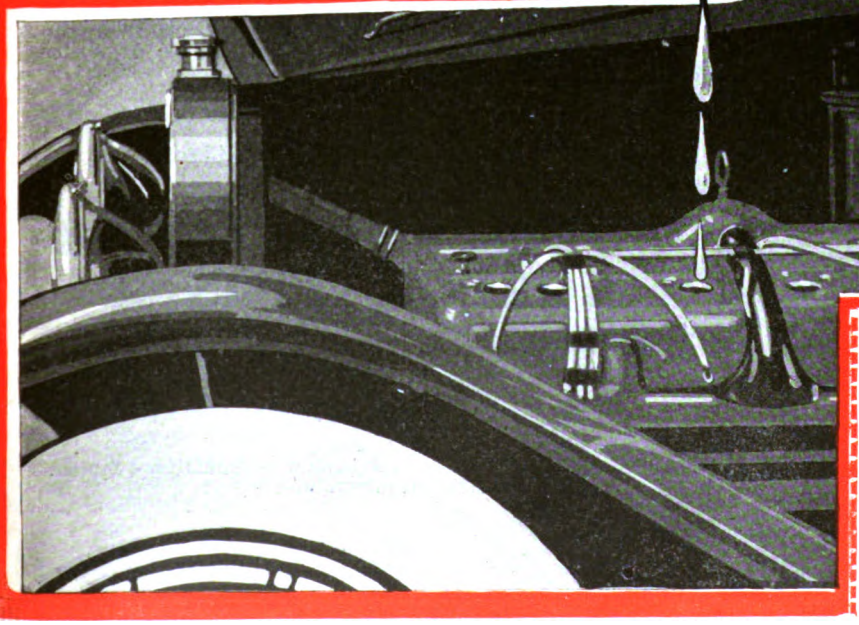
UNCONDITIONALLY GUARANTEED

We guarantee Johnson's Carbon Remover without reservation. It is absolutely fool-proof—no matter how much you use or how you use it—Johnson's Carbon Remover cannot injure any part of your motor. You could soak your engine in it for days without the slightest injury.

IT'S OUR TREAT!

Accept our offer of clean cylinders without a cent of expense. We appreciate your co-operation in marketing our Prepared Wax and Cleaner —and want you with us on this new product too.





S. C. JOHNSON & SON, Racine, Wis.

Please send me a pint of Johnson's Carbon Remover free by prepaid express. I agree to try it and report results just as I find them and if your Carbon Remover gives me as good results as you claim — I will insist upon my jobber or dealer supplying me when next in the market.

Name.....

Address.....

City and State.....

My Dealer is.....

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DEALERS

Here Is Your Opportunity to Get Into the Big, New Business of Selling FORD Cars on the - - Installment Plan - -



Indications are that motor cars and trucks in the future will be merchandised largely on the same reputable installment plan as high grade pianos, furniture, Victrolas and investment bonds.

For over six months we have demonstrated the popularity of this deferred payment plan to the entire satisfaction of both dealers and car purchasers. Our "Pay-as-You-Ride" plan has met with instantaneous success wherever introduced. Dealers throughout the country who have adopted our plan have materially increased their sales and profits.

Ford dealers and others who appreciate the opportunity the new Ford retail plan affords them will be particularly interested in our new 8, 10 and 12 months' installment plan. Cash payment required from car purchasers only $100.

We are now in position to take on a few additional lines of other low-priced standard cars or motor trucks, and with that end in view invite personal interviews with officers of motor car companies desirous of increasing their business through our merchandising plan.

Responsible dealers who wish to establish themselves in this big and rapidly growing deferred payment business are invited to give our plan a trial. Call on us, or write for full information.

Reference: The First National Bank, Chicago

LOBDELL INVESTMENT CORPORATION

800 The Rookery **Chicago**

DIRECTORS

GEORGE W. BLOSSOM — A. MERRILL COIT
FRANCIS H. HARDY — CHARLES W. LOBDELL, Sec. & Treas.
EDWIN L. LOBDELL, Pres.

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There Are Two Different Kinds of Genuine Graphited Oil-less Bearings

One is a hard wood bearing impregnated with lubricant and is known as "NIGRUM"

The other is a metal bearing made of "Graphite and Bronze" and is known as "BOUND BROOK"



NIGRUM bearings are made of hard wood carefully seasoned and then impregnated by means of a patented and exclusive process with our own special lubricating compound.

They are lighter in weight than metal, yet possess certain distinctive advantages not to be found in any other form of bearing.

They require no oiling to give efficient service. They never squeak, and once installed require no further attention.

For this reason they are used by a majority of the motor car manufacturers for use in bearing surfaces about a car that are difficult or impossible to keep properly lubricated even when the owner has the time and inclination to do so.

Motor car manufacturers who use NIGRUM bearings are saving car owners many thousands of dollars and much of the possible trouble and annoyance that would result through the use of ordinary bearings that require constant attention to give efficient service.



BOUND BROOK bearings are made of a high grade bronze, and are so designed and constructed as to retain lubricating graphite.

"Oil-less and Less Oil" is a good descriptive term for these bearings.

They have all the advantages of ordinary bronze bearings and have the added advantage of not requiring oil to give efficient service, although oil does not harm them. In other words the efficiency of these bearings is not dependent upon the constant attention of the owner.

They are used by a great many far-sighted manufacturers about a car where failure to keep the bearing properly lubricated would result in the ruin of the shafting. In this way, these manufacturers are insuring the long life of their product, even when it is neglected or abused by the owner.

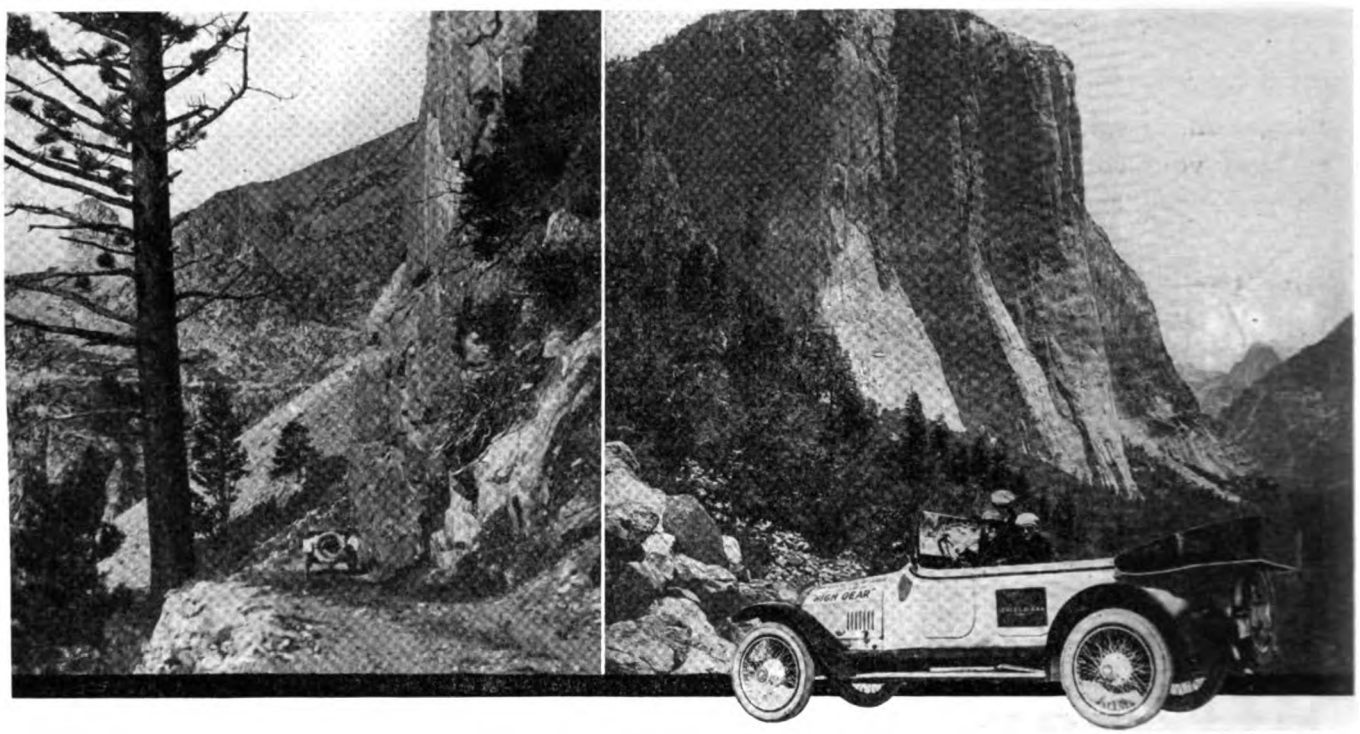
Both "NIGRUM" and "BOUND BROOK" bearings are made only "to order." Manufacturers ere invited to take up their bearing problems with us. We have specialized in the production of Oil-less bearings for more than a quarter of a century.

BOUND BROOK OIL-LESS BEARING COMPANY

Bound Brook, New Jersey

When writing advertisers please mention Motor World

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World's Record Ocean-to-Ocean Pathfinder 12 on "AMERICAN" Axles.

Speaking About Brakes

The American Ball-Bearing Co.,
Cleveland, Ohio.

Gentlemen:

Pursuant to the telegram, which I sent you at the conclusion of the run, I am pleased to say that I experienced no trouble, either with the axles, brakes or bearings used on this car. You have every reason to feel enthusiastic about the twin internal brakes. During the 4,889 miles I did not have to adjust either the service or the emergency brakes. You must appreciate the fact also my not having a low or second gear in the transmission eliminated any chance of my using the compression of the motor as a brake in descending the hills.

As one mountaineer put it at Lucky Boy Mountain in Nevada, which is a 24% grade in places and has a very rough surface: "I don't doubt that the car will climb Lucky Boy Mountain because you have already come over some bad ones, but the drop on the other side of the mountain is 15 miles long, winding road and steep grades, which are very treacherous and you will have to use the compression of the motor on low gear to hold the car back."

However, in going down this hill I experienced absolutely no difficulty in holding the car. After disassembling the car in New York for the final A. A. A. examination made by Mr. H. A. Tarantous, member of the contest board, both the brake shoes were in perfect condition.

Yours very truly,
Walter A. Weidely.

American Axles

Quality and Design count in the brakes of "American" Axles, just as in all their other parts.

Licensed Under The Kardo Company's Patents

THE AMERICAN BALL-BEARING CO.

Pioneer Axle Builders of America

CLEVELAND, OHIO

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If you gave your customers six, eight or ten quarts of gasoline for the price of a gallon, or sold "gas" that did 50%, 100% or 200% more work than the kind your competitor sells, who, do you think, would do the most business—you or "the other fellow"?



Now the same thing holds good with tires—it will be the dealer who handles the tires that give the most excess mileage who will do the bulk of the 1916-1917 selling.

Quaker Tires have made their reputation as big mileage makers. Let Quakers make big sales and quick profits for you.

If there is no Quaker dealer in your town, send the coupon, QUICK.

Quaker City Rubber Company

PHILADELPHIA	CHICAGO	PITTSBURGH	NEW YORK
Factory	182 West Lake Street	211 Wood Street	207 Fulton Street

Quaker City Rubber Co.,
Philadelphia, Pa.
I am willing to be shown how I can make money handling Quaker Tires.

Name.....

Address.....

Firm.....

City..... State.....

T1



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It's a Question of Your Future!

Will You be just Running a Shop, or Operating a Regular Business



Your future is up to you. If a big measure of success do not come to you—if you continue to manipulate pliers and wrench rather than fountain-pen and check book—you can of course blame it to conditions. But these "conditions" are of your own making. If your efforts land you in the ***success*** column take the credit for your own success. And if you ***fail*** don't blame others. *It's Up To You.*

Your business will not prosper unless it is founded upon a proper system—a process of accounting that tells you where you lose and where you gain. Many dealers and garage-men have not gone into business accounting as yet because existing methods have been complicated—too many books, too much red tape.

You need a simplified system, one that is easily understood and easy to work. Many demands for such a system came to Motor World. We tried to find something that could be recommended. None could be found. Therefore we devised an entirely new system. More than one thousand systems are now in use throughout the country.

Dealers and garage owners who have them installed are enthusiastic in praise of the system. It is a life-saver for the man or the company whose business is drifting in a systemless manner.

The full illustrated description of the simplified system has been printed serially in Motor World. These articles have been reprinted in book form—36 pages filled with careful instruction ("every day language") on how to install and operate the system.

This 36-page booklet, price one dollar, will be sent complimentary to new subscribers.

Send your subscription at once. Use the attached subscription coupon.

MOTOR WORLD,
239 W. 39th St., New York City.

Enclosed find two dollars (Canada and Foreign, $4) for which send Motor World for one year and a free copy of booklet that illustrates and describes Motor World's Simplified System of Accounting for Garages.

Name .....

Address .....

MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN

239 West 39th Street New York City

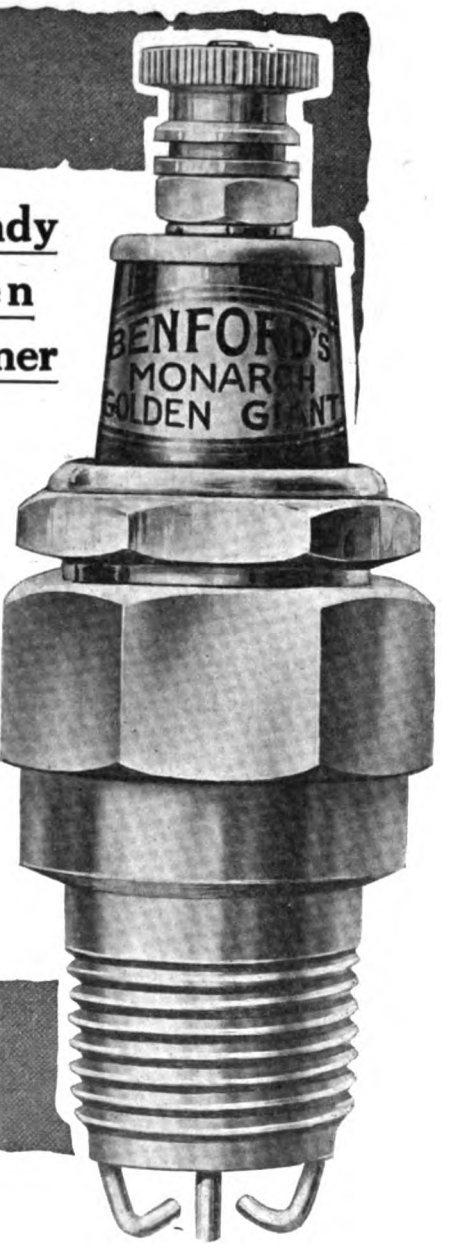
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Your Customers Know You Sell

GOLDEN GIANTS

A Dandy Dozen Container



TWELVE handsome Golden Giant Plugs! Everyone gold-plated—everyone packed in a handsome, individual metal container—everyone ready to announce its supremacy to the car owner—are packed in this attractive Display Stand.

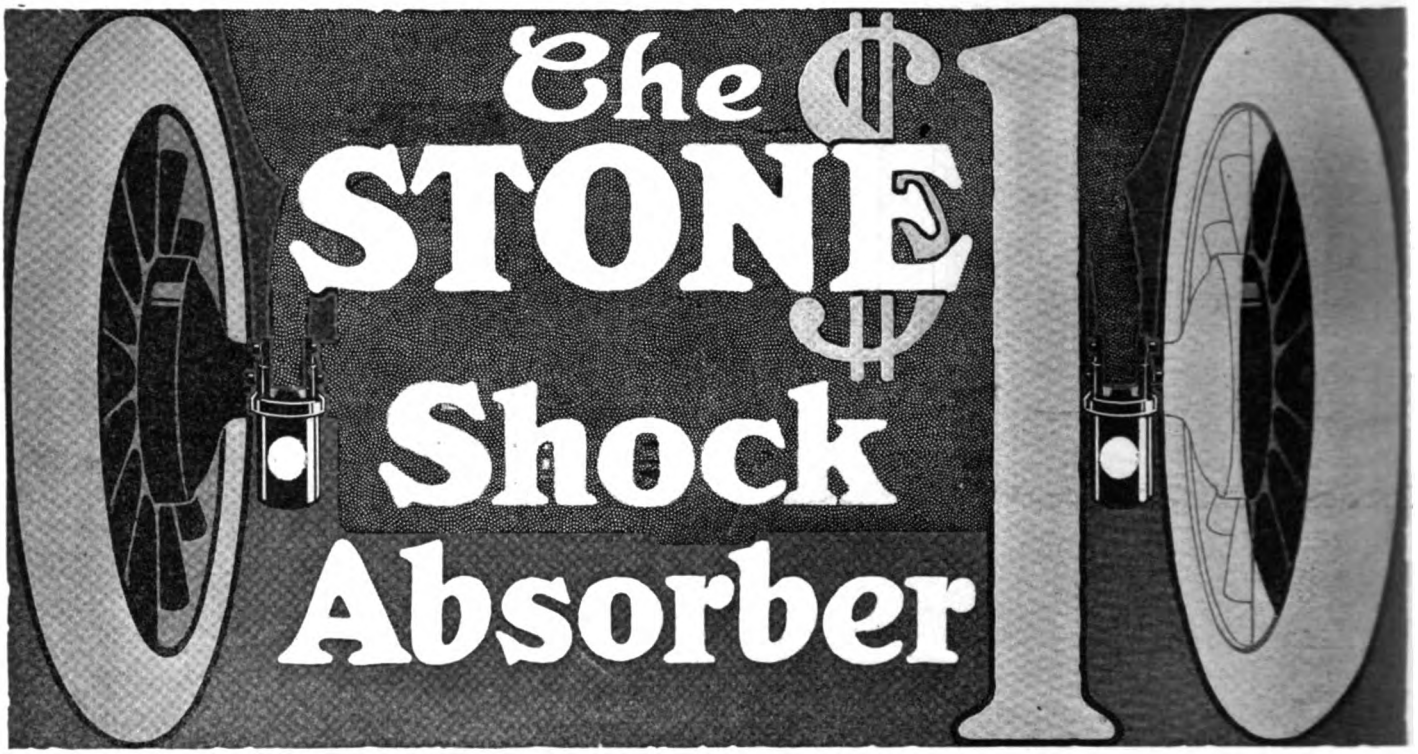
This is another of the many original features of the Sales Cooperation that you get when you buy the Gold-Plated Plug.

Sell Golden Giants! You can make a splendid profit for yourself, and you can add more satisfied customers to your business.

Every live dealer will be interested in our proposition.

BENFORD MFG. CO.
Mt. Vernon . . . N. Y.

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This shock absorber at this price has set up new conditions in the shock absorber game. It establishes a new standard in performance and price. No shock absorber at any price can do more for riding comfort. And no shock absorber that compares in price can compare in performance. This combination gives you a double chance. It draws business from high-priced shock absorbers, and makes men buy absorbers who never before felt that they could afford one that was worth having.

Note These Stone Features

A two-inch throw.

Double-bearing surfaces on moving parts—four contacts instead of two, preserving alignment and saving wear.

A lubricating method which feeds a film of oil to the moving parts, without any chance of leakage.

Increase the oscillating capacity of the leaf spring 10 to 30 vibrations per second and reduce the elastic duty by 90 per cent.

Prevent snappy rebound, the cause of broken springs, thereby almost entirely eliminating this form of trouble.

Made for cars of various weights.

Have an adjustment range of 1500 pounds.

Are built to fit any spring of the scroll end, elliptic, or platform type.

Are easily and quickly applied.

All parts guaranteed absolutely against breakage for one year.

There is a good profit for dealers in Stone. Write your jobber today. If he cannot supply you, write us.

Made and Guaranteed by Universal Rim Co. Makers of the Baker Rim

Dept. 63, 1502 Michigan Ave., Chicago, Ill.

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Don't Take Chances WITH YOUR BRAKE LINING BUSINESS

There is good money for you in Brake Lining Renewals. And if you choose GARCO Asbestos Brake Lining for every job there is a big opportunity for you to build permanent, profitable business not only on renewals, but on other automobile accessories as well. Your customers depend on your judgment, and GARCO Asbestos Brake Lining will back your good workmanship to the limit.

GARCO will not heat or burn. It is solidly woven from high grade asbestos, and may be drilled instead of punched for the insertion of rivets.



GARCO is not affected by water, oil, grease or dirt. It costs your customer less per mile of use; and every renewal job brings you a **good, substantial** profit.

We also manufacture a special type lining for Ford Transmission Bands, put up in rolls and complete sets with rivets. The GARCO Line includes a complete line of Asbestos Automobile Specialties.

Your Jobber can supply you with GARCO Asbestos Brake Lining. We will gladly give you full information—tell you about our interesting dealer's proposition if you will write us direct.

GENERAL ASBESTOS & RUBBER CO.

Main Offices and Factories: CHARLESTON, S. C.

A Complete Stock Is Carried At Our Branches:—

58 Warren Street, New York **312 First Avenue, Pittsburgh**

530 Goldengate Avenue, San Francisco



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The Contact Maker





This man, with over a thousand other Willard Battery experts, keeps alive the contact between battery owner and battery builder.

Storage batteries, like babies, need careful watching through their early life. The treatment you give a battery during its first ninety days' service on a car may determine its length of life.

Let the Willard man nearest you help you over that crucial period. Take advantage of the new free service plan. It affords the owner of a new Willard Battery whatever service is needed to keep that battery working properly—and costs him nothing.

Learn about your storage battery—how it works, its relation to starter, generator and lights, how to care for it yourself and get the most out of it.

Ask us to send you booklet P-5 about your electrical system, and P-6 about the Willard 90-day service plan, with the address of the nearest Willard Service Station.

Willard Storage Battery Co.

Cleveland, Ohio

New York: 228-230 W. 58th St. Detroit: 736-38-40 Woodward Ave.
Chicago: 2524-34 S. Wabash Ave. San Francisco: 1433 Bush St.
Atlanta: 8-10 East Cain St. Minneapolis: 36-38-40 S. 10th St.
Indianapolis: 316-318 North Illinois St.

Direct Factory Representatives in Philadelphia, Boston, Dallas, Kansas City, Omaha, Seattle. Service Stations in all Principal Cities in the United States and Canada.

Willard Storage Batteries are for sale by car dealers, garages, and all Willard Service Stations and Factory Branches.

Willard STORAGE BATTERY

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Profitable Cars of Recognized Class Distinction Are Few

—Yet most dealers have opportunities for the sale of such cars —and they give character and standing to the dealer's business.

* * *

Peerless is ready now with the car and the production to supply more dealers.

* * *

The Peerless Eighty Horsepower Eight with its low fuel consumption and double power range is in strong demand—a worthy contender in the class field.

For nine months we have never turned out any unsold Peerless Eight — no chance under such conditions for extending our dealer organization.

* * *

The largest force we ever employed working at top efficiency is steadily increasing our output—has doubled it—will double it again in another half year.

* * *

This creates the best dealer opportunity in the established, recognized class field.

The car is all you could ask —its success completely established — production absolutely dependable — the organization back of it efficient and sound to the core.

* * *

Get in touch with us right now and we'll show you a real car, real cooperation, a real live money making opportunity — don't delay—it won't last.

The Peerless Motor Car Company, Cleveland, Ohio

PEERLESS EIGHT

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Examine It Closely!

Take it apart and analyze it. We wish you would. It is an honest spring—through and through.

We realized years ago—when first we started—that there were opportunities for rotten rascality in spring making—and when we put the name

VULCAN QUALITY

on our product we determined that name should stand for the utmost in honesty and thoroughness.

Vulcan Springs represent years of constant effort directed toward Perfection—and we are proud of our product and the reputation it has made.

DEALERS

like to handle Vulcans, for they get this handsome display rack to start with, and they know that we stand ready to ship them immediately any one of our springs they ask for.

We keep CONSTANTLY IN STOCK springs to fit 90% of all American makes of cars, at our home plant and all of our branches.

We guarantee a perfect fit in each case.

We want every live, dependable Dealer, who is not already handling our Springs, to communicate with us. We have something mighty interesting to tell him.

JENKINS VULCAN SPRING COMPANY

1402 Chestnut Street,

708 Commerce St., Fort Worth, Tex. ST. LOUIS, MO. 29 Caldwell St., Sumter, S. C.

"The name VULCAN on a Spring is a guarantee of Efficiency"



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Whatever battery you use,
it needs occasional charging.

The G-E Mercury Arc Rectifier

is the simplest and most convenient device for charging batteries right in your own home.

Bulletin No. 3374 gives full particulars

(*To Dealers:*) There are territories still open for G-E agencies on all automobile material and accessories made by this company. Write for particulars.

General Electric Company

General Office: Schenectady, N.Y.

ADDRESS NEAREST OFFICE

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Baltimore, Md.
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Charleston, W. Va.
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, Ohio.
Cleveland, Ohio
Columbus, Ohio
Dayton, Ohio
Denver, Colo.
Des Moines, Iowa
Duluth, Minn.
Elmira, N. Y.
Erie, Pa.
Fort Wayne, Ind.
Hartford, Conn.
Indianapolis, Ind.
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Joplin, Mo.
Kansas City, Mo.
Knoxville, Tenn.
Los Angeles, Cal.
Louisville, Ky.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.
Nashville, Tenn.
New Haven, Conn.
New Orleans, La.
New York, N. Y.
Niagara Falls, N. Y.
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Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Ore.
Providence, R. I.
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San Francisco, Cal.
Schenectady, N. Y.
Seattle, Wash.
Spokane, Wash.
Springfield, Mass.
Syracuse, N. Y.
Toledo, Ohio
Washington, D. C.
Youngstown, Ohio

For Michigan Business refer to General Electric Company of Michigan, Detroit

For Texas, Oklahoma and Arizona business refer to Southwest General Electric Company (formerly Hobson Electric Co.), Dallas, El Paso, Houston and Oklahoma City. For Canadian business refer to Canadian General Electric Company, Ltd., Toronto, Ont. 6391

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Performance Too Phenomenal To Be Believed

Hupmobile is 99 Per Cent Efficient, Say 11,000 Owners

HUPMOBILE history—day by day—all over America, bristles with astonishing incidents.

With dealer and owner alike, the unusual is usual.

Thus, in Rochester the other day, the Hupmobile dealer was actually suspected of putting picric acid, or ether, or some other "stimulant," in the gasoline.

He Saw It Done—Yet Didn't Believe

It was the engineer of a public service corporation who recorded his opinion that the high gear performance of the Hupmobile was "impossible," even after he had seen it.

Like the rustic looking at the giraffe for the first time, he didn't believe there was any such animal. So he demanded a second test.

"This time," says C. E. Hartson, the dealer, "he even watched us fill the tanks with gasoline, oil and water. We went out and beat our first demonstration. He wanted a third test, driving the car himself. We gleefully consented.

"He gave his order, and," says Mr. Hartson, "you ought to hear him talk Hupmobile against sixes, eights and twelves now."

The Good Samaritan of the Sand-Patch

Down near Sherman, Mississippi, are two of the most unique road signs in America. They were erected by a farmer whose home faces the worst mile-and-a-half of sand in the state.

The signs at each end of the sand tell passing motorists that the farmer will gladly pull them through the sand stretch with his Hupmobile.

He erected the bulletin boards in a burst of enthusiasm after he had bought a Hupmobile which negotiated the mile and a half with ease on high gear.

On Kansas Hills and Nebraska Roads

People in Kansas City can learn how easily the Hupmobile goes to the top of Hospital Hill. The Eula street and Altamont Hills in Birmingham, Ala., are high-gear play for it.

Nebraskans don't boast much of their roads. But the Hupmobile finds no difficulty in covering 139 miles of them in 3 hours. Nor 389 miles of such roads as Iowa has in December, in less than 10 hours.

Hupmobile Owners Say: 99% Efficient

Eleven thousand Hupmobile owners have rated the Hupmobile 99% efficient.

Of these 50 8/10% buy one Hupmobile after another.

In other words, more than half of all Hupmobile owners keep on buying, year after year. They change the model, but not the make.

And while these have remained true to their choice—another 24 2/10% of Hupmobile ownership has come from those who have owned cars of higher price.

Isn't this evidence clinching, convincing and conclusive?

And doesn't it point the way to action on your part, with a view to becoming a dealer actively selling Hupmobiles, or a service station representative?

Hupp Motor Car Corporation
DETROIT, MICH.

The Mark of Superior — *Motor Car Service*

Five Hupmobile Points to Remember

PERFORMANCE—A high-gear performer in the usual low-gear situations.

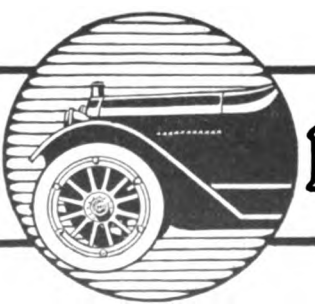
COUPON SERVICE—Regularly each month for eight months free labor, inspections and adjustments, at more than 5000 authorized Hupmobile service stations in the United States and Canada.

ECONOMY—In line with the well-known Hupmobile repair cost record of ¼ cent per mile. This is real economy—maintenance economy. Car is easy on tires, fuel and lubricant.

EFFICIENCY—Eleven thousand owners report the Hupmobile 99 per cent efficient.

REPEAT SALES — Fifty and eight-tenths per cent of the Hupmobile output is sold to Hupmobile owners, because they are completely satisfied with Hupmobile Performance, Service, Economy and Efficiency.

5-Pass. Touring Car $1185 Roadster $1185 7-Pass. Touring Car $1340
Prices f.o.b. Detroit



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KING EIGHT

"An experienced motorist—an easy sale," has become a maxim among King dealers. It is when a prospective buyer wants *more* than the ordinary car can offer that a King becomes the final choice. A shrewd estimation of values; insistence upon economical upkeep; exacting demands in every phase of road performance; painstaking inspection of coach work; trials in ease of operation and riding comfort;—these sell King cars and *keep* them sold. 10,850 miles without stopping the motor is the King's Official A. A. A. answer to all questions on performance, economy and endurance. A booklet giving complete details of this remarkable test will be sent on request.

7-Passenger, 60-Horse-power Touring Car, $1350 Roadster, $1350 Sedan, $1900

Prices F. O. B. Detroit

KING MOTOR CAR COMPANY, DETROIT, MICHIGAN

THE CAR OF NO REGRETS

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A few of the magazine ads that have made Republic Tires the big success of the season.

The Tire Success of 1916

Republic Prodium Process Tires break all previous records

Five months ago we announced Republic Prodium Process Tires.

We demonstrated to the automobile public the wonderful service-giving qualities of this now famous tire—its wonderful toughness, its freedom from cutting and gashing, its resistance of destructive heat, the exceptional mileage it gives.

Dealers everywhere have been flooded with business. Even doubled production could not keep up with the demand at times.

Have you been reaping the rich harvest of this phenomenal sale of Republic Tires? We have an exceptionally attractive proposition to the right kind of dealers. Write or wire for particulars. The Fall season still has big possibilities for you.

The Republic Rubber Company, Youngstown, Ohio

Branches and Agencies in the Principal Cities

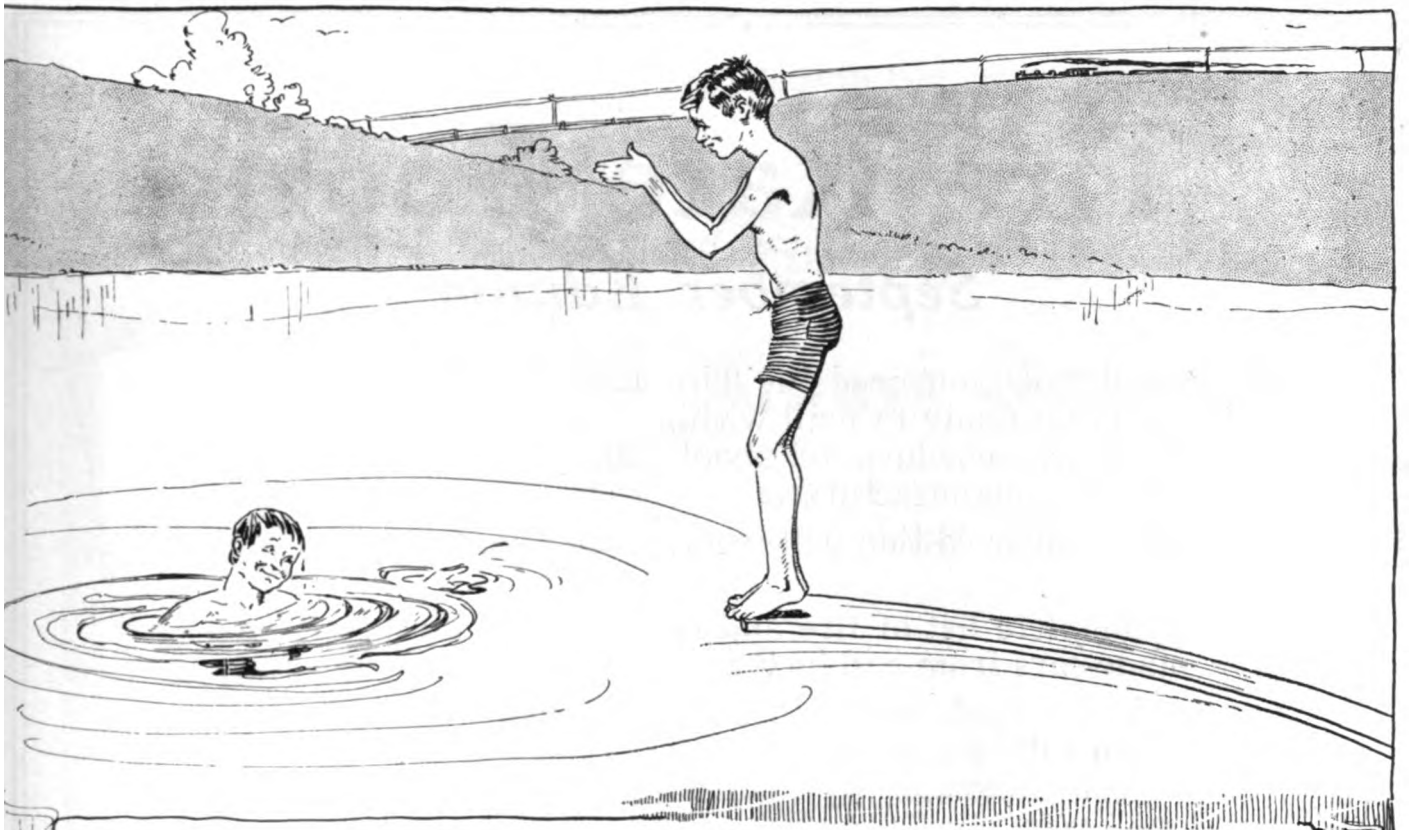
REPUBLIC PRŌDIUM PROCESS TIRES

STAGGARD, PLAIN, AND "WM" TREADS

TRADE MARK REGISTERED U. S. PATENT OFFICE

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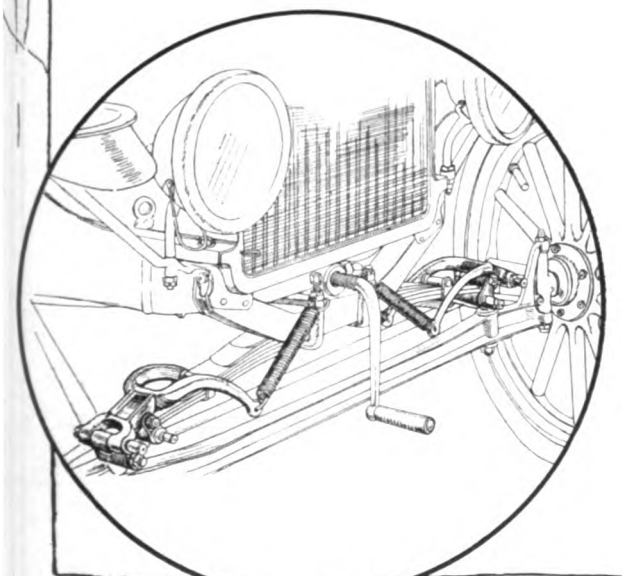
The Rhythmic Swing of the Springboard Is the Easy Swell You Feel When Your Ford W & C Equipped Meets Rough and Bumpy Roads

Did you ever teeter at the end of your favorite springboard before trying to make up your mind that the sensation of diving is half as comfortable as the easy swell of the cantilevered plank?

And did you ever realize that the same rhythmic swing that puts the first thrill into your dive is at your command on rough country roads when driving in your Ford car?

The even undulation of the diving board is the same cantilever action that makes—

The Original W & C Double Arm Shock Absorbers Make Easy-Riding Fords



It takes all the sharp jolts out of the system of your Ford, and substitutes the most satisfying sensation of even swells you ever felt in a motor car. Built on the same principle as cantilever springs on big cars—and rides as well.

Equip your Ford today with W & C Shock Absorbers—the one shock absorber for Ford cars that gives you more comfort than you expect.

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September Edition

If you sell tires you need the Tire Rate Book. The September edition will be ready to mail within a few days. It will list the complete price schedules of about 100 of the leading pneumatic and solid tire manufacturers.

The September edition will incorporate the following valuable features:

Complete list of tire and rim sizes for all American made cars from and including 1913 to date.

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The Tire Rate Book is the price guide authority for thousands of tire dealers and salesmen. A neatly bound volume, 4¼x7½ inches. Fits the pocket.

Published three times each year—January, May and September. Tire prices brought up to date in each issue. Because of recent changes in tire prices the September edition will prove invaluable to tire dealers and salesmen.

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The New Reo the Fifth, "The Incomparable Four," $875



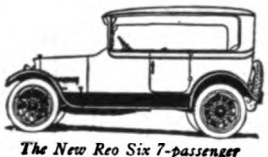
The New Four-Cylinder Reo Enclosed Car, $1025



The New 4-passenger Reo Six Roadster, $1150



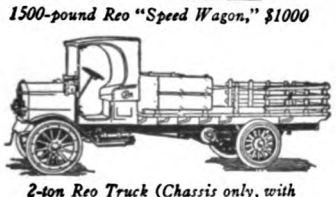
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Oversold is a chronic condition with Reo distributors and dealers.

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Of course it's aggravating to have customers waiting—begging—pleading—for more cars than you can supply.

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Always there are more customers than cars.

And that is true also of Reo motor trucks.

That's the kind of automobiles and trucks dealers like to handle—all the profit is net. Selling cost low—maintenance lower.

Perhaps you can't now—but it behooves you to watch: some day you may be able to get the Reo line.

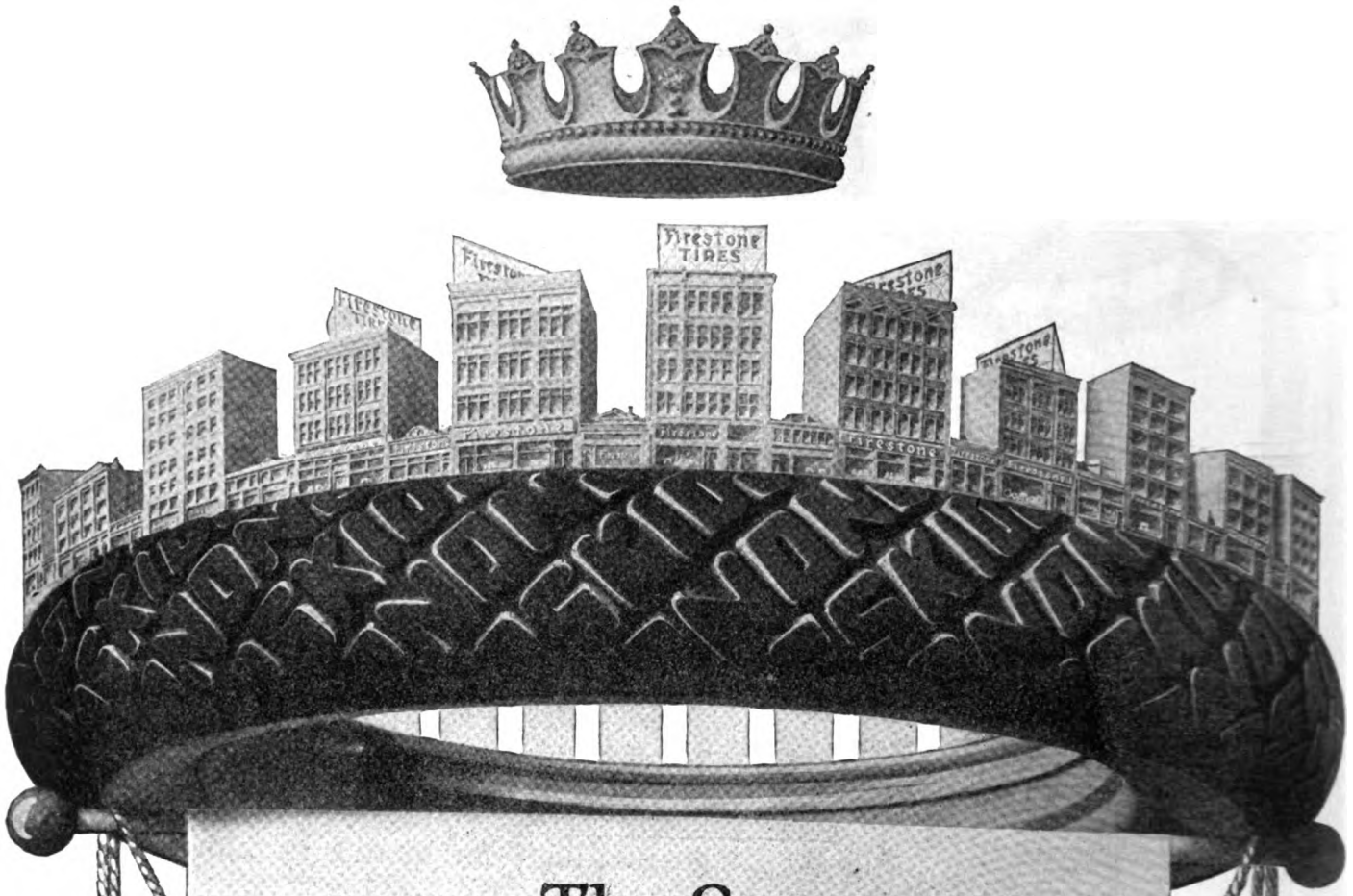
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Reo Motor Truck Company

Factories: Lansing, Michigan

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American appreciation of quality has crowned the Firestone organization with success, until now a long line of branch houses and dealers serves every community of the continent. It brings Firestone Service to you and to motorists everywhere.

Firestone mileage created Firestone demand, built the largest exclusive tire-making plant in America and made the Firestone Service organization an international institution.

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73 New Conceptions
7 New-Type Bodies

Mitchell
MID-YEAR MODEL

127-in. Wheelbase
48 Horsepower
$1325 F. o. b. Racine for Touring Car

Why Such Lavish Bodies?

Some have asked us why we go to such extremes in bodies. The new Mitchell closed cars—five styles of them—are the most luxurious cars of the day.

Our artists and designers, before completing this line, examined 257 new models, European and American. So no dainty touch is omitted. And a score of attractions are unique to the Mitchell.

The Reason Is This:

The Mid-Year Mitchell is a final development of John W. Bate, the efficiency engineer. It is the type of car which the leaders of Motordom are going to demand hereafter.

And these men who seek the maximum value want the height of luxury, too.

It is not Mr. Bate's idea of efficiency to let anyone, in any detail, excel the Mitchell car.

So you will find in the Mitchell line the most up-to-date bodies, with a matchless appeal to the artist.

Now It's Efficiency

The best class of car buyers now look for efficiency. And the Mitchell, with our enormous advertising, is coming to typify that.

That means a car which gives maximum value, due to minimum factory cost. The Mitchell, built in this model plant, offers 20 per cent more value—at least—than any other car in its class.

It offers 26 extra features.

It offers the result of 700 improvements, made under John W. Bate.

It offers a car where every part has at least 50 per cent over-strength. Where 440 parts are either drop forged or steel stamped. Where all major strains are met with Chrome-Vanadium steel.

It offers a car which a very long list of the ablest engineers in America have selected for themselves. A car which has run 218,000 miles without wearing out. Seven of them have averaged 175,000 miles apiece. That means a lifetime car.

Men are awaking to Mitchell efficiency in a most amazing way. The demand for this car has trebled in a year. We are ordering materials to double our output next year.

The Mitchell is, and will be hereafter, one of the best advertised cars in America.

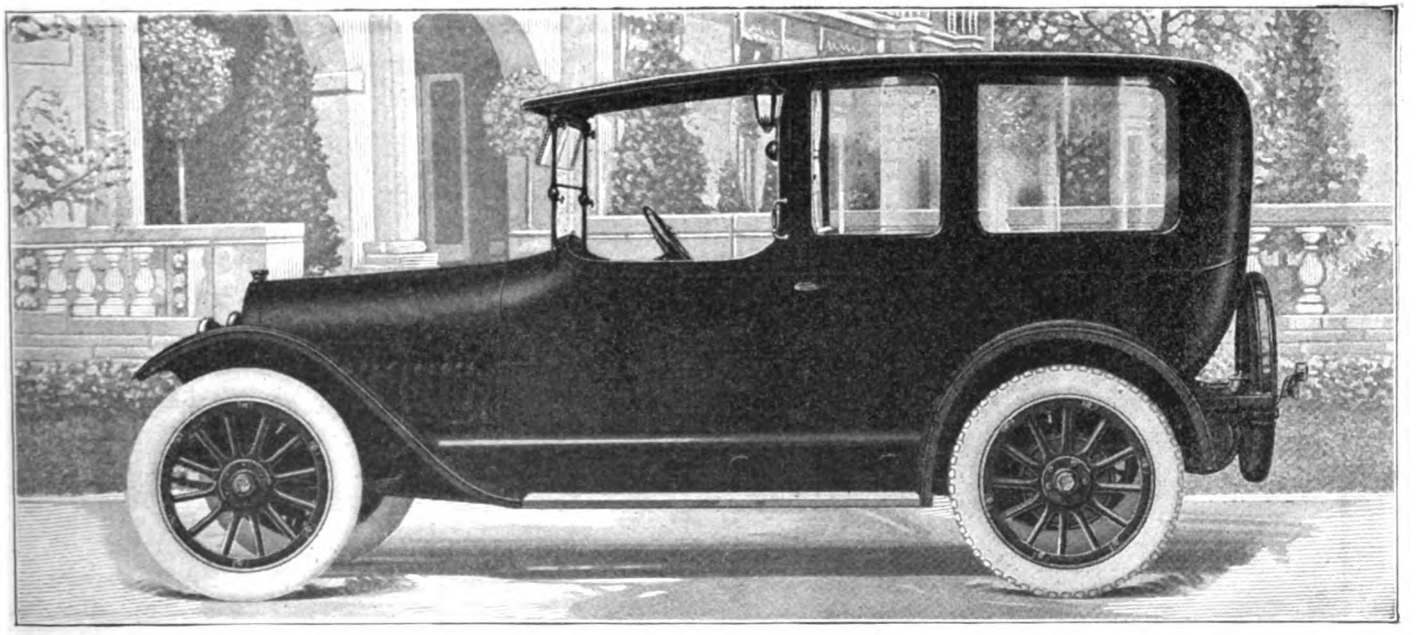
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Equipped with Demountable Top Only, $300 Extra	
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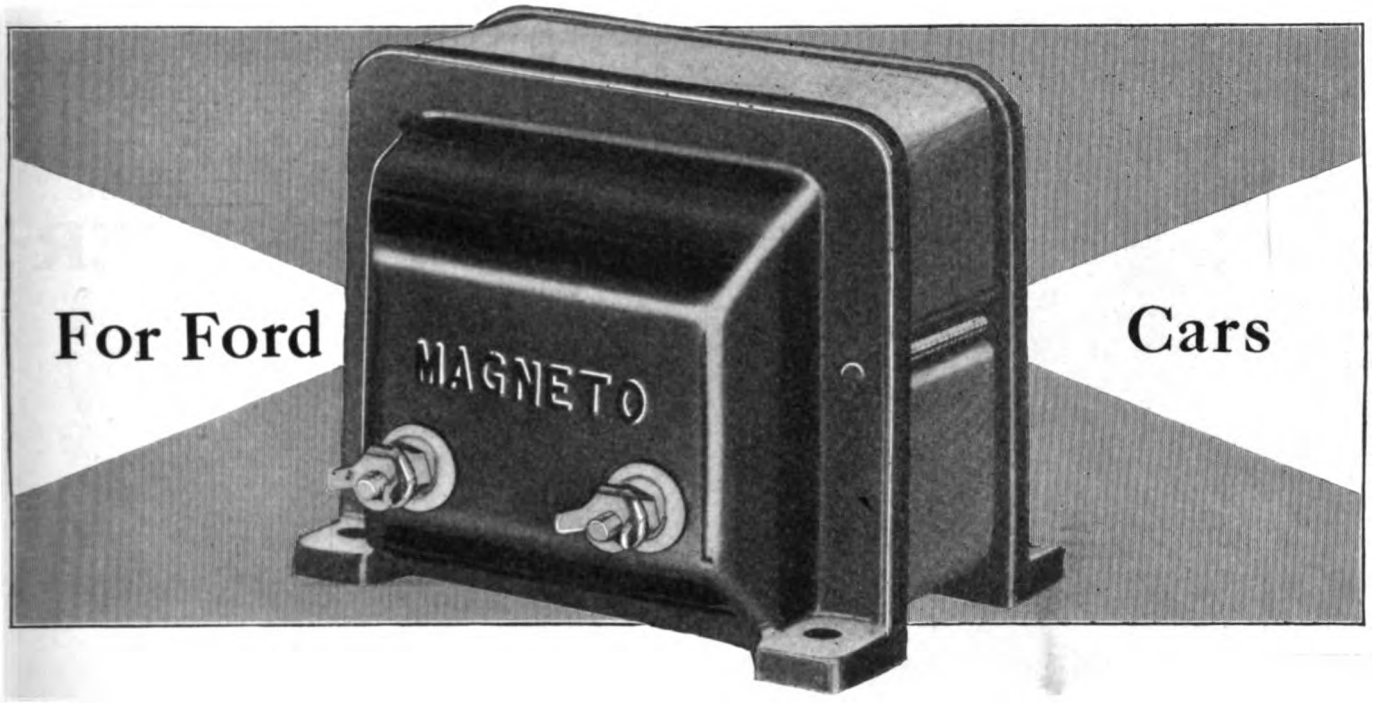
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Keep Your Lights Bright

When you slow down, the lights on your Ford car dim, and just when conditions force you to go slow is generally the time you want the most light. Connect a Waynelite to the headlights and they remain bright and practically steady whether you go slow or fast.

At high speeds, without the Waynelite the lamp bulbs are likely to burn out; the Waynelite prevents this.

Another point—the headlights on a Ford car are in "series"; if one light fails, the other goes out also. With the Waynelite the headlights are connected in "multiple"; failure by any chance of one lamp, will not affect the other light.

The Waynelite measures 3¾" x 4¼" x 3¼"; weighs about 4 lbs., is thoroughly waterproof and can be placed out of the way under the floor boards or hood. No tools or expert knowledge required for wiring up for Waynelite lighting.

The price of the Waynelite is low. Ask your nearest automobile dealer for the Waynelite for Ford Cars. Dealers write us for information.

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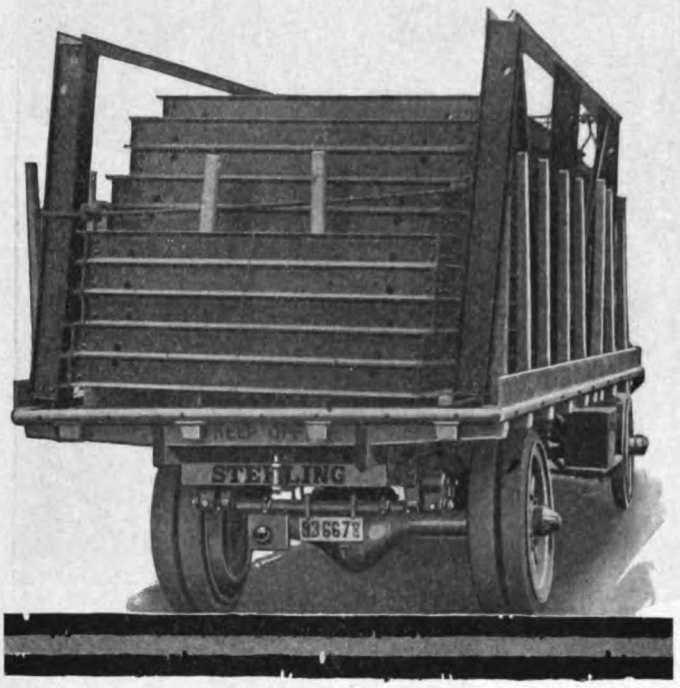
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Tremendous strength is built into Sterling Trucks. All complicated mechanism is eliminated — over 300 parts are done away with. Built in ¾, 2½, 3½, 5 and 7-ton units.

Catalog on request; also interesting figures on the cost of motor truck operation.

Sterling Motor Truck Co.

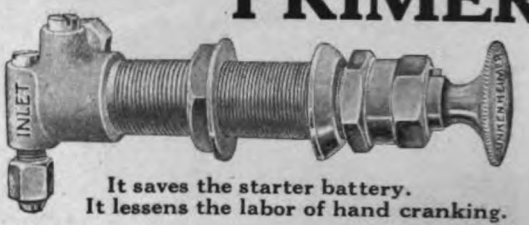
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Gasoline Engine PRIMER



It saves the starter battery.
It lessens the labor of hand cranking.

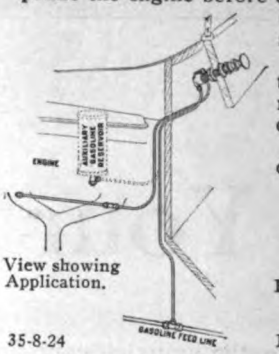
A stroke or two of the plunger forces a gasified charge to points which positively insure its entrance through the intake valves to give a power impulse on the first turnover.

The convenience of this device leads the operator to prime the engine before each start, resulting in a saving of battery energy, or time spent in cranking by hand.

All necessary fittings and tubing for attaching are furnished. No extra parts required.

A profitable accessory for dealers and garagemen.

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Through THE UNIVERSAL AUTO RECORD BOOK, if the record is correctly kept, the exact expense of all items can be easily arrived at and any leakage in expenses be corrected.

Through THE UNIVERSAL AUTO RECORD BOOK provision is made for the separate listing of different items of expense, also records of tire mileage, motor trips, etc.

The convenience of keeping the record of the mileage is well worth the price of the book.

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THE UNIVERSAL AUTOMOBILE RECORD BOOK will be sent postpaid to any address upon receipt of 50c.

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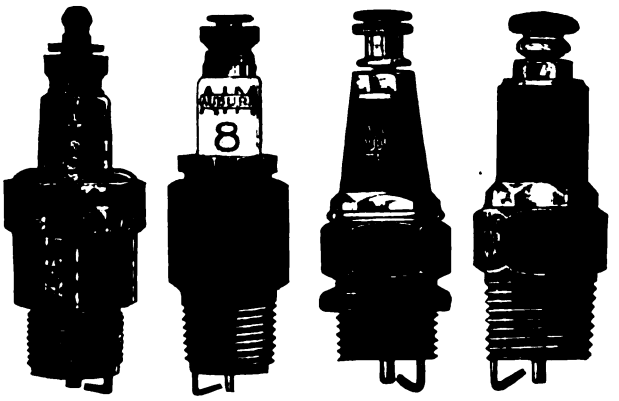
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AUBURN VALVE LIFTER



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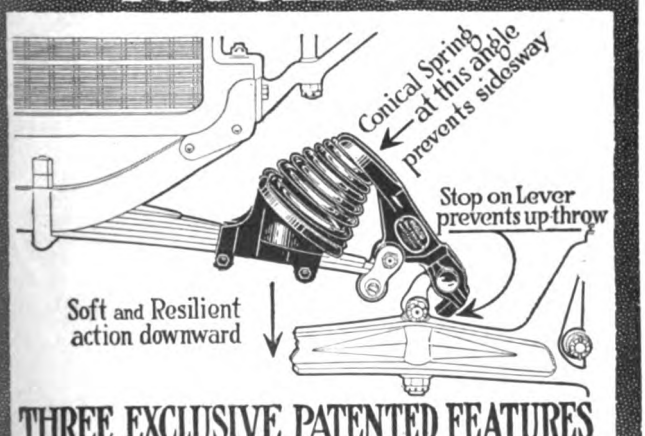


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$15 for a Set of Four

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Indianapolis, Ind.



Put the Team-work of the Batavia Boys to Work for You, Mr. Dealer!

(Your customers know them from our magazine and newspaper advertising).

These are the good little goblins of tiredom—the spirits behind

BATAVIA
SECURITY NON-SKID TIRES

We have given them names and faces and bodies so that they will be as real to you as they are to us.

Look them over again and identify each one—SAMMIE SPEED, WILLIE WEAR, SIMON SURE, KID CARE and HI QUALITY—a great team!—all pulling hard for you!

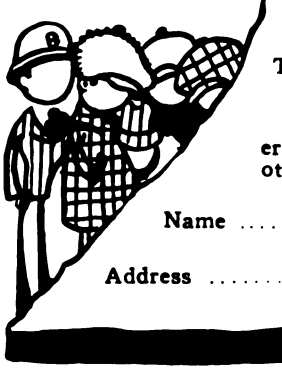
Perhaps they have amused you in our messages here—but are they *working* for you? Can you tell a customer that the tire you sell him will help his engine instead of hindering it, that the tire will wear in the routine of every day and hold true in the emergency? Can you bank on the materials and workmanship?

These are the things represented by our quaint little figures. These are the characteristics of Batavias. These are the reasons it pays you to handle Batavias. Are you? If not—quick! The coupon!

BATAVIA SECURITY TIRES

The Batavia Rubber Company
Batavia, New York

MAIL THIS TODAY



THE BATAVIA RUBBER CO.,
Batavia, New York.

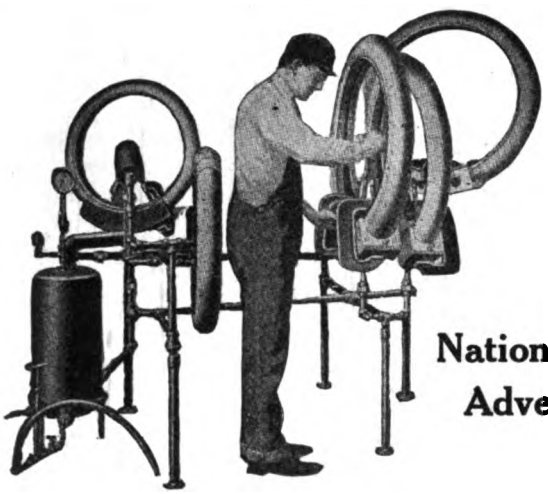
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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.
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Haywood Tire & Equipment Co.,
1042 N. Capitol Ave., Indianapolis, Ind.

Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

Name .....

Address .....

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30,000 miles with 4 SPLITDORF SPARK PLUGS



Bloomfield, Neb.

I have a 1910 E. M. F. 30 that is equipped with one of your magnetos and coils. Same has run over 30,000 miles—never has had anything done to it.

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Splitdorf Spark Plugs will outlast *any* engine. The laterally wound mica core *positively* prevents leakage of gas and oil, giving you at all times the full power of your engine.

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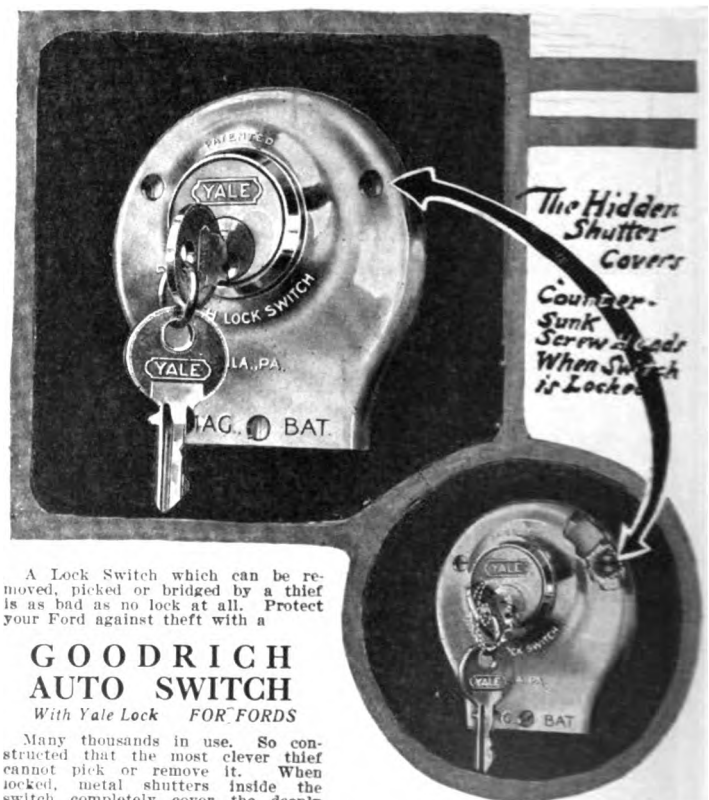
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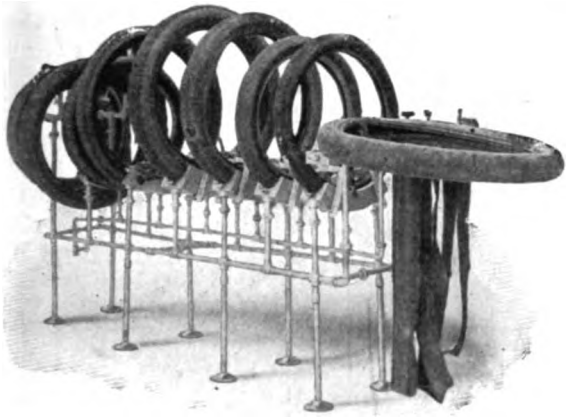
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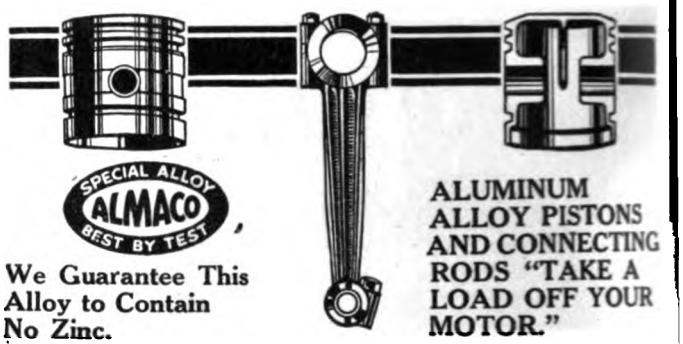
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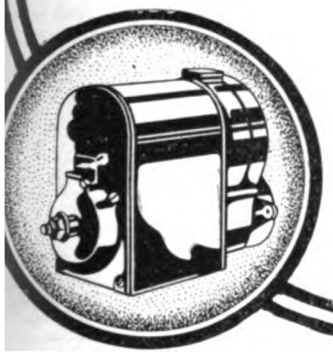
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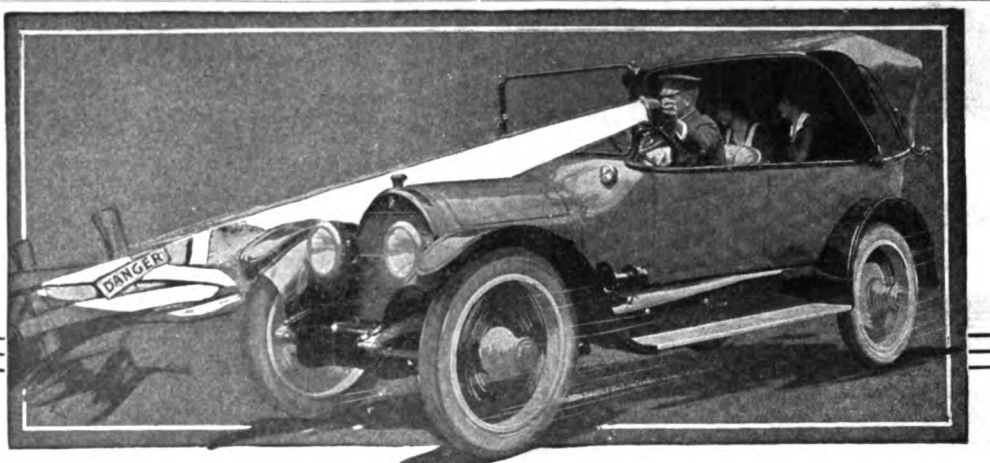
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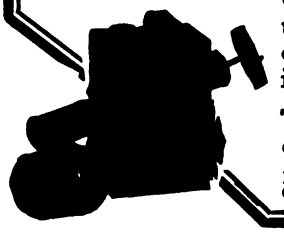
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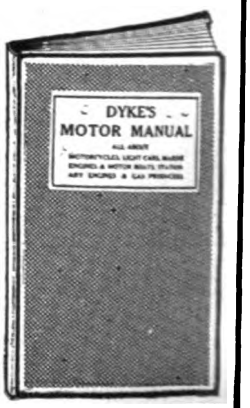
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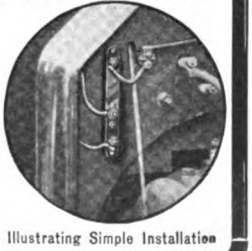
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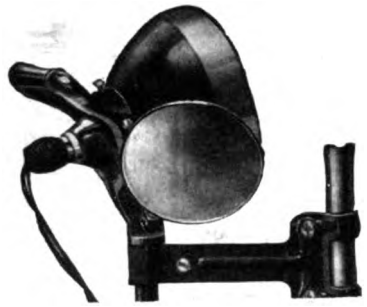
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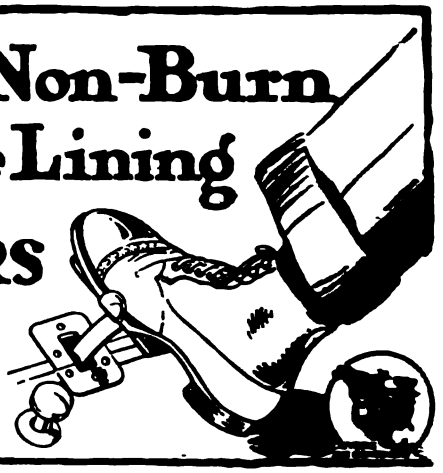
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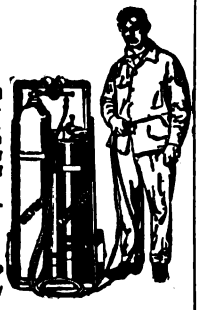
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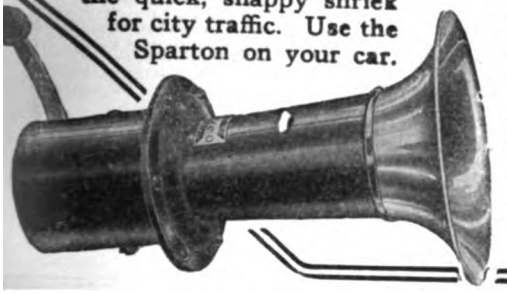
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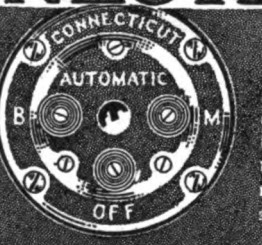
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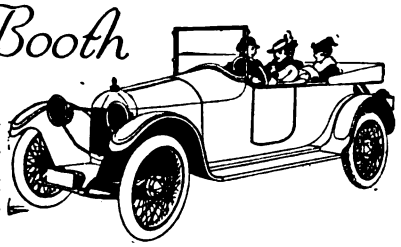
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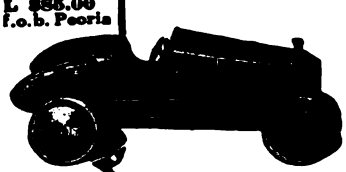
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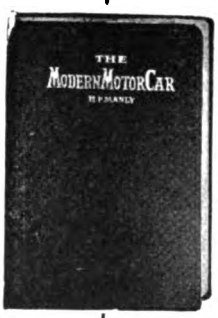
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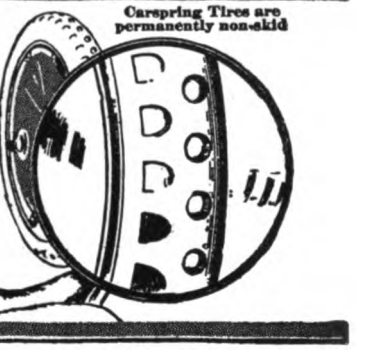
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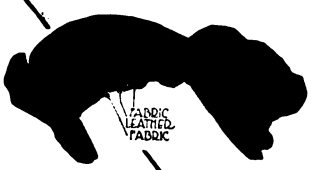
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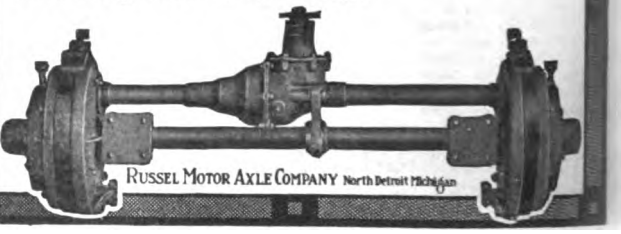
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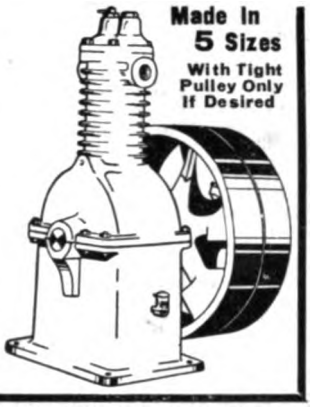
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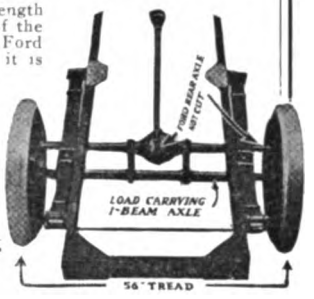
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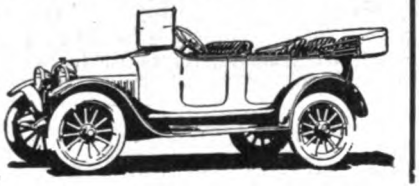
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x3	6.50	2.00	35x4	13.50	3.45
x3½	8.00	2.25	36x4	14.00	3.50
x3½	8.50	2.50	34x4½	16.25	4.00
x3½	9.00	2.50	35x4½	17.00	4.15
x3½	9.50	2.55	36x4½	17.50	4.25
x3½	10.75	2.75	37x4½	18.00	4.36
x4	11.75	2.90	35x5	17.50	5.00
x4	12.50	3.20	36x5	18.50	5.00
x4	12.75	3.25	37x5	20.00	5.20

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x3½	4.25	1.45	36x4	7.50	1.75
x3½	4.50	1.50	34x4½	8.00	1.75
x3½	5.25	1.50	35x4½	8.00	1.80
x3½	5.50	1.60	36x4½	8.25	1.85
x4	6.25	1.65	37x4½	9.50	1.89
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	Plain	Non-Skid		Plain	Non-Skid
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x3½	7.95	8.65	36x4	14.10	15.30
x3½	8.20	9.05	34x4½	17.10	18.75
x4	12.55	13.40	35x4½	18.55	19.45
x4	12.10	14.05	36x4½	18.80	19.90
x4	13.36	14.25	37x4½	19.45	20.75
			37x5	22.30	23.10

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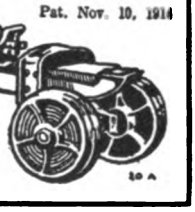
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Pat. Nov. 10, 1914

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Rie Nie German Radiator Compound

We guarantee it will not clog the system. A demonstration has proven that a Rie Nie mend in a water jacket will stand 250 lbs. air pressure after three years' service. Prevents rust and scale formations. A fine article to stock right now. Attractive tins, each 75c. Twelve in carton, $7.50.

Rie Nie Auto Patch

Three Ply and Fabric Prevents Any Leakage

The best patch made and a quick seller. For immediate use without heat or tools. Self vulcanizing. Mends largest blow-out or smallest puncture. Very durable. Carton containing patch of 36 sq. inches, 50c.

Rie Nie Products A complete line of chemical accessories, highest quality

Write for Catalog. Give name of your Jobber.

DURKEE-ATWOOD CO., Minneapolis, Minn.

Advertisers' Index

A
Allen & Curtis ... 91
Aluminum Mfg. Co ... 88
American Ball Bearing Co ... 64
American Oil Products Co ... 88
Ames Co., F. A ... 52 and 53
Atwater Kent Mfg. Works ... 96
Automobile, The ... 93
Auburn Ignition Mfg. Co ... 85

B
Backus Novelty Co ... 94
Batavia Tire Co ... 85
Battle Creek Vulcanizing Eq. Co ... 87
Benford Manufacturing Co ... 67
Bosch Magneto Co ... 51
Boston Blacking Co ... 91
Bound-Brook Oilless Bearing Co ... 63
Bowser & Co., S. F ... 105
Brown-Lipe-Chapin Co ... 56 and 57
Brugan Co ... 94
Buffalo Specialty Co ... 2
Butler Mfg. Co ... 95

C
Cassidy, E. A ... 93
Chalmers Motor Co ... 106
Champion Ignition Co ... 87
Chicago Auto Supply House ... 103
Chicago Fuse Co ... 97
Columbus Varnish Co ... 90
Combination Rubber Mfg. Co ... 91
Connecticut Tel. & Elec. Co ... 93
Curtis Pneumatic Mchy. Co ... 97

D
Disco Electric Starter Corp ... 93
Durkee-Atwood Co ... 104

E
Eisemann Magneto Co ... 89
Empire Rubber & Tire Co ... 96
Engineering and Tube Bending Co ... 103
Evapco Mfg. Co ... 95

F
Faw, J. H ... 96
Fedders Mfg. Co ... 59
Firestone Tire & Rubber Co ... 80
Fitzgerald Mfg. Co ... 95
Ford Motor Co ... 94
Foster Accessories Co ... 89
Fried & Stonier Co ... 94
Fulton Co ... 94

G
General Asbestos & Rubber Co ... 69
General Electric Co ... 73-83
Gibson-Hollister Mfg. Co ... 96
Goodrich Accessories Corp ... 86
Grossman Mfg. Co., Emil ... 97
Gulf Refining Co ... 90

H
Hampton-Campbell Co ... 96
Hartford, E. V ... Back Cover
Harvey Spring Co ... 82
Hassler, Inc., Robt. H ... 85
Haywood Tire & Equip. Co ... 86
Holmes & Bros., Robert ... 103
Hotel Marie Antoinette ... 88
Houk Mfg. Co ... 96
Hyatt Roller Bearing Co ... 92
Hudson Motor Car Co ... Front Cover
Hupp Motor Car Co ... 74

I
Inter-State Motor Co ... 97

J
Jenkins Vulcan Spring Co ... 72
Johns-Manville Co ... 92
Johnson Company ... 46
Johnson & Son Co ... 6

Digitized by Google

Advertisers' Index

K

King Motor Car Co. 75
Krembs & Co. 93

L

Laird & Lee. 94
Lexington-Howard Co. 49 and 50
Liberty Motor Car Co. 91
Lobdell Investment Corp. 62
Lunkenheimer Co. 84

M

Maxfer Truck & Tractor Co. 55
Michelin Tire Co. 45
Michigan Auto Trailer Co. 103
Mitchell Motors Co., Inc. 81
Mosler & Co., A. R. 92
Motor Age 95

N

National Rubber Co. 97
New Departure Mfg. Co. 95
New Era Spring & Specialty Co. 103
New Process Gear Corp. 96
N. J. Car Spring & Rubber Co. 95
Norma Co. of America 3

O

Oakes Co. 92
O-So-Ezy Products Co. 93
Osgood Lens & Supply Co. 47

P

Peerless Motor Car Co. 71
Pittsburgh Electric Specialties Co. 92
Pittsfield Spark Coil Co. 104
Pouvailsmith Corp 92
Prest-O-Lite Co. 92

Q

Quaker City Rubber Co. 65

R

Rajah Auto Supply Co. 95
Rayford Co 97
Reo Motor Car Co. 79
Republic Rubber Co. 76
Ross Automobile Co. 58
Russell Motor Axle Co. 96

S

Scripps-Booth Co. 94
Shaler Co., C. A. 54
Sheldon Axle & Spring Co. 97
Silvex Co. 103
Sparks-Withington Co. 93
Spear Carbon Co. 90
Splitdorf Electrical Co. 86
Standard Thermometer Co. 93
Standard Woven Fabric Co. Third Cover
Sterling Motor Truck Co. 84
Stevens & Co. 97
Studebaker Corp. 1
Superior Manufacturing Co. 91
Svensgaard Sales Corp., H. 95
Swinehart Tire & Rubber Co. 94

U

United Eng. & Mfg. Co. 84
Universal Rim Co. 68
U. S. Ball Bearing Mfg. Co. 48

V

Van Sicklen Co. 91

W

Weaver Mfg. Co. 60
Webber & Co., P. H. 77
Whitney Mfg. Co. 87
Willard Storage Battery Co. 70
Willys-Overland Co. 4
Wonder-Mist Co. 90
Woodstock Hotel 82

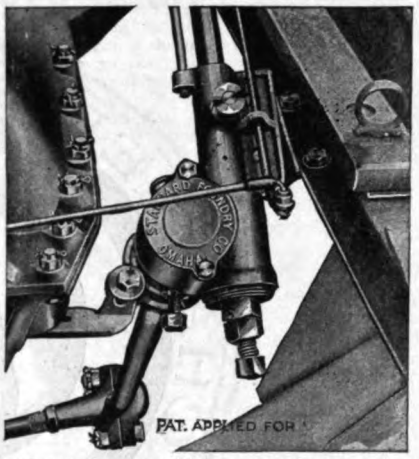
Z

Zenith Carbureter Co. 92

Fitting up a FORD is like refurnishing your House—it's not necessary; you can get along with it the way it is, but there are several refinements that will greatly increase the pleasure of both. We live but once. It is well to get out of Life all we can.

A new FORD goes along fine, but we do not like the Steering arrangement, so let's take it off and in its place put an IRREVERSIBLE WORM STEERING GEAR, the same style gear that is used on all the High priced cars.

IT ONLY COSTS $12.00



With one of these Worm Steering Gears on your Ford, you are driving a different Car. That shock and jar you formerly took up with arms and shoulders is now taken up with the Worm. Through mud and sand and on roads that are crowned up in the center, your car steers the way you want it to.

Irreversible Worm Steering Gear attached to a Ford Car—$12.00

"Leaving the Road," is a common expression among Ford drivers and that's the cause of most of the accidents, but with a WORM STEERING GEAR, your Ford will hold the road.

If you cannot purchase the IRREVERSIBLE WORM STEERING GEAR in your city, write the

STANDARD FOUNDRY CO., of Omaha, Nebr.
Dept. MW926

who are Manufacturers, for name of nearest Jobber. Dealers: You will find every FORD owner interested. This is one of the best and most useful accessories. Our discount proposition will be mailed promptly upon request.



Will save ALL waste and add to your profit

If you are trying to do without these two outfits, you are actually paying for them in what you are losing. You're only getting a small part of the business you might get and you're not making the profit you should even on that.

If you have one and not the other, you're like a fellow who would buy a suit of clothes without the pants—your equipment is not complete.

S. F. Bowser & Co., Inc.
Equipment for Handling, Storing and Measuring Oil, of All Kinds
FORT WAYNE, IND.
Sales Offices All Centers — Representatives Everywhere

G-20

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Quality First

Paddock-Zusi Motor Car Company
of Newark, New Jersey
is only one of scores of Chalmers
dealers who are selling four cars this
year to one car last year.

Chalmers Motor Company - - Detroit

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Getting What He Wants

—turns a new customer into a steady customer

MULTIBESTOS

Reg. U. S. Pat. Office

BRAKE LINING

is making steady customers for dealers every day all over the country.

Not only is MULTIBESTOS itself recognized as embodying the highest quality of Efficiency and Endurance, but "The MULTIBESTOS Way" of treating both Dealer and Customer has found high favor with all.

If you are not already experiencing its benefits, write for particulars.

We also Manufacture Tire and Friction Tape

STANDARD WOVEN FABRIC COMPANY, Walpole, Mass.

New York Branch and Export Office, 1779 Broadway

BOSTON, 175 Massachusetts Avenue
CHICAGO, 1432 Michigan Boulevard

PHILADELPHIA, 1309 Race Street
ATLANTA, 6 West Harris Street



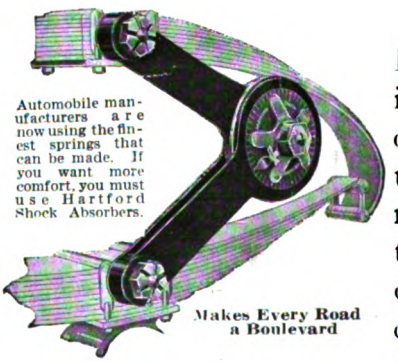
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NECESSITY

Automobile springs, designed as they are today, require control. Highly resilient and therefore highly sensitive to every change in load and road they need the steadying influence which the

Hartford SHOCK ABSORBER

affords. Leading car manufacturers have long maintained that the only car suspension capable of giving uniformly excellent results, whatever the road or the load, is active springs supplemented by Hartford Shock Absorbers. This explains why many well-known cars, Hartford-equipped at the factory, are famed for their easy-riding qualities and because of this very fact are preferred above others irrespective of price.



Automobile manufacturers are now using the finest springs that can be made. If you want more comfort, you must use Hartford Shock Absorbers.

Makes Every Road a Boulevard

The day is past when the Hartford Shock Absorber is to be viewed in the light of a mere luxury-contributing accessory. It is a **necessity** and the present trend of automobile spring design is such that you can't dispense with it if you want your car to ride smoothly and comfortably, whatever its load or whatever the road.

Trying is convincing. You cannot lose. Our guarantee is satisfaction or money back.

EDWARD V. HARTFORD, Inc.
Heretofore Known as Hartford Suspension Co.
142 Morgan St., Jersey City, N. J.

Makers of the Hartford Shock Absorber, Hartford Cushion Spring, E. V. Hartford Electric Brake, Hartford Auto Jack, Hartford Bump Absorber, Red Rack Jack.

Branches: New York, 1846 Broadway and 212-214 W. 88th St.; Boston, 319-325 Columbus Ave.; Chicago, 2637 Michigan Ave.

Distributors in principal cities. Dealers everywhere.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume XLVIII
No. 12

New York, September 20, 1916

Ten cents a copy
Two dollars a year

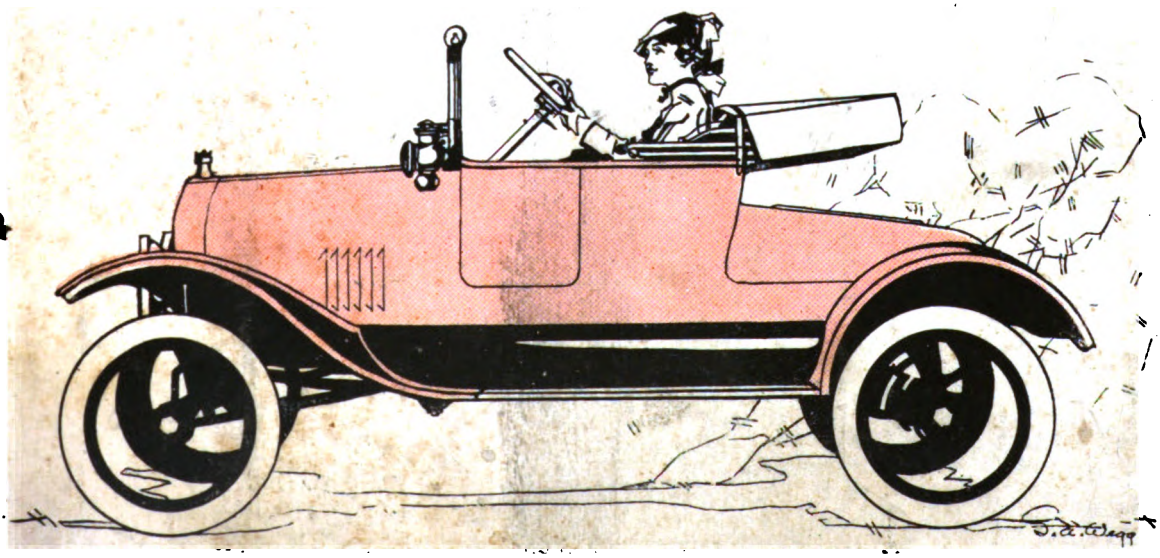
THE NEW FORD, with its Sloping Hood, Crowned Fenders, and re-shaped black enamelled Radiator, IS WORTHY OF A GOOD START. Don't spoil the fine effect of these improvements by Hand-Cranking the Engine, when the

SHAFT-DRIVE
Genemotor
Trade Mark

UNIVERSAL STARTING AND LIGHTING for the FORD will do it for you perfectly. The Shaft-Drive Genemotor can be depended upon every hour of every day—and night—during the life of your car. Like the Ford itself, it is light, compact, simple and thoroughly reliable. Charges the battery at 10 miles per hour. "U. S. L." Battery standard equipment. Now on sale in 1000 cities and towns.

Built by the General Electric Co.
Price $85 f.o.b. Lynn, Mass.
Sold Everywhere.

A. J. PICARD & COMPANY
General Distributors - 1720-1722 Broadway, New York



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"What a Fool"—

—said a man the other day as he watched a perspiring car owner laboriously inflating his tires by hand.

"For the modest sum of $12 that man can get a Stewart Tire Pump—let his motor do the work and get full mileage out of his tires in the bargain."

Dealers—tell this to every car owner that comes into your sales room and you'll do business!

"It will pay you to see that the car you buy is equipped with Stewart Products"

The Stewart-Warner Speedometer Corporation
Chicago, Ill., U. S. A.

Stewart

Motor Driven Tire Pump



$12

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Studebaker

Opportunities



This one in Virginia is good

And now comes good old staid Virginia with a Studebaker "Opportunity" that some enterprising dealer is going to snap up and develop into one of the richest markets in the South for the sale of the Studebaker cars.

This "Opportunity" is in a city that lies about a mile southwest of Norfolk, on the Elizabeth River. The last census figures place the total of population at 37,000 though there are very likely more than 40,000 people living there now.

The manufacture of paper, cotton, hosiery and knit goods are the leading industries. Shipyards and railway shops add materially to the industrial activity while an excellent harbour and rail transportation facilities furnished by 5 big railroads give impetus to a prosperous export business in cotton, lumber, naval stores and pig-iron.

Something more than financial strength and a signed agreement are necessary to secure this opportunity. You know the Studebaker requirements—**Initiative, selling ability, and progress. If you believe you have it in you to measure up—write for the facts.**

STUDEBAKER

Detroit, Mich.

South Bend, Ind. **Walkerville, Ont.**

Address all correspondence to Detroit

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Remarkable Growth of FISK

1899



Comparative Output of Fisk Tires

Yesterday and Today

ONE of the most interesting chapters in the story of the "Remarkable Growth of Fisk" is the comparative production of the plant today and during the first years of its establishment.

This phenomenal increase in the output of Fisk Tires is due to no other cause than the immediate demand which has been growing steadily and surely during these seventeen years.

In all this time the Quality of Fisk Tires has been maintained at its original high level—that "Quality first" principle was and still is the very foundation of our business, and the underlying reason for not only our selling success but the satisfaction of every one of our 35,000 dealers.



There are more than 125 Direct Fisk Branches throughout the country to serve our dealers promptly Write for location of Branch nearest you and for full information about our liberal dealer proposition.

Address Dept. 23

THE FISK RUBBER CO.
of N. Y.
Chicopee Falls Mass.

1916



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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN
PUBLISHED EVERY WEDNESDAY

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Editorial Contents

Sell Advertised Goods.....5-6-7
The dealer can materially assist both himself and the manufacturer by (1) Display; (2) Suggestion; and (3) Advertising.

Wisconsin's GREATEST Show.....12-14
More people saw the Milwaukee dealers' show at the state fair than saw the annual show last January in the Auditorium.

Motor Boosters Systematize Play.....8-9-10
First, they mapped out a plan and then they played accordingly.

The Story of a Man..... 19
Here's a man who lost both legs, yet has become a successful Cadillac dealer.

Found Cash Plan Best..... 18
This man read in Motor World about a garage operating on a cash basis and has adopted the plan.

Motor Car Engine Ultimate for Tractor.23 and 40
The big, massive engines have not proven best for cars and have been abandoned. Four cylinders essential.

Motor Truck Dealers Play..... 15
Business System Department.....16-17
Garage Construction 20-21
Angles of the Law..... 22
Repairshop Short-cuts 24-25
The Newest Accessories.....26-27
New Cars:
Yale Eight..... 33
Singer Six.....34-35
The "Open-Price" Plan..... 37
Retail News 30-32
Editorial Observation 28
Regular News Department.....36-44

Advertisers' Index on pages 98-99

It's Good Enough For Uncle Sam

More striking or conclusive evidence of the superiority of the Corbin-Brown Speedometer could not be advanced than the fact that in the placing of a recent order for 63 motorcycles the United States Government specifically stated that all machines be equipped with this instrument or equal. The order has been placed with us.

The CORBIN-BROWN SPEEDOMETER

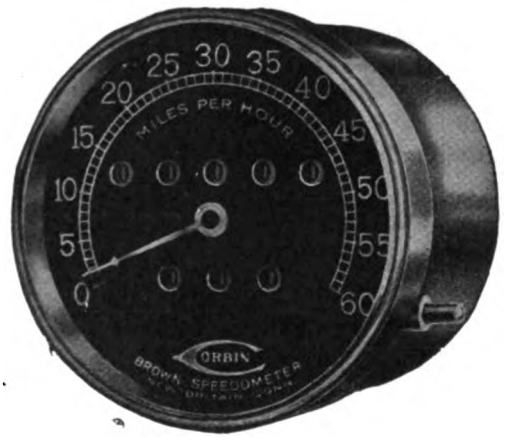
needs no stronger endorsement than this.

If it is efficient enough to handle the work cut out for it by the War Department it is efficient enough to warrant its being equipped to your automobile. Do this at once.

Investigate for yourself.

At all dealers.

Catalog on request.



The Corbin Screw Corporation
THE AMERICAN HARDWARE CORPORATION, Successors
NEW BRITAIN, CONN.
BRANCHES: New York Chicago Philadelphia
Makers of Corbin Duplex Coaster Brakes for Bicycles

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Overland Sales in Erie, Pa., Jump From 25 to 671 Cars

Just five years ago 25 Overland cars were shipped to the dealer in Erie, Pa.

That initial order is hardly a drop in the bucket today.

For the past twelve months shipments to Erie totaled 671.

And Erie is not an exception.

Overland business is booming all over the country.

And Overland dealers are profiting.

"Made in U. S. A."

The Willys-Overland Co.

Toledo, Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLVIII New York, U. S. A., Wednesday, September 20, 1916 No. 12

Wasted Energy—*No. 1*



Non-Advertised Goods move slowly, if at all. The dealer has a hard time—wastes energy—trying to move them. Read the article on pages 6 and 7 and watch this page next week.

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SELL ADVE

The Straight Line

1. Display

THE buying public must see the goods. The manufacturer, through his advertising, has made the goods known, created a demand for them, and obtained the confidence of the prospect.

But the buyer must know the dealer has the goods. The goods must be displayed.

Give these advertised goods preferred shelf space. Get them out in front, where they fairly shout themselves at every person who comes in the store or garage.

Get the cheap, unadvertised, unknown goods down off the shelves and off the counters. Get these goods UNDER the counter and put the advertised goods in their place.

Here's an actual occurrence:

In a big accessory store in Kansas City there was a neat display of unknown, unadvertised body wax on the showcase in a prominent place. Under the counter was a stock of nationally advertised body wax, in every way superior to the cheap imitation on the counter.

Said a buyer, examining the wax:

"Don't you keep ——'s wax?"

The national advertising of the manufacturer of the GOOD wax had borne its fruit. It had BROUGHT A CUSTOMER TO THE STORE

But the dealer was blinded by the few cents extra profit he made on the inferior substitute.

This dealer deliberately turned his back when the manufacturer of the advertised wax said:

"I will spend thousands of dollars to help you sell my wax. I will bring customers to your store. I will make good if the wax does not."

But this is only one instance. The same can be said of almost any one of the hundreds of motor car accessories that every day are being sold by dealers, garagemen and supply houses.

Don't let the extra penny a package blind you.

Get the advertised goods out in front, on the shelves and on the counters, so those who come in the store may see them AND KNOW THAT YOU HAVE THEM.

Advertised goods sell themselves IF THEY CAN BE SEEN.

2. Suggestion

GOOD display is the best suggestion to buy, but should be supplemented by word of mouth.

One dealer in a small Long Island town goes even further. Every time a customer comes in his store he looks to see if the customer came in a car. If he did, the dealer serves the customer and then accompanies him to his car, on the way deftly picking up a bottle of nationally advertised body polish and a piece of cheesecloth.

At the car he calls the motorist's attention to the body polish and then proceeds to SHOW HIM RIGHT ON HIS OWN CAR WHAT THE POLISH WILL DO.

He generally makes a sale of polish.

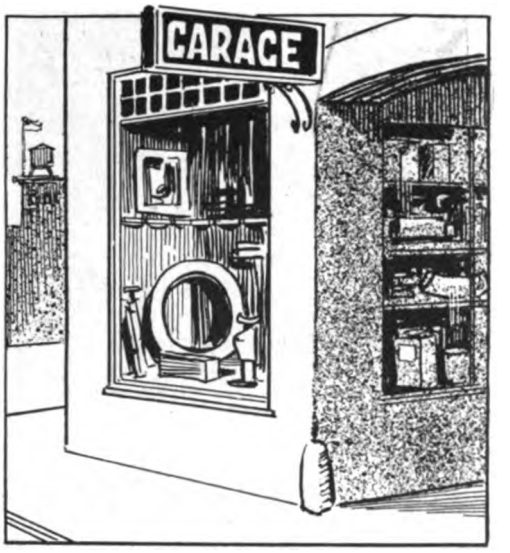
The same method of demonstration is used by a New York garageman for selling nationally advertised lamp bulbs. This man slips open a headlamp, inserts a new nitrogen bulb, and

HOW can the dealer push the sale of advertised goods, sell more of them? Here are the three principal means at his disposal:

1.—Display
2.—Suggestion
3.—Advertising

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[SED GOODS



Business Way

en asks the motorist to switch on his lamps and te the difference between the new bulb and the l one in the other lamp.

Demonstrating a product in this way is a valuable l to sales, but is not always practicable.

It is always possible to suggest the name of a oduct to a purchaser. When a motorist buys a ark plug wrench, suggest that he purchase a set nationally advertised spark plugs. Be sure to me out strong on the nationally advertised name. e may have forgotten it for the minute.

When you mention it to him it immediately brings ack to his mind all the advertising he has seen.

He says:

"Oh yes, Blank spark plugs, of course!"

Give him an advertised product whether he asks or it or not. He will not deliberately ask you for n unknown advertised product.

By selling him a known, advertised product, you re selling him the best of its kind. It is a good rticle. The manufacturer has sufficient faith in it o risk his reputation on it, to spend his money in ringing it before the possible purchasers of the ountry.

You are not taking any chances when you sell oods that are advertised and backed up by the anufacturer.

You will not be stuck with advertised goods. There is a steady demand for them that is created by the advertising. Such stock will not go dead on your shelves.

The strong advertising of reliable, reputable manufacturers will put the unadvertised, unknown, cheap, shoddy products into the discard. They will rust on your shelves, unless you work your head off selling them. And after they are sold, you still have cause for worry, for they will not be as satisfactory as advertised goods.

3. *Advertising*

WHEN your advertising appears in the local papers see that it carries the advertised names and brands of the merchandise you have in stock. Say in bold type: "You can get GENUINE Blank brake lining here." "We sell genuine Electric horns."

Make those who read your advertising realize that you are dealing in reputable merchandise, made by responsible manufacturers, who have been a long time building up their businesses along fair-play lines.

Use all the dealer help advertising matter that the factory will send you. This costs you nothing and will bring big returns.

A great many manufacturers of widely advertised products have special display racks and stands that are distributed to dealers without cost. Use them.

Manufacturers also supply wall hangers, stickers and envelope stuffers. These are sent to dealers without cost, too.

This is one way the manufacturer has of advertising. He cannot reach all your customers direct, so he asks you to help him.

The manufacturer wants you to sell advertised goods.

The buyer expects you to sell advertised goods.

You owe it to yourself to sell advertised goods.

AND you, Mr. Reader:—What do you think about Advertised Goods? What has been your experience with Advertised Goods? Are you selling them?

WE want a letter from you telling your experience with Advertised Goods. We want to print the letter.

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A. L. Newton (Buick) wielding the "big stick"



Dunning, tire rolling expert



The whistling contest provided the most real fun

BOOSTERS MIX SYSTEM WITH THEIR PLAY

And the Program is Run off Like Clock-work—But They Have a Good Time in Spite of The System

NEW YORK dealers mix system with their play, just as they mix it with their businesses. Take the Motor Boosters' Outing, for example. On Tuesday last, 200 dealers dropped business cares and played all day by Long Island Sound. But there was careful planning back of the play.

First, a committee arranged all the preliminaries with Donnelly's Grove, College Point. Generally the outing is held at Fred. Wagner's farm at Smithtown, L. I., but owing to a death in Wagner's family a change was necessary.

The committee arranged for the use of the grounds, which include four baseball diamonds, for breakfast, which was served at noon, and for a genuine Rhode Island clambake, which was served at 6 p. m. The next job it had was to get up the program, see to the printing of the tickets and arrange for the prizes. Some of the prizes were donated by dealers and some were purchased with the receipts from the sale of tickets. Tickets were $5, and entitled the holder to everything on the program.









SOME STRENUOUS MOMENTS ON THE PLAYGROUND WITH THE NEW YORK MOTOR BOOSTERS

1—J. A. Scully (Scully & Brandt) breasting the tape in the 50-yard sprint. Because Scully already had won one first prize the race was given to Hugo Larson (Cutting, Larson & Co., Oldsmobile), who was second. 2—Jack Kirk just about to fall over the tape in the 42cm. class race; M. W. Walsh (Republic Rubber) did fall but Johnson, third, kept his feet. 3—R. A. MacMurray and I. Isaacson running away from the field in the three-legged race. 4—A. L. Newton, Buick branch manager, won the final of the sack race quite handily

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POERTNER'S BAYSIDE BURGLARS

Top Row—Left to Right—W. H. Queripel (Firestone); J. S. Bestar; W. C. Poertner (National); E. H. Reid (Ajax); C. D. Studebaker (Firestone); Wm. Parkinson, Umpire (Stutz). Lower Row—Left to Right—C. E. Donnocker; Clark Roe (National); A. R. Redburn, J. A. Scully; J. Bastian (Firestone)



BILL HILL'S STAGGARDS

Top Row—Left to Right—Geo. Conlin (Dixon); H. B. Carpenter (Republic); L. Regan (Geo. D. Brown Co.); Hugo Daily (Mohawk); M. J. Walsh (Republic); Geo. D. Brown. Lower Row—F. G. Hill (Mgr. Republic); J. Kirk (Thermoid); P. Englehart (Oldsmobile); Lawrence Donlin (Republic)



STEWART'S MOTOR CLUB TEAM

Top Row, Left to Right—Chas. Jones (Buick), Bob White (Mitchell), H. S. Walters, H. W. Kurt (Buick). Lower Row—Chas Stewart (Automobile Dealers, Inc.), Harry Pike (Mitchell), E. Dirks (Buick), M. C. Carroll (Ross S)



J. A. Scully threw a baseball further than any one else who tried



JOHNSTON'S WHITE SOX

Top Row, Left to Right—F. G. Hoyt (S. O. Co.), R. H. Johnston (White), H. E. Jennings, Wm. Sweet (M & A M). Lower Row—D. McL. Lay (Motor World). A. L. Newton (Buick), Dick Swander (Firestone), R. A. MacMurray, C. L. Dunning.

The meeting place in New York was in front of the Motor Club and the hour set for the start 9 in the morning. In all, about fifty cars made the trip, and by 10 o'clock the advance guard of the motorcade was on the grounds.

The time between the arrival of the crowd and breakfast was devoted to baseball, there being four teams in the field. These were Stewart's Motor Club team, Bill Hill's Staggards, Poertner's Bayside Burglars and Johnston's White Sox. Here is the lineup:

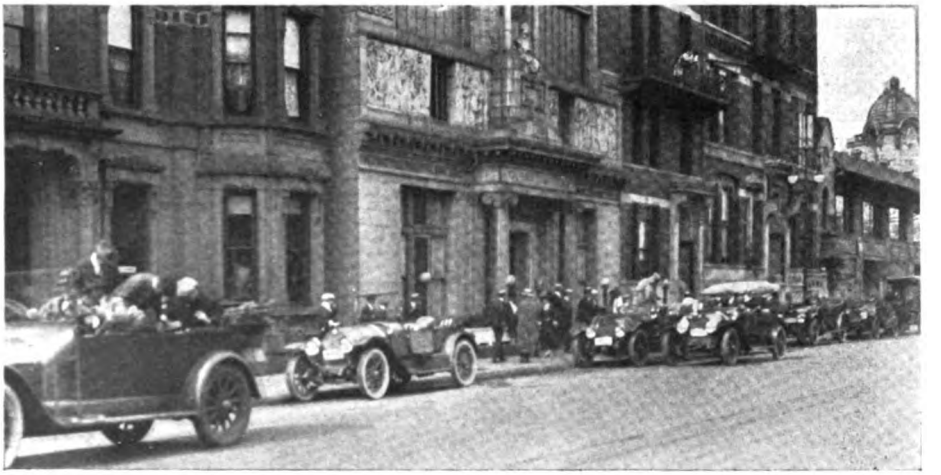
Stewart's Motor Club		Poertner's Bayside Burglars
Pike	p.	Queripel
Stewart	c.	Studebaker
Walters	1b.	Roe
White	2b.	Bastian
Derks	3b.	Scully
Bartlett	r.f.	Bestar
Kurt	l.f.	Reid
Benner	c.f.	Donnocker
Sterns	s.s.	Poertner

Johnston's White Sox		Hill's Staggards
McMurray	p.	Walsh
Dunning	c.	Englehart
Swander	1b.	Hill
Lay	2b.	Reagan
Jennings	3b.	Kirk
Sweet	r.f.	Quinn
Hoyt	l.f.	Dealy
Johnston	c.f.	Shortmeyer
Newton	ss.	Carpenter

After a hard struggle, Johnston's White Sox defeated Hill's Staggards 3-2. Poertner's Bayside Burglars, however, had a comparatively easy time subduing Stewart's Motor Club team by the score of 18-9. This left Poertner and Johnston to fight it out. Poertner's men overwhelmed the White Sox by a score of 11-5, and for their prowess every man on Poertner's team received a gold scarf pin, donated by Poertner himself. The sensational playing of A. L. Newton, Buick branch manager, was the feature of the game.

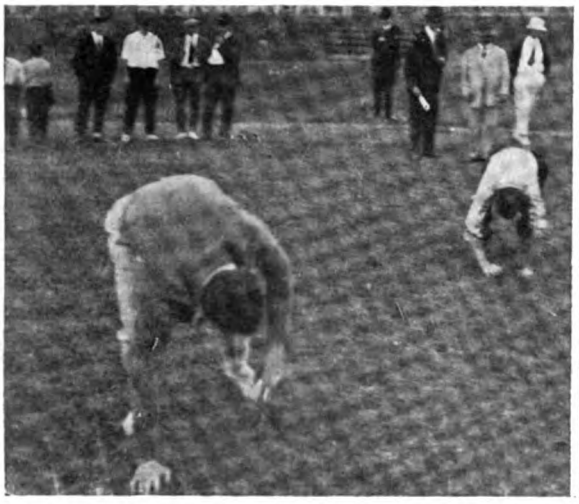
Practically all of the other events already are familiar to those who frequent outings. For example, there was a 50-yd. dash, and then another one for men in the 42 cm. class. This brought about a great (the word great is used advisedly) spill at the finish. The prizes in both events were gold scarf pins.

Followed a three-legged race, with two

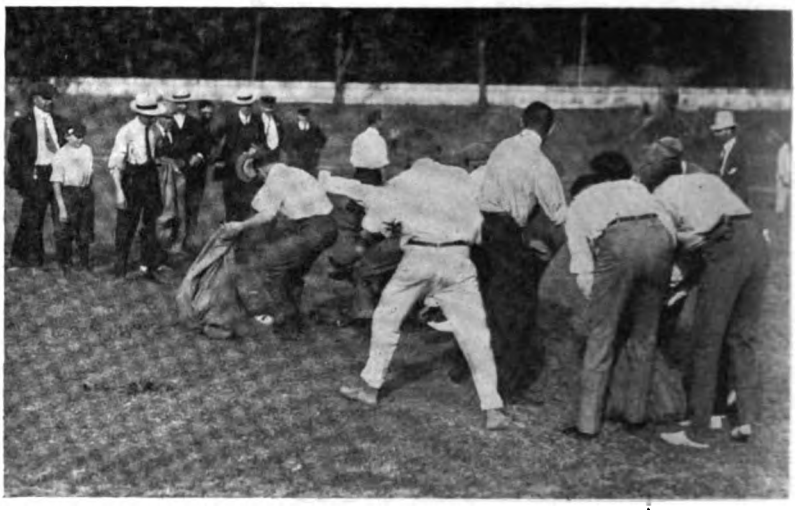


More than fifty cars were needed to convey the 200 boosters from the Motor Club in Manhattan to College Point, where the outing was held. This shows the start

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Joe Judge (Spring Valley Auto Co.) won the crab race, 50 yards backward on all fours



The shoe race was in two divisions, one for high shoes and the other for low shoes. H. P. Baran won the former and C. F. Seller the latter

steins as prizes, and a sack race, also with a stein for a prize. Newton proved the prize runner in this event. The tug-of-war provided the most merriment. Bill Hill's team of five men was all set and at the word "Go!" Charlie Well's team of five men, and others, ran away with the rope.

The shoe race was divided into two sections, one for those wearing low shoes and the other for those wearing high shoes. The shoes of each variety were put in separate sacks and the word given for the scramble. The prize was a stein. The potato race also carried a stein as a prize.

The tire-rolling contest proved the most strenuous of all the events. Contestants had to roll a 34 x 4 tire, fully inflated and on a rim, around an ⅛-mile track. There was a cigarette humidor for the winner.

The two events which provided the greatest enjoyment for those who looked on were the crab race and the whistling contest. In the former, the contestants had to race 50 yd. backward on all fours. There were several spills and the man who finished first received a copper stein. The other steins were china.

The whistling contest was brand new. Contestants were required to eat six Uneeda biscuits and then whistle a recognizable tune for a period of 3 min. The winner got a clock.

Immediately following the conclusion of the games, the crowd, headed by the band, marched to the pavilion provided for the purpose and sat down to the clambake.

The summary follows:

Baseball throw, won by J. A. Scully (Scully & Brandt, Inc.); second, C. D. Studebaker (Firestone Tire & Rubber Co.); third, Dick Swander (Firestone Tire & Rubber Co.).

Fifty-yard dash, won by Hugo G. Larson (Cutting-Larson Co., Oldsmobile); second, J. K. Bastian (Firestone Tire & Rubber Co.).

Fat man's race, fifty yards, won by Jack Kirk; second, M. W. Walsh (Republic Rubber Co.); third, R. H. Johnson (White).

Three-legged race, won by R. A. MacMurray and I. Isaacson (N. Y. Evening Journal); second, Harry Pike (Mitchell) and Gene Sullivan (Maxwell).

Sack race, first heat won by H. P. Baran; second, M. W. Colwell. Second heat won by Gene Sullivan; second, A. L. Newton (Buick). Final won by A. L. Newton; second, Jack Kirk.

Shoe race, high shoes, won by H. P. Baran; second, H. H. Brown. Low shoes, won by C. F. Seller; second, E. V. Derks.

Tire rolling contest, one-eighth mile, won by C. L. Dunning, time 43⅕ sec.; second, Otto Braunworth, time 44 sec.; third, Howard Walters, time 45 sec.

Tug-of-war, won by Hill's team, including Ed. Burman, J. M. Kirk, Harry Pike and M. J. Walsh.

Potato race, won by W. Caldwell; second, Joe Judge, Judge Auto Co. (Spring Valley).

Crab race, won by J. Judge.

Whistling contest, won by S. P. McMinn, Motor World.

Ever Hear of a Composite Motor Car?



EVER hear of a composite automobile? It had to come. They have composite pictures, composite movies, etc., so a composite motor vehicle is not so far out of line. No doubt one of the most interesting cars in the United States is the one shown herewith, which is made up of parts of some 102 orphan cars. The owner and builder is H. G. Gremel, general manager of the Puritan Machine Co., Detroit, which concern handles parts for over a hundred makes of machines not now manufactured. Gremel set to work to build a car from among the enormous collection of parts his firm handles. He has a steering gear that was originally intended for one make of car, a gearset from another, an axle that should have done duty in a third, wheels that were meant for a fourth, etc. The body was meant for a Krit machine. The car has given Gremel efficient service, having been driven over 15,000 miles thus far. It is a striking monument to the standardization of the American automobile, indicating how well the parts of various cars can be made to work together.

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William Warren Barnett

Denver, Colorado

The fifth in a series showing

Dealers Who Have Made Good

WILLIAM WARREN BARNETT, Denver, was born in Dayton, Ohio, in 1865. He is 51. He engaged in numerous mercantile pursuits in the East and West and got the motor car idea one night in 1905 in the Bullfrog Mining Camp, near Death Valley, Nevada, while reading a letter from Arthur Brown, then master mechanic of the Stoddard Mfg. Co., Dayton, Ohio.

The letter said the home-town company was going to make cars and Barnett decided to get an agency. He left the desert the next spring and formed a Stoddard-Dayton agency in Denver with Charles M. Woods.

They had money enough to pay the rent for only 2 or 3 months and Woods soon wearied of the business and sold out for a promissory note.

Barnett stuck.

In 1911 he added the Alco truck and handled that and the Stoddard-Dayton as long as they were made. In 1912 he took on the Federal truck and in 1913 the Oldsmobile line and the Ohio electric. He has done well in all lines.

From his "shoestring" of ten years ago he has built an organization of 30 dealers, covering Colorado, Wyoming, New Mexico and part of Texas and Nebraska. He has 16 employees in Denver. Service is his keystone. This year's sales are already five times those of all last year.

The Why

BARNETT is an executive. He manages his business in a business way.

He believes the customer "on this particular occasion may be right and I may be wrong." The viewpoint of the customer is always in the foreground.

He gives careful personal attention to everything. He is accessible to the public. There is no barrier at the telephone or the office door. When his telephone rings he answers it himself, and no one ever has to explain all his business before an interview will be granted.

Keeping promises is his hobby. And he always plans to give all he promises—and then some.

Business has been built through conservative, truthful, straightforward advertising and salesmanship. It has won the confidence of the public.

His stationery says: "W. W. Barnett." "William" he regards as "entirely too formal for ordinary usage"—and to a goodly percentage of Denver he is "Billy."

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Wisconsin's *Greatest* Show at Milwaukee Fair



More People Saw State Fair Exhibit Than Visited Annual Winter Show Last January—Event Proves So Valuable No Dealer Dares Stay Out of It—Primarily a Dealer Show Though Many Retail Sales Were Made.

MILWAUKEE, Sept. 16—More people saw the second annual motor show of the Milwaukee Automobile Dealers, Inc., at State Fair Park this week than visited the Milwaukee Auditorium last January to view the seventh annual winter show conducted by the same organization.

The record-breaking attendance was but one feature of what many claim to be the most pretentious exposition of the motor car industry that has ever been presented at a State fair in this country. Compared with the makeshift motor shows put on at some State fairs in the United States, that of the M. A. D. this week was like day to night.

84,000 Pass Ticket Takers

Nearly 84,000 people paid 10 cents to see the Wisconsin State fair motor show of 1916. In all, nearly 100,000 people were admitted to the mammoth concrete motor car building, devoted exclusively to this show. The official attendance at the fair for the week was 172,500, indicating that approximately one-half of the total number of visitors to the fair paid to see the motor show, and more than two-thirds of the persons who entered the big fair park actually saw the cars.

Motor car dealers of note from many parts of the country came to Milwaukee this week to inspect the exposition and get a line on the reasons for the great success achieved by the Milwaukee dealers' association in conducting a show at a State fair. Since the motor car became a factor it has been exhibited at State and county fairs, generally under canvas, or in an open shed not far from cattle and sheep, or in some corner of the fair grounds not needed for something else.

It was the same at the Wisconsin State fair until 1915, when the M. A. D., now recognized as the livest of organizations, took a long chance, leased the great concrete, shed-like Machinery Hall, spent several thousand dollars in walling in the four sides with steel and glass, and leased space to its members and other tradesmen on the same basis as it did for the annual "big show" held in the Auditorium every January since 1909.

When the fair was over and the show closed its doors there was enough left from the small admission charge so that every member of the association could receive a percentage return on his expense. Not only that, but every exhibitor was more than satisfied that his expenditure was well worth while on the basis of sales actually made and agencies placed.

The 1915 experiment was so big a success that as soon as the winter show in January closed its doors the M. A. D. started to prepare for the State fair show. This time the State Board of Agriculture, which manages the fair, recognized the venture as one of the most important features of the annual exposition. It readily leased the big Machinery Hall to the dealers, renamed it "Automobile Hall," and gave the association exclusive control of the motor car exhibits, at the same time appointing Bart J. Ruddle, assistant secretary and manager of the M. A. D., "superintendent of automobiles," which position heretofore was filled as a payment of political debts or to gratify the personal ambition of a supporter of the administration.

With characteristic energy the M. A. D. undertook a second "booster" tour, to advertise not only its fair show, but the State fair itself. This was done during the week of Aug. 28 to Sept. 2, 2 weeks in advance of the fair. This 555-mile tour, which was graced with the presence of the Governor, the Commissioner of Agriculture, the Mayor of Milwaukee and the heads of the good roads associations, as well as most of the prominent personages of the Badger commonwealth, more than made good. The show attendance record shows and proves that.

Cars and Trucks Shown

A total of 202 pleasure cars, two electric cars, fourteen motor trucks and thirty-one distinct accessory exhibits were crowded into Automobile Hall this year. Forty-two of the total number of exhibitors were active members of the M. A. D., compared with thirty-five a year ago. Approximately $2,500 was expended in decorating the great concrete building in appropriate style—a setting of autumn, depicting the harvest. It was an appeal to the city man as well as to the farmer.

The hall, 130 x 340 ft. in size, was laid out in six rows of spaces, running lengthwise. The center aisle, dubbed "Peacock Alley," was flanked by spaces measuring 20 x 17 ft. Adjoining these, and flanking the side aisles, were spaces

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25 x 20 ft. in size—more space for the money because of less advantageous position. Along the west wall were arranged the accessory exhibits, each being 15 x 10 ft. in size. The car spaces brought $125 each and the accessory rooms $50 each. Those exhibitors who are members of the association will actually pay less, for the net profit is prorated.

M. A. D. Supervises Decoration

The M. A. D. took charge of the decorative plan, and no exhibitor had any option in elaborating thereon. The idea was to keep exhibits uniform. Dealers were allowed to go as far as they liked in color schemes of cars and chassis, but the ornaments supplied by the association had to suffice. And it did. The big hall is full of pillars to support the mammoth concrete roof. The main aisle pillars were covered with artificial decorations representing autumn leaves, and the inside pillars separating spaces were bound around with cornstalks and sheaves of grain. Signs for individual exhibits were painted in exact reproduction of the trade-marks of cars or accessories, just as at the Auditorium in January.

Some of the "big fellows," like Mitchell, Overland, Lexington, Reo, Chalmers, Hupmobile and Stearns, used three spaces for their exhibits. Fifteen other dealers used double spaces, and the remainder single spaces. All paid alike at so much per space.

Although not scheduled to open until Monday, Sept. 11, at 10.30 a. m., the show was ready for inspection at 2 o'clock Sunday afternoon. This year's fair was a 7-day event instead of running only 5 days, as in former years. All exhibits were in place and the show ready when the gates of the park opened on Sunday, and they were the last to be taken down when the fair closed Saturday afternoon.

Poor Weather No Hindrance

The week's weather record was true to form. Temperatures ranged from 85 deg. above zero to within 15 points of freezing. It rained Tuesday, Wednesday and Friday, with showers on Saturday. Thursday, Milwaukee day, which brings the largest day's attendance each year, found the thermometer near 45 deg.; and exhibitors froze just as much as visitors, for Automobile Hall is not heated, because a Wisconsin September generally is one of the finest and most agreeable months of the year. In spite of the tremendous handicap of unfavorable weather, the fair and show alike exceeded all previous attendance records.

The number of paid admissions, approximately 85,000, was a surprise to all, considering the conditions. At the Wisconsin fair a fee of 10 cents is charged, because it is desired to keep out undesirables and children and the catalog fiend. Each exhibitor was given 100 free tickets for distribution among prospects and friends. Season passes were given to each exhibitor in liberal numbers for the use of officials and attendants. Demonstrators and cars used for transporting exhibitors and attendants from downtown to the fair and back were supplied with metal tags fixed at some point where the gateman could see them without effort, and represented car admissions. Each exhibitor also was supplied with 500 to 1000 show tickets to be sold in blocks or purchased by the exhibitor and given away by him as he saw fit to do. In this way the attendance doubtless was enhanced.

Boosting for Good Roads

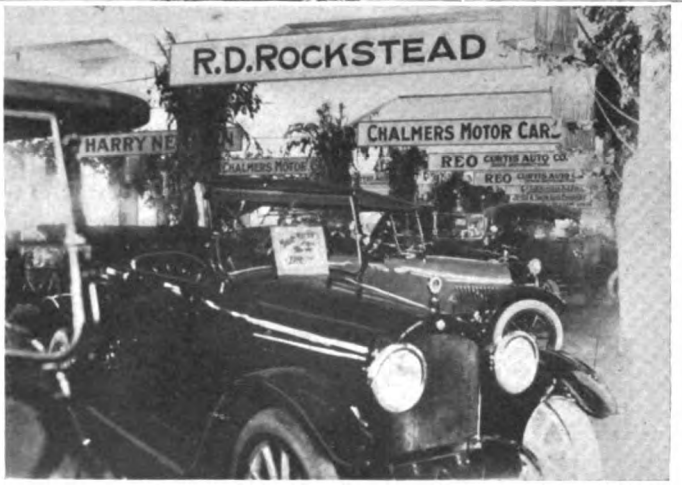
On Wednesday, which was State and Good Roads Day, the M. A. D., as previously pledged, turned over the entire receipts of the show to the Good Roads Association of Wisconsin to further highway improvement propaganda. It is said that more than $3,200 was realized in this manner.

The "booster tour" took care of practically all the advance work of the association. It called the attention of from 750,000 to 1,000,000 people to the State fair and the motor show, and was probably the best method of advertising that could be devised. Some dealers sent special invitations to prospective customers, with free admissions inclosed.

The attendance of women was probably as large as that of men. At the Wisconsin State fair show no visitor is obliged to step around in a muddy mess to get at exhibits. There is concrete underfoot and overhead and on all sides, making a visit to this exposition as safe and comfortable as going to the Auditorium in winter. As a matter of fact, it required no stretch of the imagination to feel that one was in the Auditorium; for it seemed that the big building had







The M. A. D. exercised strict supervision over the decorations and as a result there was uniformity and a pleasing effect

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been transported to State Fair Park, so fine is the arrangement afforded and provided.

The men were glad of one thing in particular, and that was that smoking was allowed. At the Auditorium, at the winter show, cigars must be deposited in ash cans before one can enter the main arena.

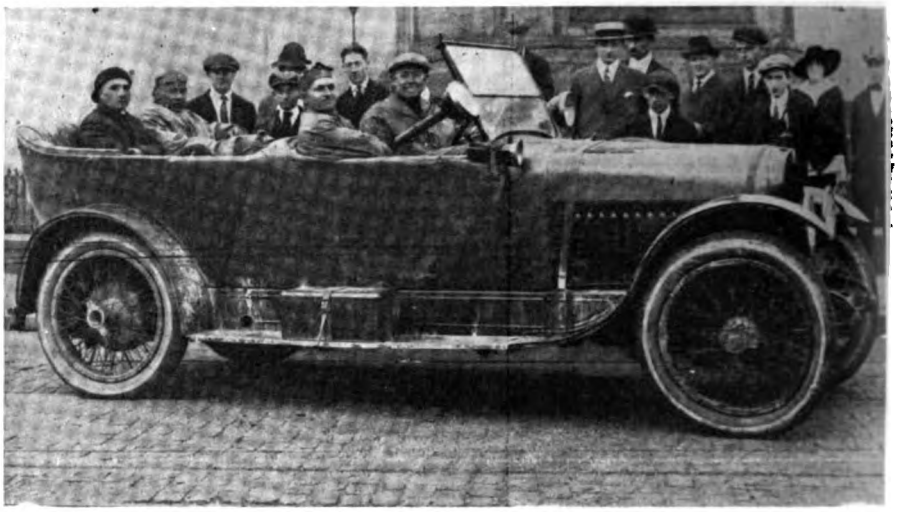
Primarily a Dealer Show

The State fair is, primarily, a dealers' show. It is a retail-selling affair only secondarily. That it pays is proven by the fact that dealers fight for spaces. Although contract time is past, there are many agencies not yet closed, and the State fair show is the psychological moment for the State distributer to round out his organization. This year even one electric manufacturer made an exhibit—the Detroit. Two models were shown; and although no actual sale is reported, the Milwaukee branch has a fine list of prospects that it never had before.

No figures on actual sales are available. Exhibitors decline to state numbers. A careful canvass of all exhibitors revealed the fact that each one is fully satisfied. Show week brought more State dealers to Milwaukee than the winter show, and it is safe to say that more dealer contracts were signed than at the Auditorium. So far as retail sales are concerned, a good many sales were closed at State Fair Park, sales that have been hanging fire for several weeks or months. A show seems to have a peculiar effect—that of bringing enthusiasm to a climax, which means a purchase. That is true just as much, if not more so, of the State fair show as it is of the winter exposition. There were numerous instances this week of requests directed at the show committee for permission to withdraw exhibition cars so the purchasers might take them home with them. The sold cars were, of course, replaced from stocks.

No Dealer Dares Stay Out

To put the question of the value of the State fair motor show to a dealer conversely, it might be said that no dealer dares to stay out of it—excepting only those who deal in the highest priced cars, none of which ever is sold "over the counter," as it were. When 100,000 people, in round numbers, go out of their way to look over the latest models of the motor car industry, it seems worth while for every dealer handling them to be on the job. To miss out reduces not only prestige, but actually puts that car in a conspicuous place as being illy represented. It is "conspicuous by its absence." That is the condition wrought by the Milwaukee dealers' association in systematizing and organizing to the finest possible point the annual fall show.



The Hudson Super-Six which smashed the transcontinental record between San Francisco and New York. Ralph Mulford is at the wheels and with him in the car are: Chas. Vincent, W. Sturm and L. Kalinsky. Photo copyright Underwood & Underwood

Cross Continent Record Smashed by a Hudson

Super-Six, Driven by Mulford, Patterson and Vincent Lowers Mark 14 hr. 59 min.

Special to Motor World

NEW YORK, Sept. 19—A Hudson Super-six has lowered by 14 hr., 59 min. the transcontinental record between San Francisco and New York. The total distance covered was 3476 miles and the average speed was 27.14 m.p.h. The elapsed time was 5 days, 3 hr., 31 min.

The car left San Francisco, with A. H. Patterson of Stockton, Cal., at the wheel, at 12.01 a. m. on Wednesday last, and reached Columbus Circle, New York, the following Monday morning at 6.31. Patterson drove to Elks, Nev. Mulford took the wheel there and drove to Laramie, Wyo. Patterson again took the wheel and brought the car to South Bend, Ind. C. H. Vincent drove the last lap of 910 miles into New York. With these men in the car were W. Sturm and L. Kalinsky.

The trip was made on United States Royal Cord tires and came through without trouble.

Following is the check of Hudson Transcontinental car:

Left San Francisco, Sept. 13, 12:01 A. M., checked by L. J. Pinkson Automobile Editor San Francisco *Chronicle* and W. C. Kieffer, general agent Wells Fargo and Co.

Carson City, Sept. 13, 7:25 A. M., 253 miles, A. C. Cunningham, Blacksmith.

Ogden, Nevada, Sept. 14, 10:05 A. M., 842 miles, W. W. Fleetwood, clergyman and F. W. Wheeby, dentist.

Laramie, Wyo., Sept. 15, 5:39 A. M., 1395 miles, G. T. Glessner, dentist and E. W. Johnson, undertaker.

North Platt, Neb., Sept. 15, 2:45 P. M., 1560 miles, J. L. Souder and L. A. Spencer.

Omaha, Neb., Sept. 16, 2:05 A. M., 1844 miles, A. P. Ginon, lumber dealer.

Des Moines, Iowa, Sept. 16, 10:36 A. M., 2029 miles, Dr. D. Lecon, automobile editor *Register*, and H. E. Ward, newspaperman.

Joliet, Ill., Sept. 16, 8:25 P. M., 2331 miles, G. S. Jackson, manager Baskiel Motor Co.

South Bend, Ind., Sept. 16, 12 Midnight, 2491 miles, J. F. Cole, president National Co.

Buffalo, N. Y., Sept. 17, 2:30 P. M., 2971 miles, H. M. Wall, president New York State Motor Federation.

New York, Sept. 18, 6:31 A. M., James Hemstreet, American Auto Association.

HOW THE TRANSCONTINENTAL RECORD IS STEADILY BECOMING LOWER

Car	Driver	Time			Date	Miles
		Days	Hrs.	Min.		
Hudson	Patterson Mulford Vincent	5	3	31	Sept., 1916	3,476
Marmon	Stevens	5	18	30	July, 1916	3,476
Cadillac	Baker	7	11	52	May, 1916	3,380
Stutz	Baker	11	7	15	May, 1915	3,728

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Of course a panoram picture was taken and this half—

Motor Truck Dealers Play for a Day

They Have a Whole Steamer to Themselves, a Baseball Game, Athletic Events and a Shore Dinner all for $4.

NEW YORK, Sept. 13—Held for the purpose of getting its members better acquainted and as a means toward securing a greater cooperation in its work during the coming fall and winter, the fifth annual outing of the Motor Truck Club of America, Inc., took place to-day at Karatsonyi's Hotel, Glenwood Landing, L. I. The total attendance was seventy-five, of whom fifteen were ladies. Karatsonyi's Hotel, on the north shore of Long Island, just this side of Glen Cove, was reached on a chartered steamer which cost $125. It was a delightful 3-hr. sail up the Sound from the starting point at the foot of East Twenty-third Street to the landing pier at the hotel. During the sail a light lunch was served by a steward hired for the occasion.

After the party had disembarked from the boat at the landing, a baseball game was staged on the diamond on the hotel grounds between a team composed of those members of the club who own or operate trucks and another formed of trade members. The former won by the close score of 8 to 7.

Meanwhile, some of the ladies and the men who did not play baseball enjoyed a swim from the club float, several hiring bathing suits at the pier. Then there was a 50-yd. dash for the men, won by C. D. Studebaker, manager of the New York office of the Firestone Tire & Rubber Co., who walked off with a pair of cuff links as a prize. A baseball throwing contest for the ladies was won by Mrs. W. S. Mears, wife of the manager of the Sterling Motor Truck Co.'s New York branch, the prize being an umbrella.

After this a delightful $2 shore dinner was served at the hotel. A dancing contest was held after supper, in which Mrs. A. C. Bergmann, wife of the manager of the local Perfection Spring Co.'s service station, won the first prize, a lady's leather handbag. Second prize went to Mrs. H. B. Carpenter, dancing with C. M. Smith, the Commercial Car Journal, the prize being an order for a $2.50 pair of silk stockings.

After the dancing contest had been decided two other prizes were awarded by drawing the ticket stubs from a hat. These were a $4 fountain pen, which was won by Mrs. A. C. Bergmann, and an order for a $3 hat, won by C. D. Studebaker, of the Firestone company. A gentleman's ticket was $4 and a lady's $2.

The committee of arrangements for the outing was headed by W. S. Mears, Sterling Motor Truck Co.; the reception committee, C. G. Bond, Coulter & Bond, counsel for the club; sports, Joseph Husson, Motor World; dinner committee, C. M. Geiger, Peter Doelger Brewing Co., and A. G. Taylor, chairman of the ticket committee.

Among the dealer and trade members present were: F. Nelson Carle, General Vehicle Co.; T. A. Aspell, B. F. Goodrich Co.; D. C. Fenner, International Motor Co.; Nat Mallouf, Harrolds Motor Car Co.; C. D. Studebaker, Firestone company; F. Morrow, Vacuum Oil Co.; W. S. Mears, Sterling Motor Truck Co.; A. C. Bergmann, Perfection Spring Co., and J. G. Maxwell and D. Schubert (Reo).



The outing was not a stag, by any means, and there were games for the ladies, too



Furthermore, even the ladies tapped the refreshments between moments of strenuous activity



—joined to this half shows the whole party together

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Accounting and Business Systems



By T. W. Snead

Entering Inventories

System Editor:

Can you explain to me where to carry figures, like cash on hand, inventory of car stock, inventory of shop equipment, inventory of accessories and capital stock? In your supplement to Motor World, Form 2, the total of stock accounts is $837.50. How do you know that the gasoline stock is $750 and the accessories $87.50? It could have been $600 gasoline stock and $237.50 accessories stock.—READER, Shafer, Minn.

If you will turn to your System Pamphlet, describing the use of the accounting system, you will find on page 30 the illustration showing the making up of your Assets and Liabilities, and under the column headed "What We Started With" you will find listed such items as you have given us in your letter.

You will first determine the amount of cash you have on hand at the first of the month. Next, the amount of your car stock, the value of your shop equipment, such as machinery, and so forth, and the value of your parts and accessory stock. These items you would then list as Assets, placing the amounts on the charge side of Form No. 3, which is a customers' account sheet, and in place of the name of the customer, write the name of your Asset or Liability account, putting the name on the charge side and placing the leaves in the back of your system.

After you have ascertained the amount of all your Assets, such as we have itemized above, and in addition to this your total Accounts Receivable (due from customers) and any other amounts that your company can use in liquidating you paying your liabilities. These amounts, added up, would make your total Assets.

Next you would determine your total Liabilities, such as Accounts Payable, Notes Payable, Capital Stock Outstanding, and any other amount for which you are liable. This totaled up would give you your total Liabilities. If your total Assets exceed the Liabilities, then you would open an account for Profit. If the Liabilities exceed the Assets, you would open an account for Loss, and as you will see by referring to page 30, your statement will then balance.

These figures you will not need to touch until the end of the month, when you use the figures taken from Forms 1 and 2 in the system, which you will notice are headed "What Happened in January." These figures, or the difference between these figures, are added to or subtracted from what you started with, which will give you the result, as shown on page 30, "What We Have Left," or your statement for the following month.

In reference to your question, "How do you know that gasoline stock is?" etc. By referring to the illustration, the amounts $750 and $87.50 represent purchases of gasoline stock and accessories during the month in which we operated. The illustration shows one purchase of $100 for gasoline and $12.50 for accessories. On line Y you will notice that we have brought forward from the previous 30 days of the month an amount of $725 added to the two purchases made on the last day of the month. This totaled gives us a total to Gasoline of $750, a purchase of accessories of $87.50. In other words, our stock on these two items has increased by this amount.

Under the credit side you will notice that our gasoline stock has decreased $425.80 and the accessory stock decreased $295, which represents the amount that was sold during the month, figured on the cost. This increase and decrease of these two stocks is added to and subtracted from "What We Had at the Beginning of This Month," and the result would be what we started out with at the beginning of the next month, and if an actual account is made this should agree with the figures as shown by your books.

We are sending to you your statement, along with a revised statement made up as per the illustration in the System Pamphlet on page 32. In connection with this we wish to call your attention to your "Loss" and "Gain" columns, in which you have an income of $1,032.04 from automobiles, but as far as we can see, you have not charged yourself with the cost of this automobile that you sold. If you have not done so, then the net gain of $851.43 that you show is incorrect. The entry to correct this would be as follows:

Charge your Loss and Gain column on the Expense side with the amount that you paid for the automobile that you sold and credit your automobile inventory. We are going to asume that this machine cost you $750 and make up our figures accordingly.

We would be pleased to have you send us a statement of your business after you have taken the same from the Motor World Accounting System. We would like to have the privilege of publishing this, but if you so desire we will withhold your name, and if we can be of any further assistance to you, kindly advise.

Rises in Stock Value

System Editor:

I wish to cite to you a question and your answer in your March 14 issue in regard to the 10 per cent increase in the tire cost, and how to handle same in figuring profits.

I take it for granted that the party making this inquiry figures his profits monthly in the usual manner; if this is the case, then your solution of the problem is all right in theory, but it will never work out in practice.

When you suggest that he use up his old stock first and then start on the new, you overlook the fact that he must draw on his new stock before his old stock is all used up.

Tires, if sold according to list price, are best handled on a percentage basis.

The solution I would offer to this problem is to charge your inventory account with the 10 per cent raise—as that will then be the market value of the tires—and credit your tire profit account with a like amount.

This, I grant, will inflate your profit account for the month, but in reality it is money earned, just as much as though you had speculated on the board of trade and bought at a good price.

We carry from $14,000 to $20,000 in tires and this was the only practical solution we could make at the time of the raise.

This letter is not meant as an unfriendly criticism, but merely to offer my solution of the problem, and I will be glad to read your criticism on my solution.—SWANEY AUTOMOBILE CO., Carroll, Iowa.

We are glad to hear your criticism, but we must disagree with you.

Although it may make no difference in a year's time, you really have no right to charge the 10 per cent increase as you have described. You see, you really do not make this profit until the

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goods are actually sold, and if the price dropped again or the goods were stolen or burned or sold, or something else happened to them, this profit would be wiped out. In other words, in selling merchandise you cannot show your profit until the goods have been sold.

In figuring up the cost of accessories sold at the end of the month for your monthly statement, you charge the old price for the old tires and the new price for the new tires actually sold.

DAILY RECORD SHEET

Editor Motor World:

What I am in need of and want, and will devise something myself if you cannot supply, is a record sheet showing the result of each day's business—the income, expense and net profit. This I would close, or sub-total, each week end, and at the month's end it should agree with my profit and loss statement, a variance of a few dollars making no difference to me.—Midway Auto Co., by J. S. Harry.

Little Rock, Ark.

We have not the record that we believe you are after, nor do we know of any such printed form. In most cases, the form that we believe you wish is one that is made on the typewriter with five or six carbon copies and is simply to show the daily income from sales, the daily expense incurred on that day, and showing the net excess of sales over expense.

This is not necessarily your net profit, for in order to obtain your net profit you would have to deduct from your sales each day:

1. The cost of the goods sold during the day;
2. One day's rent;
3. One day's light;
4. One day's salary,

etc., etc., all of which would make your accounting system very cumbersome.

It seems to us that you could very easily have such a form made in your own office and the information that you desire could be placed upon these forms from your present accounting system. However, if we can help you in any way, send us the forms or a rough draft of the form and feel free to call upon us at all times.

ALL IN ONE BOOK

Editor Motor World:

Please furnish us your complete Motor World Simplified System of Accounting and advise us if there are special forms of books for this purpose, and if so, kindly quote us price.—Elwood Auto Co.

Elwood, Ind.

The complete Motor World System of Accounting consists of three forms, all under one cover in a loose-leaf binder. One form records all Incomes from Sales, by departments. The second form records all Expenses and Cash Paid Out, by departments, and the net difference between these two enable you to find your profit or loss for the entire business by departments. The third form is a Customers' Account Sheet—all of which sells for $12 complete.

We are sending you a 36-page pamphlet illustrating and describing every entry you can possibly make, with enlarged forms showing actual entries already made. This pamphlet is presented to users of the system, and to those not desiring the system it is presented upon the renewal of their subscription for 1 year, or it can be purchased at the cost of $1.

FOUR QUESTIONS

System Editor:

We are using your simplified accounting system and will appreciate your answering the following questions:

Should any percentage or amount be added to cost of merchandise sold by one department to another?

Where does loss or gain show up when a certain article is bought from different supply houses at different prices, but figured only at one price in the total cost of merchandise sold for month? This evidently would not give a true profit.

Is it necessary to keep track of the various cost prices of a certain article?

Please explain journal entries of credit memo received from a jobber on parts returned as defective and credit memo received from jobber on an overcharge.—WINNETKA MOTOR CO., Winnetka, Ill.

Merchandise sold from one department of the business to another should be charged to the expense of that department at cost. Where labor is performed by one department for another, this should also be charged at cost, and if the cost is not known accurately, it should be estimated as near as possible.

In answer to your second inquiry, profit or loss is shown at the end of the month on supplies sold that have come from different houses in this way: We assume that you use a system of sales tickets, and you should mark on these sales tickets the cost of the article sold, so that at the end of the day, or week, or month, the bookkeeper or whoever is handling the accounting can tell by adding up the cost price on these sales tickets the cost of the goods that have been sold in that period. The cost subtracted from the sale would give you your net profit. This is most essential, for in the first place your percentage of "mark-up" should be enough at all times to give you a reasonable profit over and above your operating expenses, and if you are not sure as to what your "mark-up" is, you may be operating at a loss.

If you lumped your merchandise bought from different supply houses and charged Cost of Merchandise Sold at one average figure, it surely would not give you your true profit.

This also answers your inquiry as to the necessity of keeping track of the various cost prices of a certain article. This can be easily done by use of an inventory cost card, which would give you the names of the concerns handling this article, their list price, their discounts, and their net cost to you. We are sending under separate cover a sample of this card for your inspection.

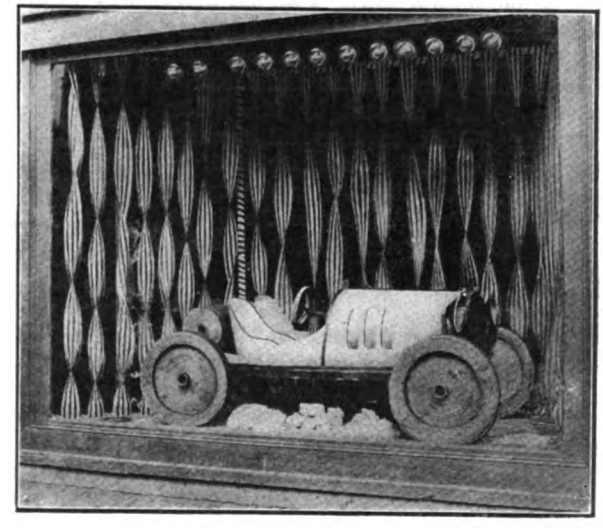
In answer to your last inquiry, when you return parts to a jobber as defective you would make an entry on your books charging Accounts Payable, blank jobber, with the amount of the parts, and you would credit your inventory parts stock. The sending of a credit memo by the jobber is simply an acknowledgement that the charge is correct. In remitting to the jobber for bills payable, this credit memo of course acts as a deduction from the total amount due. When a memo is received for an overcharge, a similar entry would be made, as the cost of these parts were originally charged to your stock account inventory of parts and accessories.

Made Motor Car out of Brake Lining

DURING the recent convention in Philadelphia of the Associated Advertising Clubs of the World the original display shown herewith was used in the window by J. H. McCullough & Son, supply dealer.

The car is made up almost entirely of the asbestos products of the Royal Equipment Co., Bridgeport, Conn. A striking feature is the radiator, which was made of a great many strips of brake lining so cut and put together as to resemble closely a real radiator.

The window was decorated with black and white crepe paper and in the foreground were a number of crude asbestos rocks, as they come from the mines, accompanied by a quantity of asbestos fiber separated and cleaned and ready for spinning into asbestos yarn.



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Found Cash Plan Best

Some time ago a company about to open a garage in a southern city asked Motor World its opinion as to operating on a cash basis. Motor World expressed its approval of the plan and gave the company the names of several cash garages, among them the Euclid Square Garage in Cleveland. The proprietor of the new company went to Cleveland, saw the Euclid Square, and has adopted a cash system. Following his investigations, he has written the following letter to Motor World:

Editor Motor World:

We have definitely decided to adopt the same cash basis of operation as the Euclid Square Garage, Cleveland, which we went to see at your suggestion. Our decision was made after seeing the many advantages derived in Cleveland, and after a most thorough canvass among Washington's most representative business men regarding their opinion on such a plan adopted in this community. We have been invariably advised to do so.

The general opinion of bankers, merchants and professional men in this community is that we may have difficulty in building up our business in volume, but that we will succeed in securing a much more satisfactory class of business, and one that will prove more profitable to us in the end.

Will Eliminate Overhead

Our main idea in adopting this course is not a criticism of the credit of our patrons, but for *the elimination of overhead charges, thereby cheapening the cost of service to the patron and making an increased profit for the company.*

I have read with much interest your comments on the opinion of Mr. Haradon, president of the State Dealers Organization of New York. I do not think Mr. Haradon's reasons for conducting his business on a credit basis are such reasons that cannot be met satisfactorily by the system adopted by Mr. Wills. He (Mr. Wills) requires all monthly charges to be paid in advance, and, incidentally, I note that the same thing is done by Mr. Fred A. Bean of the Grosse Pointe Motor Service Station, Detroit, Mich.

However, Mr. Wills sells a book of coupons for the valuation of $10, this coupon book being in denominations of 20 cents, 10 cents and 5 cents. By the purchase of one of these coupon books the customer has established a credit with the concern for the purchase of any supplies or service he might require to the amount of the value of the book. These coupon books are generally left with the garage and seem to be much favored by owners of commercial cars or pleasure cars with chauffeurs on them. They also, to a certain extent, are used by owners who drive their own cars, as they can receive service at any time without the inconvenience of making cash payments at each time they purchase. As supplies are purchased, the corresponding value of coupons is torn from the book, and notation is made on the cover of the number of order slip, signed by the party receiving supplies, and the amount of the purchase. When all the coupons are used, the empty cover with this information on it is mailed to the owner.

By calling on the driver to produce the slip corresponding in date and amount with the entries on the coupon cover, the owner has an exact record of the cost of operating his car, and the bookkeeping has been done by the garage company in making the notations on the cover. It apparently has been found that this produces a satisfactory record for the owner.

Careful Records Kept

As the garage keeps a carbon of each order slip and each night posts its rereceipts to various departments, such as accessories, gasoline and oil, wash racks, repairs, etc., they are able to keep an accurate record of the income and cost of their various departments. The thing that appealed most to me about the Euclid Square Garage was that while they handle on the average 550 cars a day, their entire office force consists of a president, secretary and treasurer and one stenographer.

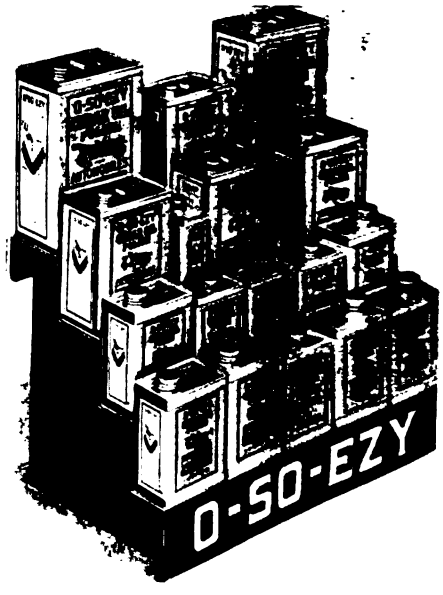
Mr. Willis also advised me that they never have any money owing them. That they started with a cash capital of $10,000 about 4 years ago; the first year they lost money, but since that time they had made money, paid dividends, accumulated a satisfactory surplus, and at this time have decided to declare a stock dividend of 150 per cent of their original capital.

Bear in mind that this business consisted entirely of storage and supplies. They do not maintain a shop, and their repair force consists entirely of one mechanic, who makes minor repairs and adjustments only. I am frank to say that I think this the best recommendation of the business policies pursued by the Euclid Square Garage.

I have been reading with much interest the articles in two recent publications of Motor World on the Grosse Pointe Motor Service Station, Detroit, Mich. Mr. Bean has certainly applied to his garage business high-class business tactics in the attitude he takes towards his customers. I am sorry I did not go to Detroit while in Cleveland to call on Mr. Bean. I have an idea that his garage must be conducted on a entirely different basis than is generally met with. I am taking the liberty of writing direct to Mr. Bean, asking him to send me copies of the booklets he published, and also asking him to allow me to adopt some of his ideas.

Our garage, in the character of its construction, is totally different and superior to anything else in this section of the country, and we deem it most important to adopt the most up-to-date tactics in conducting our operations, and I am, therefore, very glad to receive suggestions which are of as much merit as those I have been able to get through my visit to Cleveland and perusal of the articles mentioned in Motor World.—D. E. H., Washington, D. C.

DISPLAY HELPS FOR THE DEALER



To serve as a constant reminder for the motorist, the O-SO-EZY PRODUCTS COMPANY of Detroit is sending free to dealers who order its standard stock of O-SO-EZY Cedar Oil Polish, a handsome mahogany finished display stand of the Silent Salesman type.

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The Story of a Man*



ot even the loss of both his legs discouraged Palmer. He has become a successful Cadillac dealer

A TALL young man, electrician by trade and ambitious by nature, stepped from a train in Chicago e January day in 1907. "S. A. Palmer" is the name on his suitcase; and "Optnism" was the name on his face. He is healthy, enthusiastic, and showed it. e hailed from Maquoketa, an Iowa town 3500 or so. He had come to Chicago attend an electrical show—to better mself in his business.

A little confused by the unfamiliar rroundings, he started off across the acks. He suddenly had the terrible nsation that a locomotive was bearing wn upon him. He jumped. This saved m from sudden death, but the cow tcher grazed him, throwing him across me parallel tracks.

Stunned by the physical blow and the ental shock, unable to arise, unable to ove, unable to cry for help, he exrienced a sensation even more terrible an the last one. In a daze he saw nother locomotive coming from the opsite direction, speeding down the track ross which he lay in a powerless conition. He made a vain effort to move. e felt the hot breath of the engine, ien its crushing wheels, then nothing.

At the hospital a spectacled physician nparted to him the superfluous inforation that the second locomotive had ken off both legs above the knees.

He was confined in the hospital for 7 onths.

Hospital nurses see so much suffering, much of every phase of human nature, at their emotions become less sensive than yours and mine. But one day in July, 1907, when a group of them stood in the drug-scented corridor and saw young Palmer leave the protective shelter of the hospital and go out into the world where he was handicapped to compete with his fellow men on anywhere near an equal basis, but with an optimistic smile and a world of grit in his lower jaw, at least half a dozen of them felt their hearts in their throats and went back to their duties with revised notions of heroism.

First he got a position to work nights in a theater box office. In the daytime he attended a business college. He gradually felt his way and got his bearings. Qualified as a bookkeeper, he went back to Maquoketa and obtained a position with a firm doing an automobile business. While taking care of the company's books he was always on the lookout for something bigger. It dawned on him one day that there was a field in Maquoketa for a good vulcanizing establishment. Renting a small room from the garage people, he started vulcanizing.

He prospered.

At the end of a year he combined his savings and the money which the railroad company had given him in settlement and bought out the garage people with whom he had served as bookkeeper.

He has been handling Cadillacs for 2 years and is a subdealer for the Wolfer Cadillac Co., distributer at Davenport. When he took the account, Jackson County, of which Maquoketa is the county seat, had but five Cadillacs, all models combined. Now there are sixteen eight-cylinder Cadillacs in the county.

The population of Jackson County, Iowa, according to the last census, is 21,258.

There are hundreds of counties of greater wealth, greater buying power and better roads in which there are not half a dozen eight-cylinder Cadillacs—and in which the Cadillac dealer has no handicaps except those which he has imposed upon himself. Such handicaps, unlike Palmer's, are removable.

Palmer is still working hard. He always has worked hard, and he always will. His initials are S. A. They stand Spunk and Ambition. It is the greatest object lesson Cadillac men have ever had.



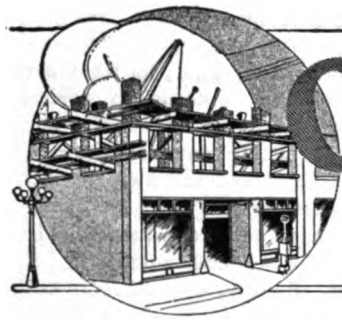
Special contrivances had to be made so Palmer can drive his car

When the car door is closed there is nothing to indicate that Palmer is not as fully endowed as are other men



*Reprinted from Cadillac Clearing House.

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Scientific Construction

GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

TWO-STORY GARAGE, 100 x 100

Fig. 1

Editor Motor World:

We are now planning that we may change the location originally decided upon and build upon a corner 100 x 100 and two stories, with electric elevator, so we are inclosing a sketch of about what we want. We will put the repair-shop upstairs.

We have left a 5-ft. hallway leading from the general office into the garage, so that the office will be accessible.

We have decided that we want only one door into the garage from the street. This will enable one man to take care of the floor and also the storage space will not be broken up.

Please give us a general criticism of our plan and also advise how to finish the showroom.—Hubbell Auto Sales Co., Inc., Bay City, Mich., A. E. Hubbell.

We have drawn plans for your building, and perhaps we can best explain why we have selected the particular layout we have by criticising your plan, although we would like to say that it is one of the best plans we have had submitted to us.

We do not approve of your salesmen's room being in the corner of your showroom. It is better to have the desks out in the open, and practically all dealers follow this scheme. Having the desks right out in the showroom makes it easier for a salesman to approach a prospective customer, and in case he has any printed matter or data in his desk which he wishes to show this customer it is essential to have the desk as easy of access as possible.

There is a further objection to this room, and that is, that it interferes with the arrangement of the cars. One of the first principles in designing a large showroom such as this is to arrange it so that great variety can be had in the placing of the machines at the desks, tables, etc. For this reason a perfectly bare, square room is the best. It permits of greater variety in layout. The salesmen's desks can be put close to the side walls or at the rear, and the position of the cars may be changed at will. For the same reason it was found desirable to remove the ladies' rest room.

In your plan no provision is made for lighting the general office except by artificial light, and there is very little opportunity for ventilation. It is desirable to have both general and private offices with some street frontage, as shown in our plan, Fig. 1, which is on this page.

In your plan, in order to go from the showroom to the accessory store it is necessary to go through the general office, which is undesirable for two reasons, first, because it disturbs the clerks, and second, because the passing of patrons through this room, even if you would allow it, is objectionable, and there is the difficulty, also, that the more timid ones would hesitate to go through.

One of the most important things in store keeping is to make it as easy as possible for the buyer to buy. In your plan the buyer, if he is in the showroom, must open the showroom door, walk out on the street, and then open the accessory store door. This is only a little trouble, it is true, but when a man drops in your showroom only for a minute and is revolving in his mind whether he should buy a new tube to-day or not, for example, it might be just a little circumstance such as this that will prevent him from making the purchase, and when he is ready to make it some other store may be more convenient.

It is never desirable to place the entrance at the side of the garage space, as you have done, as this location gives a winding entrance to the garage proper, which results in waste of space. You will see the difference by inspecting your plan.

The most efficient layout for storing cars on the garage floor is to place two rows of medium-size cars on each side and a row of large cars on the center. It is not necessary to follow this plan exactly, but for the sake of as wide an aisle as possible we believe you will find it worth while, and it would mean little or no extra work in placing the cars.

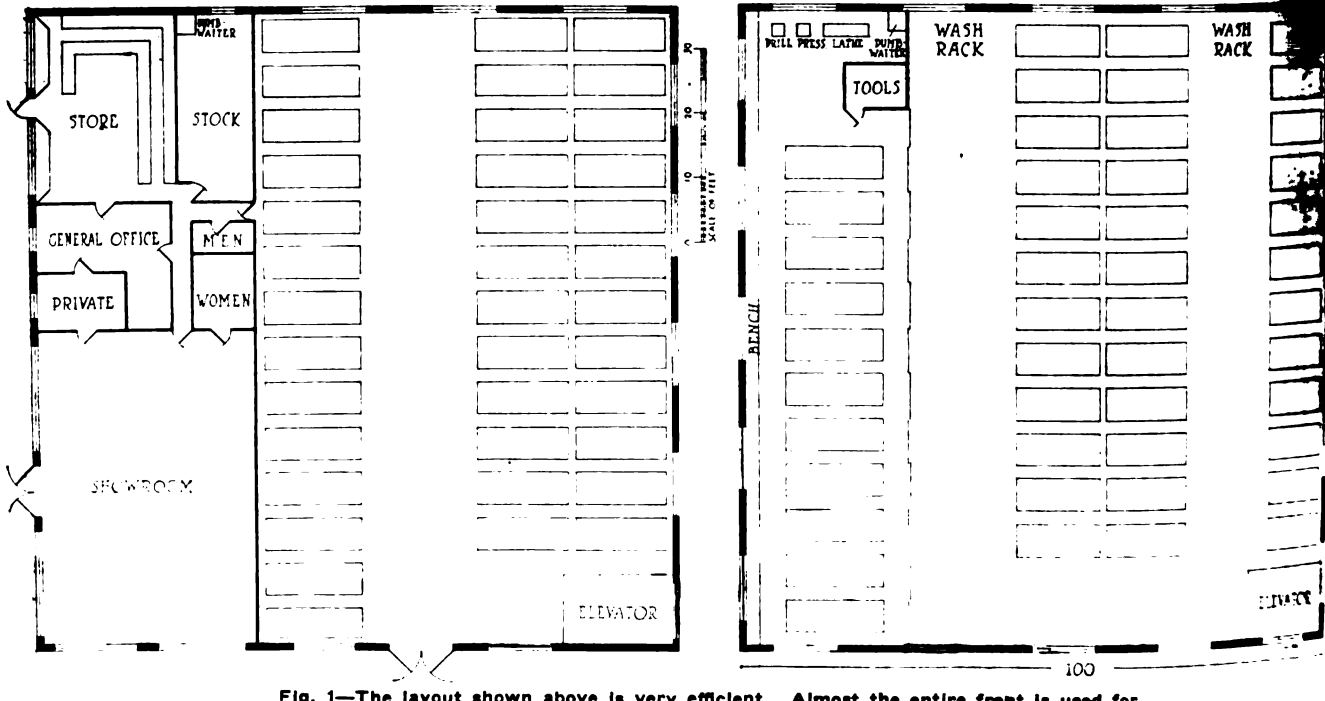


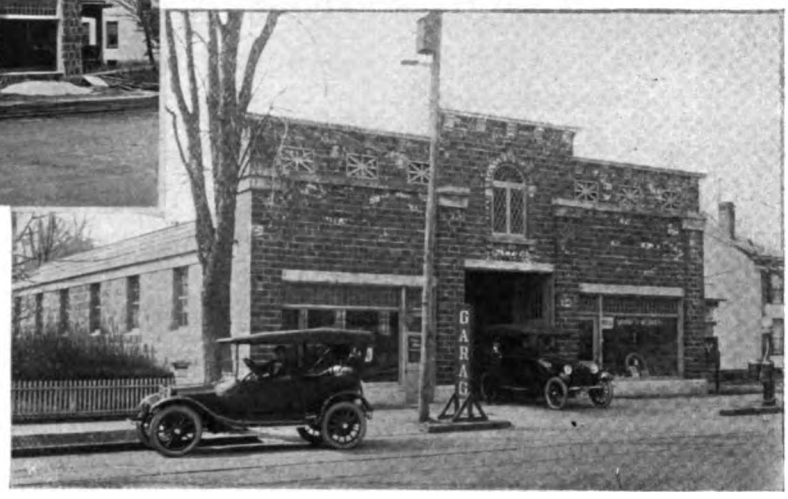
Fig. 1—The layout shown above is very efficient. Almost the entire front is used for display of cars and accessories and the accessory store may be readily reached from the showroom

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The Fireproof Garage

Several Examples of Hollow Tile Construction





Upper—Doris I. Weeden's Garage, Asbury Park, N. J. This view shows the appearance of the building prior to the application of the stucco. The general dimensions are 60 x 118 ft. with walls 16 ft. high and built of Natco 8 in. XXX tile. The floor is concrete and the roof is supported on steel trusses placed 16 ft. on centers. The cost—Land, $6,000; building, $12,000; stock, $5,000; equipment, $6,000.





Upper — The Standard Garage, Patchogue, L. I. This building measures 50 x 100 ft. and is made of Natco smooth tile that requires no stucco finish. All floors are concrete except that of the office, which is of wood and built over the cellar. Roof is supported on wooden trusses resting directly on the tile wall. Cost, about $4,250

Left — The Newman Garage, Edgewater, N. J., is an excellent example of what may be done with the hollow tile construction. The building is 70 x 120 ft. with walls of 8 in. Natco XXX tile. The steel roof trusses with a span of 70 ft. are supported at intervals of 15 ft. on 18 in. hollow tile piers. The top of each pier has several courses of brick to distribute load over entire column. The exterior is finished in a combination of stucco with face brick trim and mosaic inlays. An abundance of light is furnished to the garage by large skylights. The repairshop is in the rear and lighted by windows that cover practically the entire end of the building. The cost, about $11,000

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ANGLES OF THE LAW



By George F. Kaiser

CAN WE CANCEL?

Editor Motor World:

We have a case at this time with the —— Advertising Agency. Their order says it cannot be cancelled. At the time, it was agreed upon to use same for 1 month at rate of $6.50, and if not satisfactory we could return it. We asked agent to write this in the order, but he said, "Better yet, here are three men," and he explained to them, saying the $6.50 payment would cover expenses. The price was to be $39. Now they are trying to collect $32.50 from us, and we returned the cuts to them in good condition. What can we do?—Taylor & Beckett Garage, Golden, Ill.

If your contract contains a stipulation that it cannot be cancelled, the chances are that you will be unable to cancel it. As you have not forwarded a copy of the contract, I do not know whether or not there are are any other clauses in it which will operate to your injury, as, for instance, a clause providing that no oral agreements, stipulations, etc., will be recognized.

If that stipulation is contained in the contract, the fact that the agent made a warranty to you in the presence of witnesses will not greatly benefit you, as the contention which the company will set up that the agent was without authority to make representations or warranties will be upheld by the courts. As to the question, what can you do, you have your choice:

You can pay the claim; you can consult a local attorney, if they sue you, to defend your case, or you can forward me a copy of the contract, which I will be glad to look over for you. If you do the latter, I will, of course, write you again.

——

MUST SEE CONTRACT

Editor Motor World:

We wish to inquire, through your legal department, if a deposit made by a dealer with a motor car company can be collected legally where the company refuses to return the deposit at the expiration of the contract?—Myers Carriage Co., Franklin, Pa.

There are occasions when a deposit made by a dealer with a motor car company can be collected where the company refuses to return it. There are also occasions where the return of the deposit cannot be compelled through legal action. In order to advise more definitely on a question of this kind, it is necessary to examine the particular contract and know the facts and circumstances in each case. If you care to forward the contract or a copy of it to me, I will be glad to give you my opinion.

——

INJURED PASSENGERS

Editor Motor World:

I would like advice upon the following points of law. I presume they have been touched upon in some of your previous issues, but I do not happen to have them at hand, although I have been for years a subscriber to your magazine:

1. In case an automobile salesman, employed to drive cars for the purpose of selling same for a dealer, takes a car from dealer's store, to which he has key, after midnight, not for the purpose of demonstration, and while with two men friends indulges in a brush with another car, turning dealer's car over and injuring the man who sat next to him to the extent of many bruises and a broken arm:

(a) Can the injured passenger, who was a guest, not paying for his ride, recover damages?

(b) If so, from whom—dealer or salesman?

2. In case the salesman on joining a sales force agrees to purchase his demonstrator, payment to be deferred until end of season, or until car is disposed of, but has not fully paid cash for same, and should such an accident occur, what would be the status of the dealer in the case?—P. G. Spining, Chickasha, Okla.

If an automobile salesman takes his employer's car from the garage for the purpose of his own pleasure, and not for purposes of demonstration, a person injured while riding as a passenger would have no cause of action against the dealer. In the event of the salesman being guilty of negligence, however, the passenger would have a cause of action against him personally, if a passenger had taken due precautions for his own safety before the accident occurred. By due precautions I mean an attempt on the part of the passenger to leave the car or an attempt to have the salesman drive in a more careful manner.

If the salesman had agreed to purchase the demonstrator on a deferred payment plan, the liability of the salesman and his employer respectively would not be any different, providing always the car was being used for the sole use and pleasure of the salesman at the time the accident occurred.

80 PER CENT INSURANCE CLAUSES

Editor Motor World:

I figure that my business is worth about $10,000. I have an insurance on it for the amount of $6,000. I am told that if a fire occurs I won't be able to recover the full amount of my insurance unless the fire damages me $6,000 or more. Is that so, and why, as I am insured for $6,000? If I have a loss of $2,500, can I recover $2,500 from the insurance company?—A. H. D. Binghamton, N. Y.

The amount of your recovery depends entirely on what clause you find in your policy. If these is no co-insurance clause in your policy, you can recover the amount of any loss sustained by you up to the limit of the policy. If there is what is called an 80 per cent clause or 100 per cent clause, you will not be able to recover that much. The co-insurance clause reads something like the following:

"This company shall not be liable for a greater proportion of any loss or damage to the property described herein than the sum hereby insured bears to eighty (80) per centum to the actual cash value of said property at the time such loss shall happen."

They are used by the companies so that at least 80 per cent, or 100 per cent in some cases, of insurance will be carried on the property. Under the 80 per cent clause, if the property is valued at $10,000 and is insured for $6,000, and a fire occurs which causes the loss of $6,000, only $4,500 can be recovered by the owner from the insurance company. Under the 100 per cent clause, only $3,600 falls on the insurers.

Under the 80 per cent clause, if the loss is over $6,000, that amount can be recovered. When the loss is less than the amount of insurance, only a proportionate part can be recovered. As for example, $\frac{\text{6000 = (the insurance)}}{\text{8000 = (80\% of value)}} = \frac{\$}{\$}$ or 4500, of the loss falls on the insurers, and $\frac{\text{2000 = (the deficit)}}{\text{8000 = (80\% of value)}} = \frac{\$}{\$}$ or 1500, falls on the insured.

When the 100 per cent clause is found in the policy, 6/10, or 3600, must be paid by the insurance company, and 4 10, or 2400, must be borne by the owner of the property.

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Motor Car Type Engine Ultimate For Tractor

Great, Massive Motors Less Suitable Than Lighter, Higher Efficiency Engines—Must Have Four Cylinders

THE motor car type of engine will be the ultimate type for agricultural tractors. Automobile experience indicates that the massive, heavy type of engine which a few years ago was found in such representative makes of cars as Olds, Reo, Cadillac and some others was not the most reliable or satisfactory type. It was the superior qualities of the vertical multiple cylinder engine which caused the abandonment of the large cylinder motor cars. And even in the stationary engine field there is a strong tendency toward more cylinders of a smaller size, according to A. Ludlow Clayden in The Automobile.

The most modern engines of the leading German Diesel makers have had many vertical cylinders, because they gave less trouble; in England the high-speed gas engine has been developed in recent years and has taken much from automobile practice. The automobile engine, the engine of the motor truck, the tractor or the aeroplane, is working under far more strenuous conditions than any stationary engine.

Low Efficiency Eliminates Big Engines

It was this fact that has led to the elimination of the old type for use on vehicles; it simply was not up to the demands of the service. Thus it is perfectly reasonable to assume that the old type will be still less able to cope with the heavy demands of tractor service than it was with the demands of the passenger car and truck to which it proved unequal.

No doubt this view will be strongly combated in many places, but it is a view that is shared by many in the tractor business, where the impression is strong that those who are fighting against the so-called automobile type of tractor engine are digging a pit for themselves and will soon find it necessary to climb out and start afresh.

To settle the proper size of engine for a tractor is very difficult. It is a matter of experience, and experience is not too plentiful. There is only one way to figure it successfully and that is to start at the drawbar, taking the pull required and the speed of pulling as the fundamentals. Then comes the efficiency of the machine and last the engine power necessary to give the required pull via the transmission. Having settled this there come the matters of piston speed and the best mean effective pressure, to be considered.

Now, there is no close agreement as to the proper draw-bar pull or horsepower. It may be reckoned conveniently on the basis of plows to pull. For one plow the average pull required is not a safe basis for calculation unless that average is taken from a vast number of experiments. It varies greatly with the soil and the condition of the soil and the depth of plowing. Now, there is not yet agreement as to the tractive effort that should be provided per plow, nor as to the best speed for plowing. A pull of 1000 lb. is apparently enough to take a plow through anything, and half or less than half this is sufficient under easy conditions. As to speed, 2 to 2½ m.p.h. is the rule, but the machines that exceed this speed certainly appear to have a more pulverizing action upon the soil. However, if we assume 2½ m.p.h. as the best speed, and take a mean value of 700 lb. as the tractive effort that should be available per plow at this speed, the results of calculations on these premises will not be far from the truth. Reducing the speed and traction to horsepower units, this means that the drawbar horsepower per plow allowed in the design should not be less than 4.7 or, say, 5 hp.

Now comes the efficiency of the transmission and the machine as a vehicle; gearing efficiency and power taken to propel the machine. Naturally this can vary greatly, but several of the most prominent manufacturers are content to take the drawbar horsepower as equaling half the brake horsepower at the flywheel. Some estimate less than half and others a trifle more. Taking the exact 50 per cent as the loss between flywheel and drawbar this gives us as a necessary allowance 10 b.h.p. of engine per plow.

Altogether it is hardly surprising that tractor engineers have found it impossible to agree completely as to exactly where the happy mean lines.

Engines Must Have Four Cylinders

There is one thing that can be stated positively, however. It is based on motor vehicle experience admittedly, but that does not weaken the argument, and this is that engines with less than four cylinders ought not to be considered. Even if the stationary gas engine type of power plant is chosen it ought to have four cylinders as the low limit. This is because the vibration from any lesser number is destructive. With a stationary engine, on a massive bed set deep in concrete, vibration can be combated, and in driving by belt vibration in the engine is not transmitted to the machine driven, but on a vehicle engine vibration must pass through every portion of the machine before it can finally be absorbed by

Continued on Page 40.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 863) BENCH DRILL

A portable electric drill may readily be made into a bench drill in the manner illustrated. All parts entering into the construction were obtained from a plumbing shop and were put together with but little machine work. The frame is 1¼-in. pipe, the feed wheel an old gate valve, and the table a rough cast bridge washer. A United States electric drill was used, though almost any portable drill might be so mounted. Its use as a portable drill is not affected, as disconnection from the frame may be made in about 35 sec.—W. J. Burns, Pendleton, Ore.

(No. 864) GASKET CUTTER

A gasket cutter containing many valuable features is shown. It consists of a thin metal plate carrying four upright rods supporting the bearing plate of the cutter spindle. The knives of the cutter are tool steel, ground to a razor edge, and are readily adjustable. The depth of the cut taken on each revolution of the cutter is regulated by the depth screw, facilitating the cutting of soft material, such as felt.—Chas. Coon (Drenco Machine Co.), New York

(No. 865) QUICK-ACTING JACK

Cars may be quickly lifted and placed on an auxiliary jack by means of the device illustrated. It consists of a long wooden lever pivoted on a wooden frame. The height of the lever may be adjusted to suit the requirements of the various cars. The pivot pin bearings are protected by metal plates fastened to the uprights and to the lever. To use, the point of the lever is caught beneath the wheel hub, the car lifted and the auxiliary jack placed beneath the axle. The auxiliary jacks used are similar to the quick-acting jack, except that they have no lever. Several sets of these auxiliary jacks should be made to be used in conjunction with the quick-acting jack.—Chas. Coon (Drenco Machine Co.), New York.

(No. 866) VALVE LIFTER

Valves designed to be ground by means of a spanner wrench may be lifted from their seats by means of a valve lifter made from a spring steel rod. A piece of 3/16-in. round rod, about 14 in. long, is heated and bent in the form illustrated, after which the coil is spring tempered. The points are filed down until they are a snug fit in the holes in the valve top. Valves may be ground and readily lifted out for inspection by means of this device.—A. Somenberg (Capitol Auto Co.), Lansing, Mich.

(No. 867) WASH RACK PIPING

An inexpensive hose system having an automatic shut-off and permitting two men to work on the car at a time may be readily made. A T-connection is placed on the end of the water main above the center of the wash rack, and horizontal arms extending to a point above each side of the rack are fastened into it. An elbow and close nipple at the end of these arms permits the attachment of the valves. These valves are of the common gate valve type, having a special long handle counterbalanced with a lead ball and operated by a cord running to a point near the washer's hand. The initial cost is low and the saving effected by the automatic shut-off is well worth while.—Van's Garage, Asbury Park, N. J.

(No. 868) WASH RACK LAMP

This lamp provides perfect illumination for car washing and yet may be swung up out of the way when not in use. A board 12 ft. long, 6 in. wide and about ¾ in. thick is hinged, with the edge vertical at a point about 3 ft. above the floor. This board serves to carry the wiring and the lamps with their reflectors. Extra large reflectors and at least 50-watt tungsten lamps should be used. Both sides of the wash rack should be provided with lamps, and if two wash racks are adjacent the board between the two may be used to carry two sets of lamps.

Sell Advertised Goods

See Pages 6 and 7

(No. 869) RIVETING HAMMER

A hammer having a cross pene instead of the common straight pene is advantageous in many riveting jobs. Any blacksmith can readily make the hammer and it should be made somewhat heavier than the usual riveting hammer, as these are ordinarily made too light for the most efficient work.—A. Somenberg (Capitol Auto Co.), Lansing, Mich.

(No. 870) ROLLING STOCKROOM LADDER

Where the stockroom shelves are high and long, access to the goods is facilitated by the use of a rolling ladder. A common ladder may be made over into one of this type by the addition of grooved rollers running on a track at the top and plain rollers at the bottom. The track is made from strap iron screwed onto the top rail of the shelf. The grooved wheels may be made up on a lathe, and are held in an iron frame that may readily be made by any blacksmith. The ladder may be readily pushed to the desired position and is sufficiently strong to permit change of position while standing on the rounds.

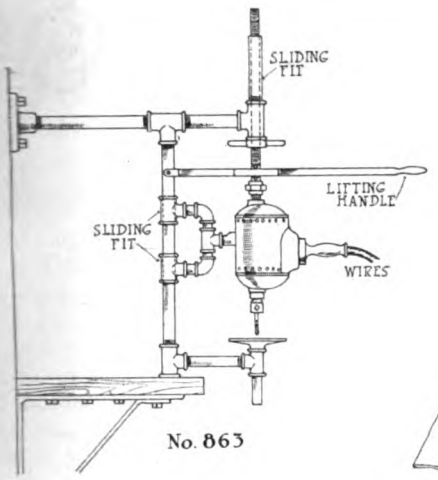
(No. 871) VALVE GRINDER

The proper oscilatory movement may be imparted to the valve by means of the valve grinding tool illustrated. It consists of a cast-iron frame carrying an upright shaft. This shaft has a small spur gear mounted on it and resting in a recess in the frame. Motion is imparted to the gear and grinding spindle by means of a hand-operated rack. The advantage of the device is that the work is equally divided between the two hands of the grinder, and the valve may be quickly ground with a small amount of exertion.—Chas. Coon (Drenco Machine Co.), New York.

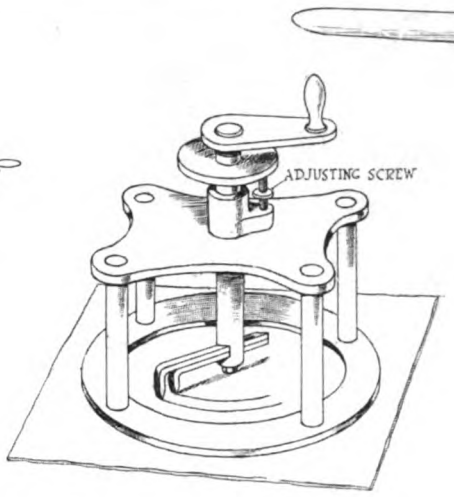
(No. 872) SPRING WINDER

Springs of various sizes may be wound on the spring winding outfit illustrated. A cast-iron frame supports two uprights that act as bearings for the spring winding spindle. These spindles are tool steel rod, having a diameter somewhat smaller than the inside diameter of the spring to be wound. One end is bent to form a crank and handle, the other being notched to receive the spring wire. As many spindles are made as the shop practise indicates to be necessary.—Chas. Coon (Drenco Machine Co.), New York.

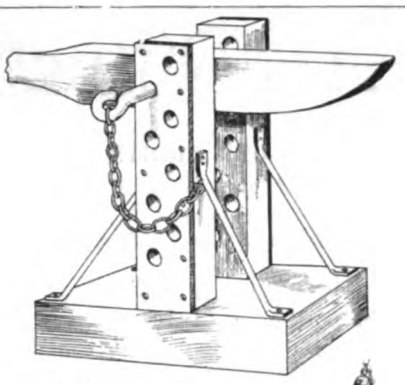
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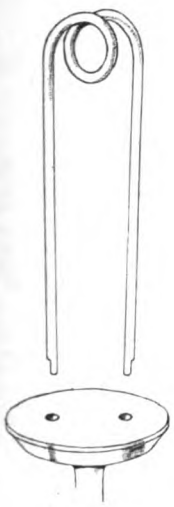
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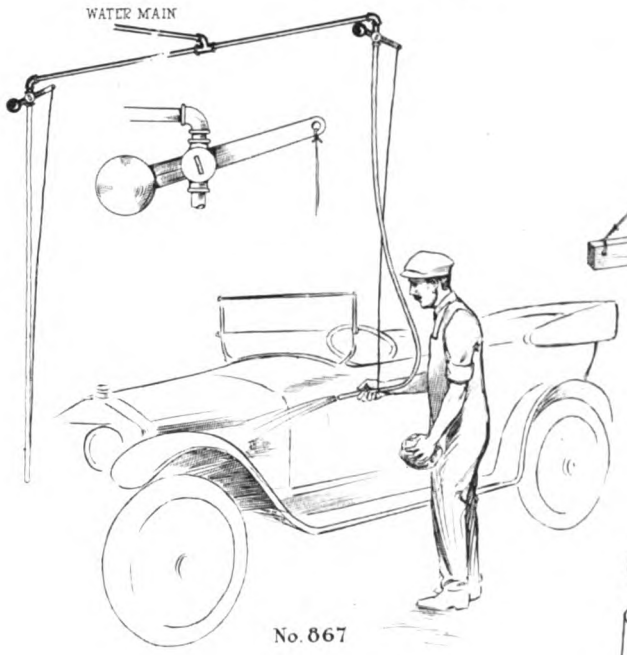
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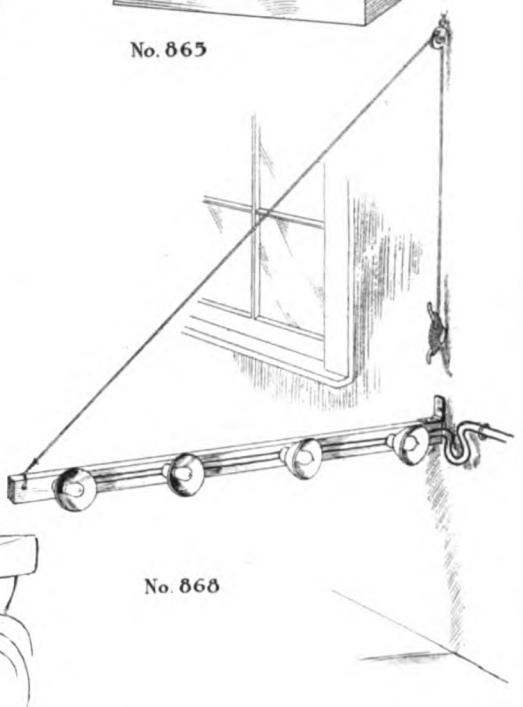
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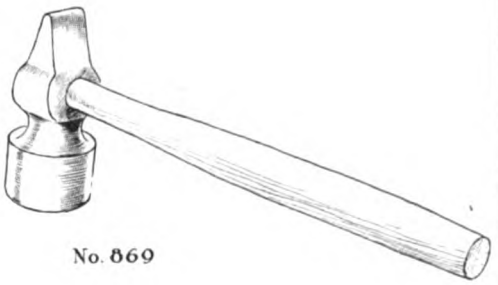
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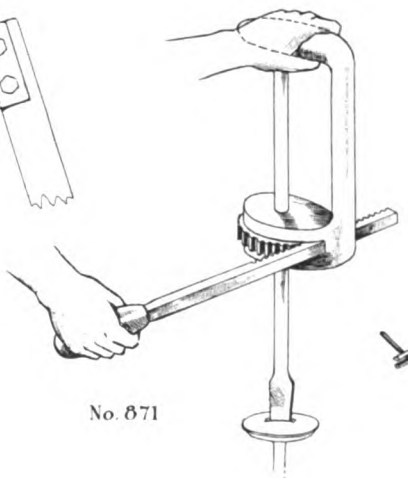
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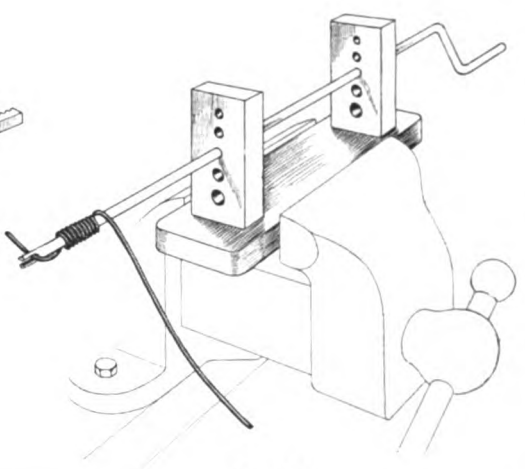
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Accessories & Supplies



GLARE-OFF LIGHTS

The Glare-Off Co., 1777 Broadway, New York. PRICE, $1 per pair; $6 per dozen pair; in gross lots, $4.80 per dozen pair.

An ornamental metal shield covering the upper portion of the headlight lens and causing the light rays to be concentrated on the road. The ascending rays are reflected by the polished surface of the shield, thrown back onto the reflector of the lamp and thence onto the road in a manner that does not blind the oncoming driver. The face of the shield carries either a club monogram or any ornamental design suitable to the purchaser.

WEAVER TOWING POLE

Weaver Mfg. Co., Springfield, Ill. PRICE, $10.

An adjustable-length pole that may be fastened to the front or rear axle of any car, enabling it to be towed with safety. The pole is of steel tubing, adjustable from 5 ft. 6 in. to 8 ft. by means of a key-pin. At each end are metal sockets carrying a 30-in. leather strap that permits attachment either to the axle, spring or frame. The towed car may be pushed backward, cannot jam into the forward car on hills, and all shocks are absorbed by the double-acting spring mounted in the pole.

FRANKLIN CONVERTOR FOR FORD

Franklin 2-Way Convertor Co., Herald Building, Chicago. PRICE, Model A2, $345; Model A3, with motor governor and jackshaft brake, $400. Dealers, 20 per cent; distributers, 20-5 per cent.

Converts the Ford into a 1-ton truck without damage to the chassis, permitting it to be converted back again into a pleasure car. The axle becomes a jackshaft and is bolted to the new channel frame by means of a special casting. A special bell-sprocket that telescopes over the brake drum carries the chain that drives the truck wheels, and permits the use of standard gage. The change requires only the removal of the rear wheels, rear spring and radius rods and the bolting on of the convertor. It is claimed that no skilled labor or special tools are required to make the change.

E AND S TOWING TRUCK

Ellis-Smith Mfg. Co., Buffalo. PRICE, $27.50.

A wrecking truck that may be clamped beneath the axle, supporting the car and permitting it to be towed in. Two 14-in. wheels with an 18-in. tread are mounted on a malleable iron frame that has an adjustable upright clamp that may be bolted to the axle. Two towing poles are included, one 10 ft., for a rear axle break, and one 5 ft., for front axles. All bearings have grease cups and the total weight is 160 lb.

ATLAS ARBOR PRESS

Atlas Press Co., Kalamazoo, Mich. PRICE, No. 24, $80; without legs, for bench, $70.

An arbor press designed for repair-shop work. Operating under a leverage of 160 to 1, one man is said to be able to exert a force of 20 tons. The frames are of special analysis iron, the pinions and rams from heat-treated alloy steel, and all other parts from materials chosen to meet the hardest service. Work measuring 20 in. in diameter and 18 in. deep can be handled, and the press will remove arbors measuring up to 5 in. The weight with base is 650 lb.

GARDNER THERMOSTAT CARBURETER FOR FORDS

Gardner Carbureter Agency, 680 Woodward Avenue, Detroit. PRICE, $10.

The gasoline supply is automatically controlled by means of a metallic thermostat. This thermostat is an integral part of the carbureter and requires no adjustment. It consists of a metal plug at the carbureter termination of the supply line and contains two openings, admitting the fuel to the mixing chamber. One of these openings is controlled by the thermostatic flap-valve actuated by the changing temperature. In starting when the motor is cold, the valve is open, giving a rich mixture. As the motor warms up, the valve closes, giving an economical running mixture.

TRUMP JACK

The Trump Products Co., Garland Bldg., Chicago. PRICE, per set of four, $5.

The car may be readily lifted from the floor by means of these jacks. By means of a compound lever caught beneath the hub the wheel is lifted free from the floor and locked in the raised position. The height of the jacks may be adjusted, and it is said that each jack will support 5000 lbs.

LOX-IT PATCH

Superior Fabric Patch Co., Midlothian, Tex. PRICE, 6 x 18 in., $1.50; 4 x 16 in., $1; 3 x 17 in., 75 cents; 2½ x 12 in., 50 cents.

A strong canvas and rubber combination patch applied to puncture or blow-out cold, allowing ½ to ¾ in. around the hole. It is said the ordinary repair may be made in 5 min. and that the tube may be used immediately.

TRACFORD

Standard Detroit Tractor Co., 1506 Fort Street, W., Detroit. PRICE, $125.

Any Ford may be converted into a tractor in 2 hr. time. The device consists of a rectangular subframe which bolts onto the rear of the Ford frame and which carries two heavy steel wheels which are driven by roller-tooth gears on the axle ends which mesh with internal gears on the wheels.

The ratio is 9 to 1, which gives a total reduction of 32.6 to 1. The machine is designed to operate on high gear exclusively; and since the reduction is 9 to 1, the speed of the motor at 2 miles an hour is equivalent to that of a Ford car running 18 miles an hour. The drawbar pull is normally about 1200 lb., and if low gear is used in an emergency the pull may be anywhere up to 2000 lb. The cooling efficiency is increased by adding a pump.

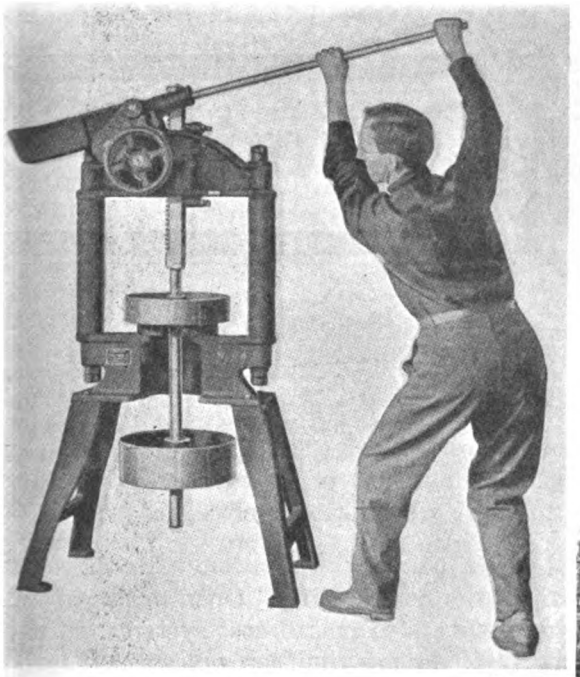
In attaching the Tracford it is necessary to drill only two holes—one in each side member of the frame. The machine is designed for all sorts of farm work, including drawing spring-tooth harrows, rollers, mowing machines, binders, corn harvesters, potato diggers and plows. In fact, it is designed to do all the work that any tractor will do.

WHITE'S OIL DISTRIBUTOR FOR FORDS

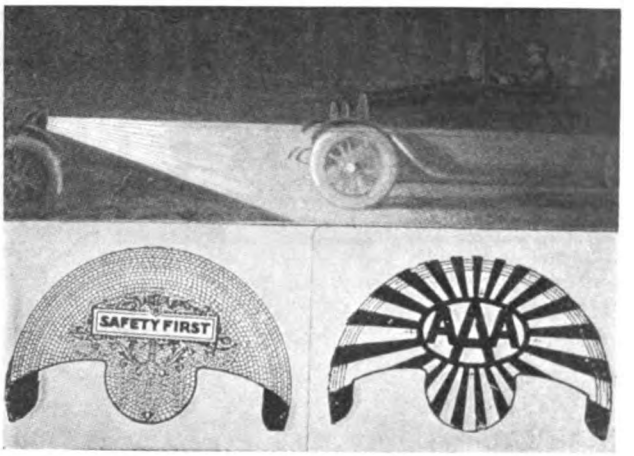
Evapco Mfg. Co., Detroit. PRICE, $3.

Catches the excess oil as it drips downward into the crankcase of the Ford and distributes it to the rear crank pockets and reservoir, keeping it at the same level in each pocket. It consists of a series of steel troughs combined to form a single unit and placed inside the crankcase on the right side. It is said that accumulation of oil under the cranks is prevented and the motor properly lubricated whether ascending or descending a grade. To install, the crankcase hand hole cover is removed, the distributor slipped in place and the cover replaced.

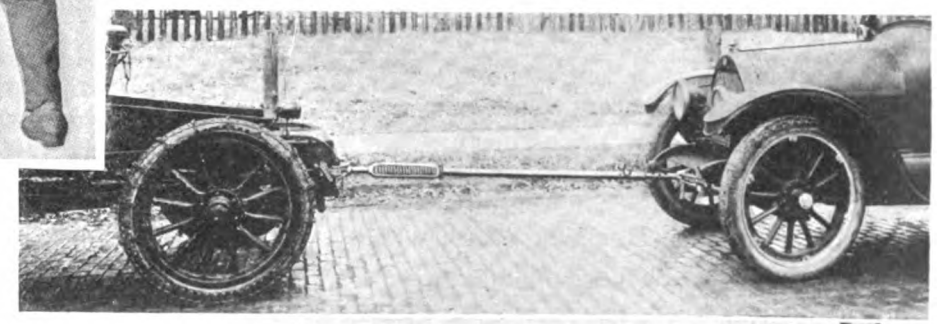
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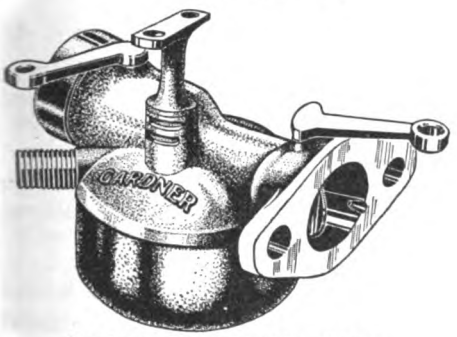


Atlas Arbor Press

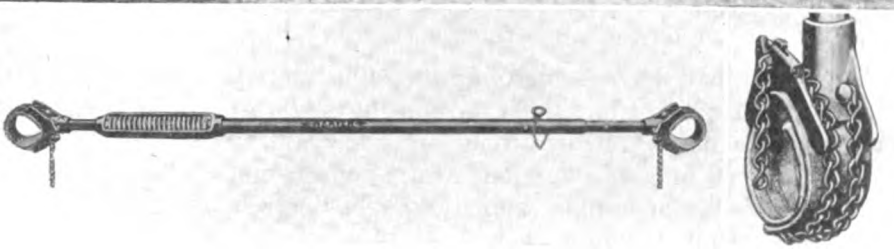


Glare-Off Lights

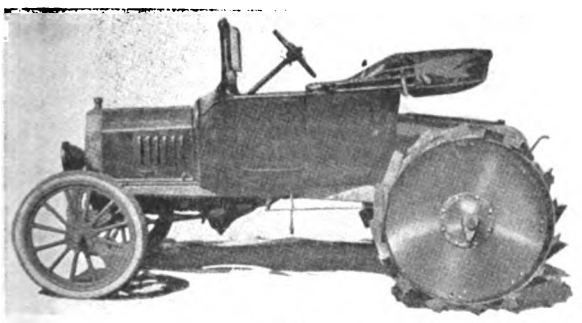




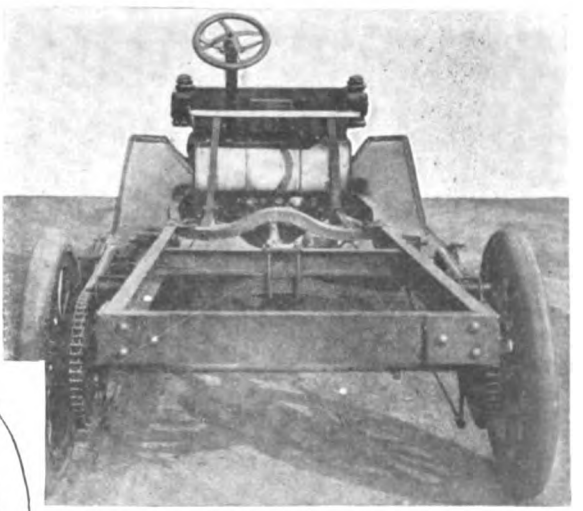
Gardner Thermostatic Carbureter for Fords



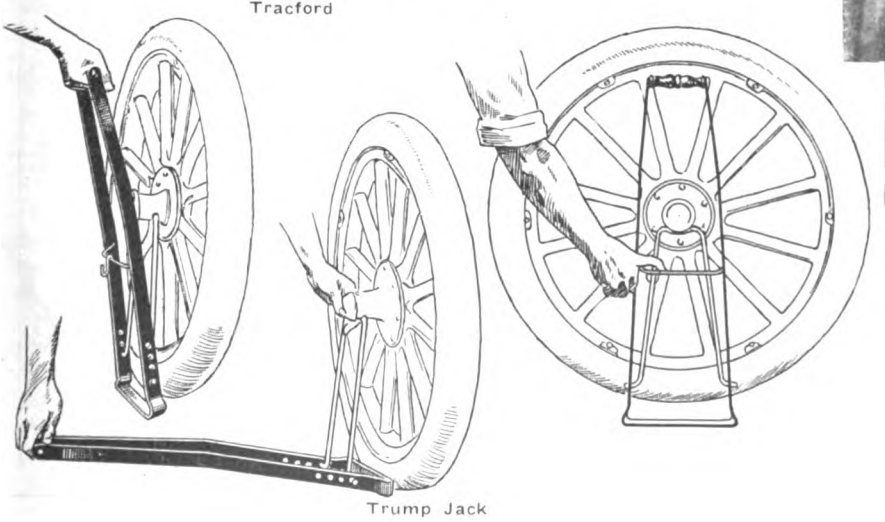
Weaver Towing Pole



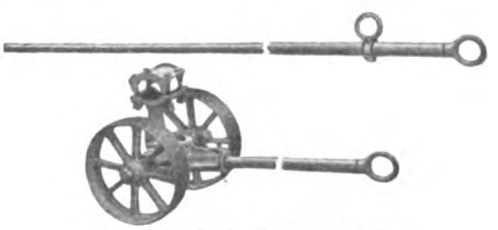
Tracford



Franklin Convertor for Fords



Trump Jack



E & S Towing Truck

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The Open Price

THERE has been much complaint about price-cutting—and Uncle Sam absolutely won't stand for price-fixing. So what are you going to do about it?

What seems to be a rather unique way of preventing price-cutting of the ruinous sort, without at the same time fixing prices in any way whatsoever, is contained in the "open-price plan," which was discussed at the Babson Conference on Co-operative Competition last week, in Wellesley Hills, Mass.

The idea is this: Give publicity to prices. Let your competitor know the prices you make and let your competitor do the same for you.

Then you will have something to guide you in making your prices, but there is not the slightest obligation to maintain any price. If you want to sell below cost, or give the goods away, you are not hampered by the open-price plan. Your business is your own. Run it your own way.

But it does seem that if one man knows he is selling so low there is hardly any profit in it while all his competitors are not selling so low, he would be inclined to cease working at such a low price.

Linked up in practical operation with the open-price plan is the cost system. Open-price associations urge members to install cost systems, so they may know just how low they can sell without losing money.

The open price is a radical idea, but it is not so radical as it was ten years ago, for since it was promulgated some twenty associations have been formed and are operating successfully on that plan.

Those who have adopted the plan are quite enthusiastic about it, and are as "open" about telling about it as they are "open" about prices.

If any association in the trade wants to know more about the plan, MOTOR WORLD will be pleased to refer them to those who are in position to explain fully.

Half-Hearted Dealers

TOO many dealers are half-hearted. They are in the business in a lackadaisical, happy-go-lucky, hit-or-miss sort of a fashion. They say to themselves:

"Well, I'm making a living out of it; I've got a car to ride around in, and I'm having a good time."

And that is about as far as their thoughts ever go.

They are living in the present, with no thought for the future.

The men whose pictures are appearing in the department in MOTOR WORLD, "Dealers Who Have Made Good"—see page 11 this week—are whole-hearted dealers. They are not in the business to have a good time, nor for their health, nor to ride around in a car.

They are in the business to SELL cars. Their every thought is to sell cars. All their energy is put forth to INCREASE business. They have no time for lackadaisical methods. They don't wait for a man to come in and ask for something.

They go out after that man and SELL him.

These men are successful because:

THEY ARE WHOLE-HEARTED DEALERS.

AMONG the essentials of efficiency in any business, correct and adequate knowledge of that business is the first. That is the foundation, and the corner-stone of a knowledge of business is a knowledge of costs.

—Edward N. Hurley,
Chairman Federal Trade Commission

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DEMANDS ADVERTISED GOODS

Editor Motor World:

The dealer owes it to himself to sell advertised goods, first of all, as an indication of character. If I drive into a garage and ask for —— oil and the dealer says he hasn't got ——, but just oil, why, I immediately look upon him with suspicion and wonder what kind of a business he is running. In my mind he is immediately a backward business man. *I feel that he is not alive to the situation and does not realize the amount of business he is losing by selling this unknown brand of oil.* The same argument applies to all sorts of commodities. If I want a —— spark plug I don't want him to tell me he hasn't got it but can give me a Wxyz or some other phony brand that no one ever heard of.

Aside from the question of whether it hurts his reputation or not to sell brands that are little known, he should sell advertised goods because it is easier. If I am in the market for graphite I want ——; or if it is spark plugs, I want ——, —— or some other plug that has established a reputation of quality via advertising; or if it is tires, I want one of the makes that I have read most about; and the same argument applies all through the business.

Simplifies Selling Problems

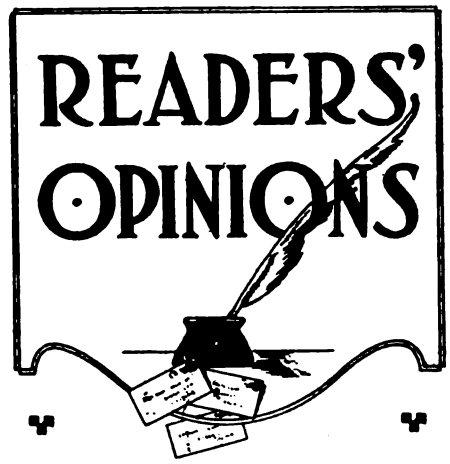
The idea is still more important when we get away from the things that are not bought every day. If I am buying demountable rims for my Ford I want ——, and not some unknown make; and the dealer who has the standard brand has the customers just about half sold the minute he says ——. In other words, he only has to sell the customer on the proposition as to whether he wants demountable rims or not, and not also on whether this particular make of demountable rims is worth purchasing.

The customer has been educated to feel that advertised goods are almost invariably sold at standard prices, and, consequently, he feels safe in going into an unknown garage and purchasing a standard article. He knows that there is little likelihood of his being overcharged, but if it is some unknown brand he never is sure whether he is being imposed upon or not.

Manufacturers Will Co-operate

The manufacturers of advertised goods co-operate with the dealers by furnishing various kinds of display stands and cabinets which may be used to advantage. This is a great aid in getting business. Many of them get up attractive window displays, which is another reason why the dealer should handle these goods.

Because of advertising these manufacturers are invariably large, better off financially and better organized than their competitors. Their size means that



they have better facilities for distribution, and it is possible for a dealer to obtain a new stock much quicker than if he were dealing with some small concern.—H. F. B., Detroit.

They Like Taber's Ideas

THE method by which Russel P. Taber, Reo dealer in Hartford, Conn., handles follow-up letters was told in Motor World of June 28 under the heading "Reserve Soldiers of Salesmanship," and following the appearance of the story Taber received numerous requests for further details and samples of his follow-ups.

These letters came from various points, including Panama City, Panama. They indicate the interest of the trade at large in keen, modern sales methods. Three of the letters follow:

Mr. Russel B. Taber,
Hartford, Conn.

The outline of your reserve salesmanship letters recently published in Motor World was very interesting to us and we believe that your method of distributing and handling these letters is the best that we have ever seen.

We are very curious to know just what the question, answer and story of Taber's service consists of.

We would appreciate it very much if you would mail this story to us. Thanking you in advance, we are.—The Forest City Garage & Sales Co., Cleveland.

Mr. R. P. Taber,
Hartford, Conn.

I have just finished reading an account of your sales methods in Motor World.

Ever since joining forces with the Curtis Automobile Co. I have been trying to induce Mr. March to let me use a follow-up system on the order of yours.

The peculiar thing about it, though, is, that I was remarking to him just a few days before the article appeared, about the complete and thorough system you had incorporated in your business; this piece of publicity topped it off fine, and now he is all for me putting it through. Consequently I am writing you for any assistance you can give me without too much trouble on your part.—C. O. Couniff, Milwaukee.

Russell P. Taber,
Hartford, Conn.

We have read your experience with follow-up letters and folders, as described in Motor World of June 28.

It proved interesting reading.

If you could favor us with a few samples of your letters and folders we would be very much pleased.

Assuring you in advance of our appreciation of your courtesy, we remain. —Smallwood Brothers, Panama City, Panama.

Asheville Association Elects

ASHEVILLE, N. C., Sept. 15—At the annual meeting of the Asheville Automobile Trade Association the following officers were elected for 1916 and 1917: President, E. C. Sawyer; vice-president, A. H. McCormick; secretary-treasurer, J. P. Hill. It was definitely decided to hold the second annual automobile show the first week in November of this year.

Help Straighten the Curve

Below are comments from a prominent jobber on the Winter Business Number that Motor World will issue October 11

Editor Motor World:

It is with a great deal of interest that we note your remarks entitled "Help Straighten the Curve."

By such publicity as you are giving through your magazine the jobber, dealer and garageman will become imbued with the necessity of doing something in order to keep up his winter business.

Ordinarily the garageman considers it a matter of fact that business will fall off in the winter and that very few take steps to make this decrease of a lesser importance than in previous years. By your publicity you are giving ideas to the dealer and garageman as to how he can improve his winter business and we heartily sanction the work you are doing.—THE MOTOR CAR SUPPLY CO., Calgary, Alberta, Canada.

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The RETAIL NEWS

SOUTHWEST

John Crane, Clay Center, Kan., has sold his interest in the Watson-Crane garage to Walter Watson.

T. W. Wilson, Eskridge, Kan., is to build a new garage.

James L. White, Chanute, Kan., is erecting a two-story building to be used for a garage.

The White Way Garage, Waterville, Kan., is successor to the Merchants Auto Co.

Ed Hoover, Phillipsburg, Kan., will open a new garage.

E. L. Elsey, Kinsley, Kan., has bought the Kinsley Storage Battery Co.

The Smeltzer Batteries Co., Kansas City, Mo., is now located at 1711 Grand Avenue, with L. P. Smeltzer as manager. The new company takes over the B-R city business of the Gould storage battery.

H. B. Peatling, Talmage, Kan., will open a new garage.

G. G. McNee, Clay Center, Kan., has opened a repairshop.

A. D. Walker, Valley Falls, Kan., is going to erect a new garage.

H. A. Frier, Russell, Kan., is erecting a new stone garage, which will be used as a storeroom for Buick supplies and repair work.

Geo. Woodbury, Clay Center, Kan., will open a garage and repairshop.

Riggs & Dixon, Winston, Mo., have opened a new garage.

George C. Dahnke, Manhattan, Kan., will open a new garage.

Dell McCormick and Earl Morgan, Walker, Mo., have bought the garage formerly owned by Edward Gault.

The Walker Auto Co., Phillipsburg, Kan., has let the contract for the erection of a cement garage.

Wm. Koelzer, Seneca, Kan., has purchased the garage business of the Buser Auto Co.

Alphonse and Francis Gagnon, Zurich, Kan., have opened a garage.

The Clay Center Vulcanizing Co., Clay Center, Kan., is open for business.

P. L. Goins and Roy Collins, Okfuskee, Okla., have opened a new garage.

The Motor Instruction & Engineering Co., St. Louis, a new corporation, has taken the agency for Hollier Eight. A building will be erected at 4835 Easton Avenue and will be used also for an automobile school. The officers are: J. E. Phillips, a locomotive engineer, president; C. E. Brooks, vice-president and manager; Arthur Rudolph, secretary; J. T. Daniels, treasurer. The company also will handle Maxfer truckmaker and for the present will have offices at 4768 Hammett Place.

The Maxwell Motor Co. branch office, at Vandeventer Avenue and Olive Street, St. Louis, has been discontinued. District Manager L. A. Poundstone will make his headquarters with the Brinkman Motor Car Co., Maxwell distributer.

The E. R. Pirtle Co., El Paso, has begun the erection of a new building which, it is said, will be the finest in that city devoted exclusively to the automobile business. It is located at the corner of Montana and Florence Streets and will be ready for occupancy about Oct. 1. The shops and service rooms will have a floor space of 50 x 100.

The Toltelk Co., El Paso, has established an accessory and parts department in the basement of the Toltelk Building, which it occupies.

The El Paso Auto Sales Co. is refitting its garage and salesroom at El Paso.

The Buick Automobile Co. of Texas, headquarters at Dallas, Tex., is erecting a two-story building at Young and Browder Streets, at a cost of $26,000.

The White Motor Co., Dallas, has closed a contract for a two-story $18,000 brick building at Ervay and Lear Streets.

The Ray Rose Automobile, Dallas, has opened new quarters at 1715-17 Commerce Street.

A. H. Elmore has been appointed to the head of the sales department of the International Auto Co., El Paso.

The Wagner Electric Mfg. Co., St. Louis, has opened a branch and service station at 1430 Vine Street, Philadelphia, under the direction of N. A. McCoy of the Philadelphia office.

SOUTH

Richmond, Va.—During the summer there has been considerable improvement in the headquarters of the various automobile concerns in this city. The Harper-Overland Co. has just moved into a commodious and modern new home on West Broad Street; the Chevrolet Motor Co., the Maxwell Motor Co., the Alsop Motor Co., and R. A. Blenner, Chandler distributer, all are housed in new buildings. The Standard Motor Co. will soon occupy its new home on East Grace Street, adjoining the Murphy Hotel, wherein special provisions have been made for the care of tourists. Charles S. Clark, formerly with the Harper-Overland Co., has accepted the position of city sales manager for the Kaehler Motor Co., Saxon distributer. Jerome Fancuilli will have charge of the distribution and sales throughout Virginia and will soon tour the State in a Saxon Six to locate agencies and service stations. The Universal Motor Co., Ford dealer in Richmond, announces the adoption of plans for a modern structure on West Broad Street.

PACIFIC COAST

Matthews Motor Car Co., Seattle, distributer of Jeffery cars, has let the contract for the construction of a new garage building.

Williams Motor Car Co., Seattle, has been incorporated by C. R. Williams to handle the Liberty in the Northwest.

Overland Automobile Co., Portland, has leased the store at Savier and East Twenty-eighth, which will be utilized for a garage.

Gatsky Bros., Lents, Ore., are erecting a two-story garage.

Melvin T. Clark has purchased the interest of Geo. W. Banning in the Westside Auto Supply Co., of North Yakima, Wash., and will be associated with Edward E. Shenberg. The firm name has been changed to Valley Auto Supply Co. and a new garage building has been erected, which includes a well laid out salesroom and repairshop. The Stromberg line and Mohawk tires are distributed.

W. Ralph Ragsdale has taken the management of the Wapato Garage, Wapato, Wash., and will handle the Ford car and tractor.

R. S. McCarroll has purchased a half interest in the Independent Garage, Pendleton Ore., and is associated with Carl Himmelgarn.

Cast & Lucas, Granger, Wash., have taken possession of a new brick garage building. The Buick and Oakland will be their 1917 line.

E. A. Whittier, Baker, Ore., is erecting a concrete garage at the corner of First Avenue and Center Street. It will be known as the Ford Garage.

H. L. Ross, mining engineer, Baker, Ore., has purchased a half interest in the Fernald & Crandall garage. The firm name has been changed to Ross & Crandall. The Reo is handled.

J. R. Childreth, Pendleton, Ore., has secured the agency for the Chalmers and Chevrolet and erected a modern garage at 701 East Alta Street, which will be conducted as the Alta Garage.

M. C. Haines, Cle Elum, Wash., has become sole owner of the Reliable Auto Co and has renewed the contract for the Buick and Ford.

Harry G. Brown and Walter Hesse have incorporated under the name of H & B Repair & Accessory Co. and built a three-story garage in North Yakima, Wash.

G. I. Ladow, Pendleton, Ore., has disposed of his sporting goods line and will operate an accessory and automobile supply store exclusively. He has installed a complete vulcanizing plant and will job United States tires. Fred Ward is manager.

MIDDLE WEST

Paul Gee, Grand Rapids, Mich., has secured the agency for the Chalmers. He has taken a lease on the garage and salesrooms formerly occupied by L. Phelps, Michigan Street and Lafayette Avenue.

The Kenyon-Clark Sales Co., Grand Rapids, Mich., Jeffery and White distributer, has discontinued its service department, which has been turned over to the Oswald Motor Car Co., which has added several more men to its staff and will devote most of its time to the interest of White and Jeffery owner wants.

The Howard-Buchbinder Co., Detroit, has been organized by B. T. Howard, formerly sales manager of the Flanders Mfg. Co., Pontiac, Mich., and Herbert Buchbinder. The new company will handle the Pilot and has opened a showroom at 855 Woodward Avenue.

Charles A. Reynolds, Alpena, Mich., has sold his garage to Charles Jackson, Fred Habermehl and Robert Shenks. The distribution of Studebakers for Alpena, Alcona, Presque Isle, Montmorency, Iosco and Oscodo counties has been secured by the new owners.

A. E. Fuller and E. A. Chisholm, Ithaca, Mich., have secured the agency for the Elgin for Gratiot and Isabella counties.

The Hastings-Buick Garage, Hastings, Mich., has been purchased by Gard Bennett from Aben Johnson. From now on only Buick cars will be handled.

The Merritt Garage, Big Rapids, Mich., has been sold by M. Merritt to Moore & Rondahl.

The Anger Engineering Co., 301-303 Sixteenth Street, Milwaukee, a new Ford dealer, has increased its capital stock to $30,000. B. F. Anger is general manager.

Sell Advertised Goods

Read Pages 6 and 7

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E. H. Allen & Sons, Shell Lake, Wis., im-ement dealers, have sold their business, ock and building to F. R. Brand and will ect a new fireproof garage, salesroom and pairshop.

The Pardeeville (Wis.) Garage is being en-rged; the repairshop will be doubled in ze.

A. H. Bluemke & Sons, Rosendale, Wis., Sept. 1 took possession of their new ga-ge building, 50 x 64, of fireproof construc-on.

The Agner Automobile Co., Burlington, Vis., Cadillac and Studebaker dealer, has aken the district agency for the Maxwell. he company is building a new garage cost-g $12,000.

Lando L. Albert, 187 Oneida Street, Mil-aukee, a new Ford dealer, is preparing lans for a large garage, salesroom and serv-e station at Prospect and North Avenues, block away from the Milwaukee assem-ling plant of the Ford Motor Co. The uilding will pe 50 x 125, with a wing 30 x 87. Vork began Sept. 11.

Charles Byse, Redgranite, Wis., has broken round for a new garage and salesroom, 36 x 10, on Pine River Street.

Peoria, Ill.—Milo Mackemer and C. E. Kel-ey were awarded the Peoria territory for he Ford. Mackemer was a partner of H. . Pinkerton for several years. They held he agency for the Ford at that time. The ew concern will occupy quarters at 711 and 15 Main Street. The building is now being emodeled.

The Michigan Oldsmobile Co., Detroit, vhich was recently organized by Richard H. nd Wilbus H. Collins and Frank J. Muller-hoen, has been incorporated, the capital tock being $25,000.

The Ford Sales Co., Flint, Mich., has in-reased its capital stock from $12,000 to 24,000.

The Walker-Saxe Motor Co., Detroit, is a ew concern which is to deal in automobiles. ts capital stock is $18,000 and the incor-orators are John S. Walker, Genard F. and Grace C. Saxe.

The Quincy Garage & Supply Co., Han-ock, Mich., has contracted for a new one-tory garage, 110 x 60, on Hancock Avenue.

The Belding Vulcanizing Co., Belding, Mich., has been organized by Claude Cowles nd Knott Cobb.

The Phelps Auto Sales Co., Grand Rapids, Mich., has removed to its new quarters at Michigan Street and Bond Avenue. The King and Apperson are handled.

George A. Newhall, Grand Rapids, Mich., distributer for the Denby truck, has moved his headquarters to 512 South Division Avenue.

The Bronson Auto Co., Bronson, Mich., is a new concern managed by A. D. Smith. Ford cars will be sold.

L. Raymond Stoney, Pontiac, Mich., dis-tributer for the Chevrolet, has opened his new garage, styled the Opera House Garage.

David S. Childs, Flint, Mich., has pur-chased C. H. Bliss's interest in the Childs-Bliss Auto Co., which handles the Oakland and Milburn.

The Boomhower Auto Supply Co., Flint, Mich., has started in business at 615 North Saginaw Street. The members of the con-cern are Louis B. Boomhower and Lee W. Forncrook.

Adolph Berka, Saginaw, Mich., has opened a tire repairshop at 317 Lapeer Avenue.

The Saginaw Auto Sales Co., Saginaw, Mich., has been reorganized and is now Gibbs & Holden. F. E. Holden was for-merly manager of the Saginaw company. J. H. Gibbs comes from Edmore, Mich. The new firm will handle the Chevrolet and the Jeffery in Saginaw and Gratiot counties. Headquarters have been opened at 702 Genesee Avenue.

Thomas Goodreau, Ishpeming, Mich., has contracted for a new garage, to be located on Main Street.

A. M. Spaugenburg and J. H. Appelgate, Charlotte, Mich., have leased the Eagle Building and opened a garage Sept. 1.

The Union Sales Co., Grand Rapids, Mich., has recently been organized by G. A. Smalidge to sell accessories. Headquarters have been opened at 9 Oakes Street, S. W.

G. R. Austin, Grand Rapids, Mich., will enter the general garage business, having leased for that purpose the building for-merly occupied by the Barkwell-Buick Co. on Division Street.

The Reo-Oakland Sales Co., Jackson, Mich., is the name of the new company formed by Harvey G. McCrum and R. Z. Allen to handle the Reo and Oakland.

The Cadillac Co., Grand Rapids, Mich., moved into its new salesrooms, 210 Ionia Avenue, recently. The building has 17,000 sq. ft. of floor space.

Charles Smith, Petoskey, Mich., manager of the Overland Garage, has bought the property at Howard and Bay Streets, where a much larger garage will be erected.

C. B. Gannon, Brighton, Mich., Ford agent, will enlarge his garage and install an acces-sories department.

Mel Swackhamer, Port Austin, Mich., has opened a garage on Lake Street.

Edwin Wheeler, Coldwater, Mich., has contracted for a two-story garage. He is the Ford dealer.

Charles Hoppins, Manistique, Mich., has sold his garage business to Nels Johnson.

The Star Auto Co., Holland, Mich., has been incorporated with a capital stock of $25,000 and will conduct a general garage business.

C. W. Sharp, Imlay City, Mich., has bought the interest M. E. Jones had in the local repairshop and the business is now being conducted as Sharp's Auto Repair & Tire Shop.

The Utica Garage & Service Co., Utica, Mich., has been bought by Kraft Bros.

Henry Girzi, Ishpeming, Mich., has started in the automobile business and expects to take on a line of medium-priced cars.

The Fisk Rubber Co. has opened a new branch office and service station in Gales-burg, Ill., leasing a new building corner of Simmons and South Kellogg Streets. The Galesburg branch is one of a series being established throughout Illinois. The build-ing has a frontage of 60 ft. and a depth of 80. A vulcanizing department and repair-shop will be inaugurated.

Jay Conklin, Canton, Ill., has let the con-tract for a fireproof garage on the corner of Locust Street and First Avenue, 62 x 104, two stories. There will be a sales agency in front and repair and storage rooms in the rear. Supplies will be carried.

The Litchfield, Ill., Tire Vulcanizing Co. has opened for business on the north side of the public square. G. L. Dougherty of Jerseyville and Clark Hills of Franklin, Ill., compose the new concern. The former has been until recently one of the partners in the Jerseyville Tire Shop, recently retiring.

Frank Massing, Danville, Ill., has pur-chased the tire shop of Raymond D. Smith, 22 East North Street, that city, and has engaged the former owner as manager. The business will be enlarged and quarters ex-panded.

White Bros., Havana, Ill., have taken a long-term lease upon a lot on Main Street, between Broadway and Plum, and awarded the contract this week for a fireproof garage of two stories, 60 x 132. The building oc-cupied by the firm for the past year has been found too small and a larger and more modern structure becomes imperative. The new building will be ready for occupancy Dec. 1.

The Williamson Motor Co., Rockford, Ill., which has been conducting the Ford dis-tribution at Freeport, Ill., for the past year, has closed the garage and service station on Galena Street and will devote its entire attention to the Rockford trade. A number of Freeport garagemen are figuring upon opening a Ford agency in Freeport.

Laux Bros. and Frank Walden, Racine, Wis., have purchased the Ware Building at Waupaca, Wis., and are remodeling it into a service station for Buick and Oakland cars. The firm also will handle Delco elec-tric systems.

Quinn & Clark, Westfield, Wis., will en-large their garage by adding 40 x 80 ft. The present building will be used only for re-pairshop and service and the addition for salesrooms and storage.

The Quincy Garage & Supply Co., Han-cock, Mich., has awarded contracts for the erection of a large and modern garage, 60 x 110, of fireproof construction. It will have a storage capacity of fifty cars and a large repairshop.

The Munkwitz Realty Co., Milwaukee, closes bids Sept. 18 for the erection of its new three-story garage, 60 x 120 ft., on Broadway, near Mason Street, part of which will be occupied by Holmes & Co., Ford dealers, 803 Grand Avenue.

W. Heck, Kewaunee, Wis., will build a garage and service station on Clermont Street, Antigo, Wis.

The Motor Car Sales Co., 525 Jegerson Street, Milwaukee, has been appointed State distributer of the Liberty Six for Wisconsin and upper Michigan and will handle Mil-waukee retail business. The company also represents the Marmon and Jordan.

B. R. Owens, proprietor of the Quick Service Garage, East Troy, Wis., has moved to larger quarters provided in the remodeled East Troy Livery.

Wilke & Knopp, Forestville, Wis., have sold their garage and business to William Leege.

The Algoma Tire Repair Co., Algoma, Wis., has been sold by William McLaughlin to Leo Seiler, Forestville, Wis., who takes immediate charge.

The Oconto Garage, Oconto, Wis., is re-modeling and improving its building and adding more repairshop space.

The Peil Auto Co., Bloomer, Wis., will take possession of its new garage Sept. 15. It is 64 x 138 and accommodates eighty cars.

The Service Motor Co., Clintonville, Wis., has been formed by J. C. Freeman, a new Ford dealer, and is opening a garage and service station in the Kuester Building.

Lando L. Albert, Milwaukee, a new Ford dealer, has incorporated the business as the Lando L. Albert Sales Co., with $5000 cap-ital. The incorporators are Lando L. Albert, John B. Toner and F. J. Vebber.

J. F. Acker, Merrillan, Wis., has leased quarters at Owen, Wis., and is establishing a garage and repairshop.

N. M. Howe, Shawano, Wis., is preparing to build a public garage and repairshop, 44 x 150, of brick and tile.

The G. A. Gullikson Co., Stevens Point, Wis., Ford dealer, will build a new garage and service station at West Ellis Street and Strongs Avenue, to be 44 x 124 x 38 x 20, of fireproof construction, to be ready Nov. 15.

NORTHWEST

The Goodwear Tire Co., 506 Andrus Build-ing, Minneapolis, and not the Goodyear Tire & Rubber Co., as was stated in Motor World for Aug. 23, will erect a factory in Red Wing, Minn.

Josh Hatfield, Ellendale, N. D., has bought the Motor Inn.

Kingery & Weber, Forbes, N. D., have begun a new garage.

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Roberts & Dixon, Devils Lake, N. D., are erecting a garage.

Henry Clark, Erskine, Minn., has opened the James Anderson blacksmith shop as a garage.

Odin Odegard, Princeton, Minn., has opened a garage.

Jungers & Johnson, Kilkenny, Minn., have rented the new Gregor garage.

Thelen Bros., Albany, Minn., will erect a garage.

E. L. Lander, Grand Forks, N. D., has begun construction of a fireproof garage, to be occupied by the Sims Automobile Co.

Chris Anderson, White River, S. D., will build an addition to his garage.

Fakton, Cihlar & Co., Winnebago City, Minn., has dissolved, Fakton taking the garage and automobile business and Cihlar the repair work. Robert Flemming retires.

The Cass Lake Garage, Cass Lake, Minn., is to be enlarged by an addition 50 x 130 ft.

Carle Farup and David Mills, Park River, N. D., have bought the Moore Auto Co. branch and take over the Ford agency and garage business.

H. P. Crandell, Hazleton, N. D., has sold his interest in the Crandell & Wood garage to Fred Asch.

Frank Blaha, Ravinia, S. D., is building a tile garage, 24 x 70 ft.

M. J. Osborn, St. Paul, representing the Overland car, has opened a branch in the Brunswick Building at Stillwater, Minn. H. C. Bliss is in charge. A service station is opened on Water Street in the rear. He will build a $35,000 sales building at South Stillwater.

H. A. Peterson, St. Paul, is manager for the Cadillac agency. He was formerly with the Barclay Auto Co., Minneapolis, selling Chalmers cars. E. A. Erkle has been transferred from Minneapolis to have charge of the Cadillac inspection department.

Will Paschke, West Union, Minn., has bought the Frank Harth interest in the West Union Garage.

M. L. Jones and Idris Jones, Lake Crystal, Minn., will build a garage, 50 x 100.

Erskine & Logan, Grand Rapids, Minn., will erect a brick garage.

Ralph and Guy Lande, Ellendale, N. D., will build a garage.

The Midwest Auto Co., Pierre, S. D., has been capitalized at $10,000 by Bernard McCallag, Winifred Ewert and Theodore Sheehan.

Christofferson & Larson, Cokato, Minn., garage, have dissolved, John A. Larson taking the garage and John Christofferson the sales end.

E. J. Letford, St. Cloud, Minn., will build a $5,000 garage on Broadway.

Ruff & Hoffman, Vergas, Minn., will erect a garage, 40 x 50.

J. L. Gibbons, St. John, N. D., will erect a concrete garage, 40 x 120 ft.

S. A. Louden, Fargo, N. D., will erect a brick garage, 50 x 125 ft., to cost $25,000.

Floyd Cooper, Scenic, S. D., is building a garage.

Poppen & De Vries, Estelline, S. D., have completed a new garage. They have bought the Gagnon Bros. garage machinery and supplies.

J. S. Miller, Como, S. D., will build a garage.

J. L. Gibbons, St. John, N. D., will build a concrete garage, 40 x 120.

The Kuboska Motor Co., Williston, N. D., has been organized and will open a garage at First Avenue E. and Second Street.

A. C. Berg, South Shore, S. D., has opened a repairshop.

L. D. Cochran, Elkton, S. D., is now sole proprietor of the Cochran garage.

Charles Climmer, Marion, S. D., has rented the Fred Austin garage and will use it for car storage.

Yeandle & Son, Highmore, S. D., are erecting a cement block garage.

Luy & Gieler, Beulah, N. D., have completed a garage.

The Lyons Auto Co., Grand Forks, N. D., has been incorporated at $25,000 by J. W. Lyons, T. A. Wamken, O. G. Wamken.

The Fargo Motor Sales Co., Fargo, N. D., has been organized by Harrison & Spaulding, formerly Aberdeen, S. D., and will build a $30,000 structure, three stories and basement, 50 x 130 ft.

Chadbourn & Son, St. Clair, Minn., formerly Amboy, Minn., have bought the Leo Hardware Co. garage and will open it for business.

J. A. Rossel, Flaxton, N. D., has bought the Flaxton Garage from A. O. Merrill.

Henry Bruns, Esmond, N. D., has opened for automobile business in the Hicks Building.

John Blake, Lamberton, Minn., is going into the automobile business.

The New Ulm Tire Hospital, New Ulm, Minn., has been opened by A. C. Stoltenberg, formerly Watertown, S. D.

Paul Guertin, St. Peter, Minn., has bought the Miller & Olson garage.

EAST

The Hartford Storage Battery & Supply Co., 14 Wells Street, Hartford, Conn., has sold out to the Electric Supply & Equipment Co. James H. Morris will manage the business. Charles Krohn, who has been with the organization since it was formed 3 years ago by George Gammack, remains with the new ownership. The old concern up to a short time ago handled the Stewart products. This branch of the business was taken over by the Stewart Products Service Station at 8 Wells Street, of which George Gammack is proprietor.

The Hartford Automobile Garage & Parking Space has completed a garage at 995 Main Street. There are also three entrances from Church Street. The east end of the building has been raised to three stories, the second of which is occupied by the repair department. The third floor is used for dead storage; the north end of the building is given up to day storage. There is space for 500 cars. An electric elevator is used to raise cars from one level to another.

The Fuller Storage Battery Co., 62 Ann Street, Hartford, Conn., Willard battery representative, has removed to the new three-story building on Church Street. The basement is given over to the battery department, the first floor to the office and salesroom. The other store, on the ground floor, has been taken over by Edward S. Clark, Paige representative, who is now moving in. Clark will now have his service and sales departments under one roof, having taken over the second floor of the Fuller Building for a service department, the third for a repairshop.

The A. C. Hine Co., Hartford, Conn., has segregated the service and sales departments. The sales will be handled from the downtown location, 314-316 Pearl Street, and the parts from the service department at 1329 Broad Street.

Sell Advertised Goods

Read Pages 6 and 7

The Thrall-Colton Motor Co., Hartford, Conn., has been organized to handle the Kissel and has just opened a new sales room at 1283 Main Street. C. M. Colton, formerly with the Studebaker agency, Otis and D. A. Thrall, and E. H. Richardson make up the organization. The actual sales are in charge of Messrs. Colton and Richardson.

H. S. Block, who for some years has been the Chandler distributer for Maryland, is now looking after the retail business for the Chandler in Baltimore at 1014 Morton Street.

The Colonial Automobile Co., 1779 Main Street, Hartford, Conn., has increased its sales department by three men. The allotment for 1917 is more than double that of 1916. The service department has also been enlarged to care for the increasing business.

The Beam Motor Car Co., 1114 [illegible] Street, Baltimore, former Chandler [illegible] are handling the Allen motor car [illegible] new Premier line.

H. Judd Stevens, Walbrook [illegible] burton Street, Baltimore, is the [illegible] for the Glide Motor Car Co. [illegible] Delaware and eastern Pennsylvania.

The Hurwitz Auto Sales Co., [illegible] Bond Street, Baltimore, is the [illegible] outer for the Little Giant truck [illegible] expects to announce a pleasure [illegible] a more central location. E. M. [illegible] and Michael Hurwitz form the company.

The Wilson Motor Co., 605 [illegible] Avenue, Baltimore, former [illegible] and Maxwell distributers, are now handling the Liberty and the Grant lines.

The Fisk Rubber Co., 258 North Broad Street, Philadelphia, is looking for a location in Reading, Pa., for a branch store.

G. Howard Bright, 506 Penn Street, Reading, Pa., is building a brick garage, 16 x 40 ft., at Lansford, Pa., costing $40,000.

H. H. Ward and F. M. Bowers, of Chester, Pa., are building a brick and concrete garage in the western end of the town costing $10,000. It will have a capacity of sixty cars.

FORD CHANGES

Baltimore, Md.—Thirteen agencies will handle the Ford in Baltimore, and throughout the State of Maryland there will be fifty-five additional agencies. The list follows: Motor Agency, Inc., Eutaw Street, Baltimore; Hosbash Motor Co.; Baltimore Motor Co., 8-11 North Central Avenue; William J. Tickner & Sons, North and Pennsylvania Avenues; J. G. Gorfine, 210 Madison Avenue; Butler Motor Co., Auto Sales & Service Co., 913 North Howard Street; Wilcox-Brown Co., 607 West North Avenue; Kline Motor Co., Northeast Baltimore; the Downtown Motor Co., Frederick and Water Streets; Oriole Motor Co., 1103 Cathedral Street; West End Motor Service Station, 1123-1125 West Baltimore Street; R. M. Stein Co., 408-412 North Calvert Street.

Philadelphia—Benjamin F. Hoffman, sales manager for the Ford Motor Co. of Philadelphia, will leave that company about Oct. 1 and open up the Hoffman Motor Co. at 235 North Broad Street, the quarters now occupied by the Buick agency. Mr. Hoffman will handle Ford cars under the new plan.

Reading, Pa.—The Windsor Motor Co., 1018-28 Windsor Street, has taken the agency for the Ford car and will handle a full line of accessories. J. H. Walborn and L. [illegible] Rothermel are the proprietors.

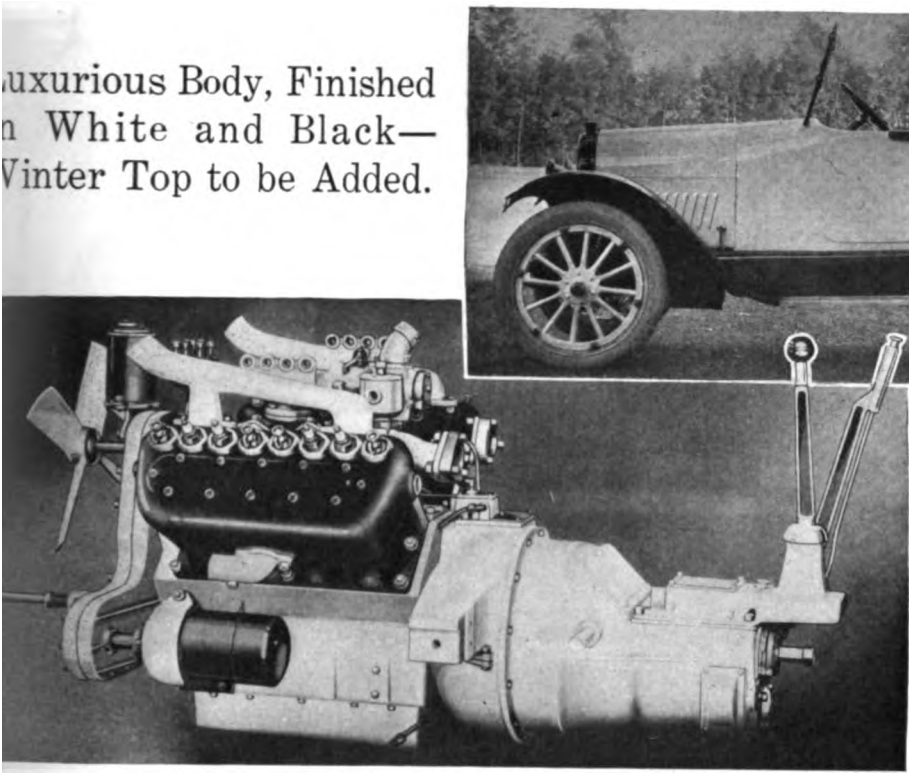
Tacoma—Peter Leonard has secured the Ford agency in South Tacoma and has opened a service station at South Tacoma. Auto Brokerage Co.

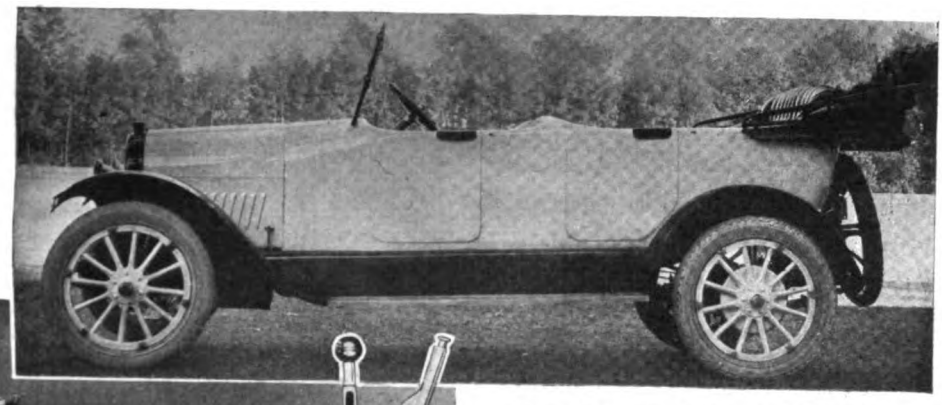
St. Paul—Felix Joswich has taken the Ford agency and has moved it back to Fifth and Market Streets, headquarters before the factory branch building was erected near the Capitol.

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Standardized Parts in Yale Eight at $1350

ıuxurious Body, Finished n White and Black— Vinter Top to be Added.





Care has been taken to reduce wind resistance to the minimum in the Yale Eight. The motor is the conventional type of V Block

THE Yale Eight, which is produced by the Saginaw Motor Car Co., Saginaw, Mich, is characterized by ıe use of standardized products ıroughout. For the present it will be ıpplied only in seven-passenger form at ,350, though the addition of a winter ıp is contemplated. The standard color ivory white for the body and black ıders and trim. Yale blue and black optional without extra cost.

The attempt to reduce wind resistance the minimum is apparent in the body ısign. The hood is tapered to blend ell with the rather deep cowl and the des are perfectly smooth. The windıield is smartly raked. There is a cowl the back of the driver's seat which ırves to house the auxiliary seats. All ıors are fitted with pockets. The upılstery is leather and the backs of the ats have been molded to fit the back.

Great care has been taken to insure ccellent riding qualities, and to this end ıe weight has been proportioned over ont and rear axles only after long exeriment. The spring suspension is norıal in front, but in the rear there is ıodification of the three-quarter-elliptic lea, which, however, does not appear nusual to the eye. The springs are 3 in. long.

The motor does not depart from usual ractice, the cylinders being cast in two locks of four each. The Remy ignition nit is accessibly mounted directly at ıe front of the V. The electric lightıg and starting system is a unit outfit nd the battery is a Willard.

Lubrication is primarily by force feed, with auxiliary oiling by splash. Cooling water is circulated by thermo-syphonic action. The clutch is a multiple-disk type, transmitting power through a three-speed selective gearset in unit with the motor. The Hotchkiss type of drive is used.

The Saginaw Motor Car Co. has recently purchased the plant of the American Electric Wheel Co., which will be used to facilitate production. The E. B. Sutton Sales Co. has taken over the entire distribution of the Saginaw company. Headquarters have been established at the factory.

Yale Eight Specifications

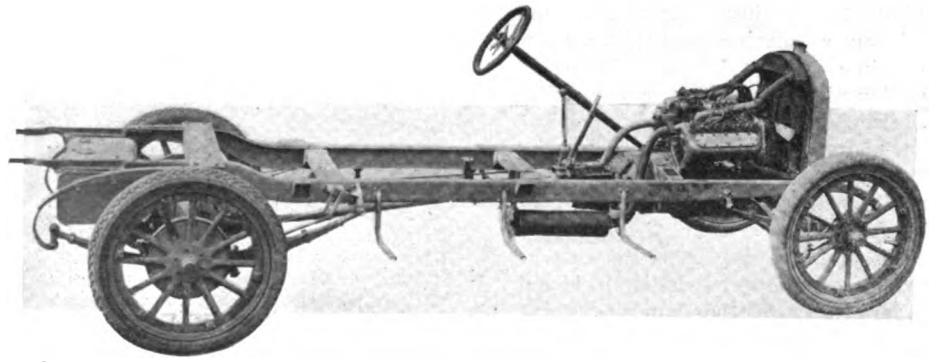
Price—Touring, 7-passenger	$1,350
Color	White and black
Make of motor	Own
Number of cylinders	Eight
Shape	L-head
How cast	Blocks of four
Bore	3⅛
Stroke	4½
S. A. E. horsepower	31.25
Ignition	Remy
Carbureter	Rayfield
Starting-lighting system	2-unit
Clutch	Disk
Gearset	Muncie 3-speed
Wheelbase	126 in.
Front tires	34 x 4
Rear tires	34 x 4 non-skid
Steering	Lavine
Make of axles	Timken
Options	Color: Yale blue and black
Equipment	Stewart speedometer and motor-driven horn.

Farmack Becomes Drexel

Editor Motor World:

The change in the name of this company from the Farmack Motor Car Corp. to the Drexel Motor Car Corp. has not been clear to some of the firms in the trade, and we are therefore advising all those with whom we have had any dealings that the Drexel Motor Car Corp. is the same corporation as the Farmack Motor Car Corp., the only change being that of the name. All of the obligations of the Farmack Motor Car Corp. are continuing obligations, of course, of the Drexel Motor Car Corp.—Drexel Motor Car Corp.

Chicago.



The Hotchkiss type of drive is used and the rear spring suspension is characterized by three-quarter elliptic members with an angle drop

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Singer Six Now Has Magnalite Pistons

This is Principal Change—Bodies Enlarged and Lowered

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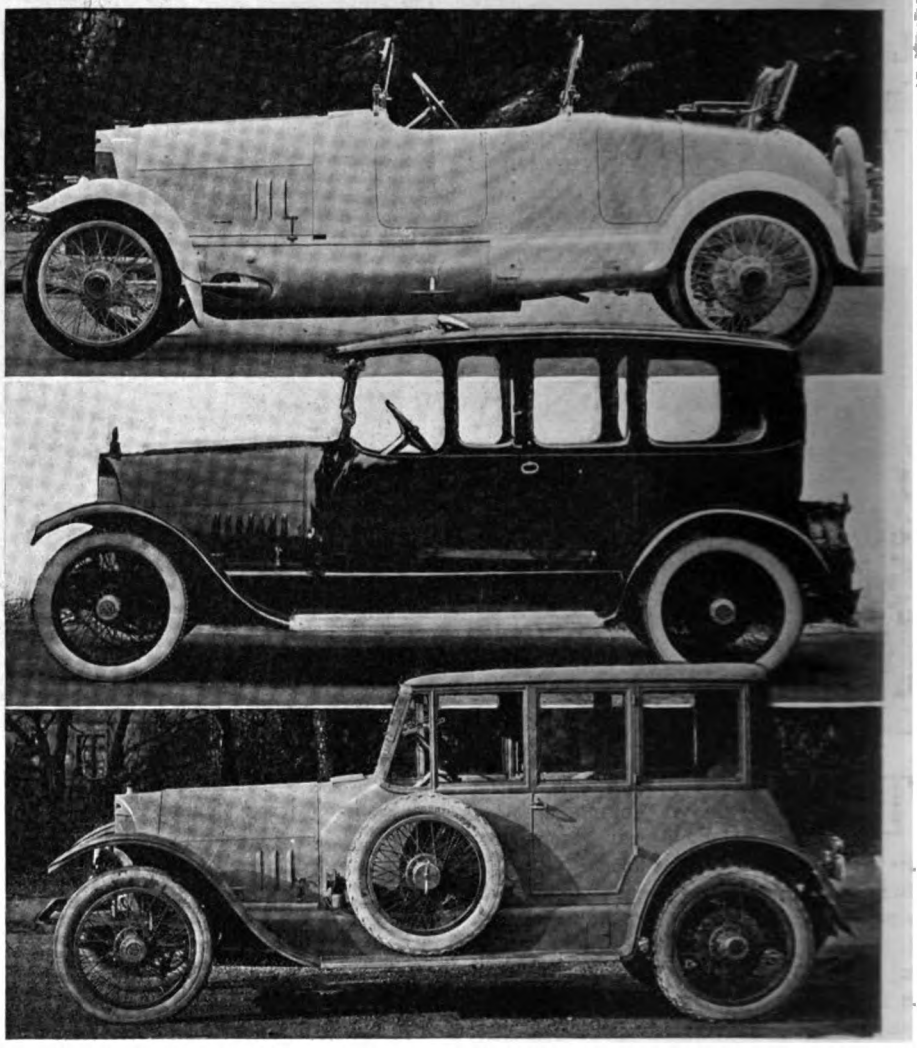
Chassis Price is $3000—Standard Touring Model $3500

MAGNALITE pistons are the most important change on the Singer six for 1917. This car, which sells for $3,500, is entering its third year of production with very few changes of a fundamental nature. There are, however, a number of detail improvements, which have rendered the car as a whole lower, of slightly better characteristics at high speed, and more nearly perfect in its suspension and control.

While the major percentage of bodies for the Singer cars are custom built, the concern is marketing a standard roadster, touring and closed bodies. The standard touring design is a seven-passenger type with the Belgian double cowl. The extra seats fold into the backs of the front seats and above them is located the mahogany cabinet, which is an innovation this season. This is made of inlaid wood and is ornamental as well as of practical utility. Any color that is desired will be given the body, so that the purchaser is allowed a very wide latitude in making his selection. The chassis alone sells for $3,000, and in case special bodies are ordered the prices of these must be added to the chassis price.

The only motor change other than the pistons is in the oiling system, which heretofore has fed lubricant to the connecting-rod bearings by splash. In the new cars, pressure feed, acting at 30 lb. per square inch, sends the oil positively to the required spots. This has necessitated a new oil pump.

Structurally, the Singer car is longer and lower, although the wheelbase is shorter. This condition is obtained by an increase in the length of the frame of 6 in. The wheelbase is now 136 in., instead of 138, giving a greater overall length on a shorter supporting span. The prime reason for the change in frame length is in a new type of gasoline tank, which, instead of being cylindrical, is now of rectangular section. The cylindrical tank was used because it conformed to the turned-over frame ends which formed the rear tire support. Since a spindle is now being mounted to carry two extra wire wheels, it is not necessary to curve the frame over any more, and hence the new form of tank and longer frame.



MOST OF THE SINGER BODIES ARE CUSTOM BUILT
Upper—This is a specially designed roadster type without running boards
Center—This, too, is a special—a limousine with cab sides
Lower—This type of touring sedan is becoming very popular

Singer Specifications for 1917

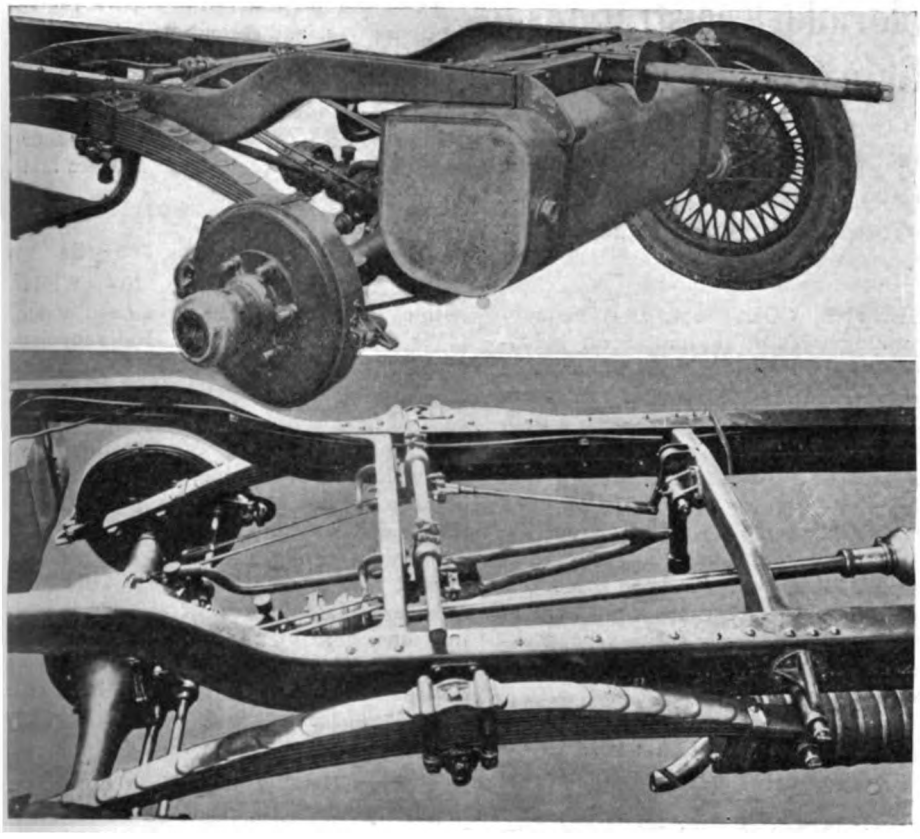
Price—	
Chassis	$3,000
Touring	3,500
Limousine	4,600
Landaulet	4,700
Color	Optional
Make of motor	Herschell Spillman
Number of cylinders	Six
Shape	T-head
How cast	Threes
Bore	4
Stroke	5½
Magneto	Bosch
Carbureter	Rayfield
Starting-lighting	Westinghouse
Clutch	Cone
Gearset	4-speed
Wheelbase	136 in.
Tires	35 x 5
Wheels	Houk
Steering	Gemmer
Make of axles	Timken
Type rear axle	Floating

This increase in frame length has given more body room because of the extra supporting surface which is now possible beneath the sills. The rear seat is also wider, having been increased from 45 in. to 47 in. The body is more comfortable also, because of deeper upholstery, which is now 10 in., and instead of tufting, French plaiting is used in its place. As far as decoration and convenience go, the body is improved, particularly in the fitting of a new mahogany case in the rear cowl behind the front seats.

The rear springs are now flatter under load than formerly. The flatter springs, combined with lower bodies, make the entire car 3 in. lower than it was a year ago.

In the front springs there has been an alteration in mounting. These are parallel to the center line of the car, but are tilted in their own vertical planes, so

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Upper—The rectangular Singer gasoline tank is strapped to the frame
Lower—The rear springs are now flatter than before; the car is 3 in. lower

that the forward end of the spring is lower than the rear. This has been done owing to the belief of the engineering department that the shocks are better absorbed in this way. The front spring horn has been made steadier and of greater bearing space to compensate for this change. In addition, the Timken axle, which is used in front, is now the heavy-duty design, with full bearing support.

While the torque rod made up of welded Shelby tubing with cross-members forming virtual webs is still employed, it is 8 in. shorter. This change has been accomplished by moving the front cross-member, which carries the support for the forward termination of the torque arm, back a corresponding distance. The result is that owing to the decreased length the torque rod is more rigid. Another change in the rear linkage is in the braking system, which used to run continuously from the operating levers back to the brakes. It has now been broken in two, giving a double reduction.

There is a longer clutch pedal, which has increased the leverage to such an extent that a person standing beside the chassis has no trouble in disengaging the clutch with the hand. The steering gear has been changed and is now a Gemmer.

Fitted to the motor there are three attachments which are innovations for the 1917 model. These are a Rayfield carbureter, a Klaxon horn and a four-bladed cast aluminum fan.

The Singer power plant is made up of a specially-built Herschell-Spillman engine, a dry-plate clutch and a four-speed gearset with direct on fourth. While the engine is rated at 50 hp., it has developed in excess of 100 at more than 2000 r.p.m., and with the aluminum pistons there has been an increase in power output due to a higher maximum speed. Probably the most notable point of the power plant is the unique system of manifolding. It is to this that a large part of the power and flexibility is credited.

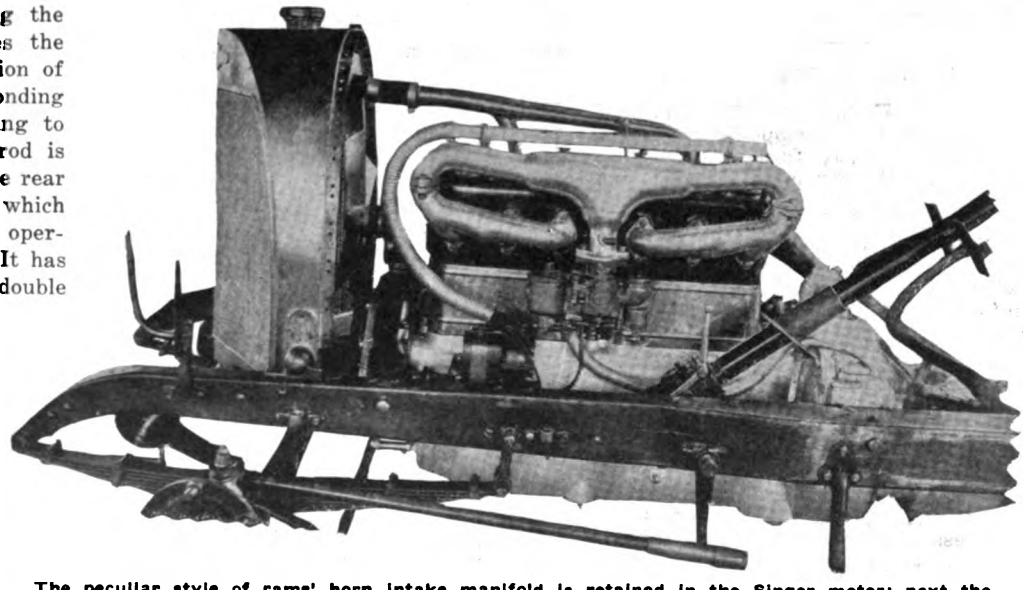
The intake manifold has a sort of ram's horn effect, taking the gases from the carbureter, carrying them upward to the branches of a Y-shaped waterjacketed pipe, from where each branch divides into a loop to the three cylinders.

On the exhaust side there is a dual manifold in which each set of three cylinders is taken care of independently, thus avoiding conflicting or overlapping exhaust. The manifold is in one piece, but there is a wall between, which separates the flow from each block of three cylinders. The timing is arranged so that the exhaust of two cylniders are never open at the same time.

The engine dimensions are 4 x 5½. The cylinders are T-head, cast in threes with integral waterjacket spaces closed by caps on the top. The manifolds are separate. Both sets of valves are thoroughly inclosed, giving a clean exterior. The carbureter and magneto are mounted on the left, the latter being a Bosch high-tension instrument with the wire lead carried in conduits to the spark plug. On the right side is mounted the electric generator and water pump, and also the starting motor. The generator and pump are carried on the same shaft, while the starting motor engages with the flywheel at the rear right of the engine.

The remainder of the electrical equipment is Westinghouse. There is a two-unit starting and lighting system, operated on the single-wire system, and the storage battery is a Willard.

In the new oiling system the gear pump is driven off the camshaft and the oil reservoir is in the bottom of the crankcase. The oil is fed under pressure to the main bearings and through the hollow crankshaft to the remaining bearings under pressure. Under ordinary



The peculiar style of rams' horn intake manifold is retained in the Singer motor; next the carbureter it is waterjacketed

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running the oil feed is up to 30 lb. per square inch, but this will vary according to the work performed by the engine. The oil is recirculated and screened on its course through the lubricating system.

Power is transmitted from the motor to the gearset through a dry-plate clutch consisting of steel disks faced with fiber. The clutch is held engaged by a double concentric helical spring. This clutch is in a unit with the four-speed gearbox.

Two Spicer universals are used. The axle is a Timken floating design. The drive is taken through cantilever rear springs, but the torque is taken care of by a special member assembled and welded together in the triangular form of Shelby steel tubing. The axle gears are spiral bevel and provide a ratio on direct of 3½ to 1. The wheels are Houk wire and carry 35 x 5 tires, which have been continued.

One of the noteworthy features of the Singer construction is in the rigidity of its frame layout. As is conventional practice, the individual members are of channel section, with a 5-in. depth of web and 4-in. flanges. The frame is amply provided with cross-members, which stiffen it against racking stresses. The cross-members are fitted with large gusset plates, which give them a capability of withstanding distorting tendencies.

As would naturally be expected with a chassis of this price, the equipment is of the best throughout. The radiator is a V-shape of exceptional size and capacity and throughout the actual fittings are large and sturdy. The top is a one-man design, provided with Jiffy side curtains and connects with a special built-in ventilating windshield. The car also has a Warner 100-mile speedometer fitted with an electric light, Klaxon horn, 8-day keyless clock, electric trouble lamp with extension cord, tools, jack, motor-driven tire pump and a full supply of nickel fittings.

Booth Heads Scripps-Booth Corp.

NEW YORK, Sept. 18—The board of directors of the Scripps-Booth Corp., which was recently formed to acquire and operate the Scripps-Booth Co. and the Sterling Motor Co. of Detroit, is made up of the following: C. H. Booth, president; W. H. Little, N. J. Miller, W. L. Scripps, F. J. Senenbrenner, Alfred P. Sloan, Jr., and T. P. Warner. Up to the present time the production of Scripps-Booth cars has reached approximately 6000, about one-third of which has been sold in foreign markets.

Sell
Advertised Goods

Read pages 6 and 7

Colorado Registrations Gain 66% for Half Year

First Six Months of 1916 Show 14,405 More Cars Than Last Year —Total Registration 36,231 Cars

DENVER, COL., Sept. 16—The substantial growth of the motor car industry in the Rocky Mountain region, and also the rapid development of Colorado's scenic highways, are indicated by a gain of 14,405 cars, or 66 per cent, for the first half of 1916 over the same period last year.

Practically complete returns from the sixty-three counties give a total registration of 36,231 cars for the 6 months, as against 21,826 for the first half of 1915 and 28,254 for the entire year, making a gain of 7977 cars, or 28 per cent, over last year's total.

Secretary of State Ramer estimates that the total registration for 1916 will pass the 45,000 mark, making an increase of more than 50 per cent over last year, and that it has already reached 40,000, which would be one car for every twenty of Colorado's 800,000 people.

These estimates are based upon partial returns received for July and August, upon the calls from county clerks for more license tags, and upon the continued heavy sales reported by State distributers of cars.

To the 1913 registration of 13,624 cars, 1914 added 4809 cars, or an increase of 35 per cent, while 1915 showed a gain of 9821 cars, or 53 per cent, over 1914, and this year promises a gain of 15,000 to 18,000 cars, or more than 50 per cent, over last.

The registration has been so heavy this year that the returns from the counties to the State house have been exceptionally slow. Many counties did not report until along in August upon the last 2 to 4 months of the half year, while some held their returns for the entire 6 months until in August. One small mountainous county, San Miguel, has made no report at all, except that it had used up its original seventy tags and would need fifty more. Only one county is recorded as having no cars at all. That is Dolores, highly mountainous and thinly settled, and located in the extreme southwestern corner of the State. And there is an unofficial report that two residents recently bought cars and registered them in an adjoining county, Dolores having no tags.

The total revenue from the motor vehicle license fees last year was $120,000 in round numbers, and the receipts for 1916 will likely be between $150,000 and $175,000.

The Ford is first, with 15,727 registrations; Overland second, with 2926, and the Buick third, with 2369. The Buick held second place a year ago by a lead of 54 cars ahead of the Overland. The Maxwell has 1707, while the Studebaker combination of Studebaker, Flanders and E. M. F., totals 1850.

To Revive Indianapolis 500-Mile

INDIANAPOLIS, Sept. 19 — While nothing authoritative has yet been done, it is expected that the Indianapolis Speedway will ask a sanction for a race of 500 miles with a purse of $50,000, to be held next Decoration Day. The original speedway contest was for this distance, but it was reduced to 300 miles because of the seeming unpopularity of the longer event.

Some time ago the speedway managers agreed not to offer more than $100 per mile, and since a purse of $50,000 is being considered by the Indianapolis management, it necessarily follows that the distance must be increased if the $100 per mile agreement is to be kept.

Ryan Heads Gibson Branches

INDIANAPOLIS, Sept. 20—The Gibson Co., Indiana Overland distributer, has appointed P. J. Ryan supervisor of its six branches. He has been identified with the Gibson Co. for many years. He will have charge of branches and branch managers at the following cities: Muncie, W. B. West; Lafayette, W. A. Veerkamp; Logansport, Earl Freese; Vincennes, Sol Allman, and Danville, Ill., J. F. Ryan.

Loewe Made General Manager of Brunswick-Balke-Collender

MUSKEGON, MICH., Sept. 18—F. J. Loewe has been appointed general manager of the Brunswick-Balke-Collender Co., billiard and bowling alley fixture maker, which entered the automobile tire-manufacturing field last April.

Abandon Signal-Commerce Merger

DETROIT, Sept. 19—The merging of the Signal Motor Truck Co. and the Commerce Motor Truck Co. here under the name of Signal Commerce Motor Truck Co. has been abandoned. It had been the plan to take over the two properties and incorporate under New York State laws, with capital stock of 600,000 shares of no par value. Thomas Neal, president of the Signal concern and one-time head of General Motors Co., was to have been president of the merger, and W. E. Parker, president of the Commerce company, was to have been vice-president of the proposition. The two motor truck manufacturing concerns involved in the negotiations will revert to their original individual identities, and each will continue to operate separately as heretofore.

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Urge "Open Price" as An Aid to Cooperation

Price Publicity, Aired at Babson Conference, Would Curb Price Cutting

WELLESLEY HILLS, MASS., Sept. 15—The Third Babson Conference on Co-operation was held here Wednesday, Thursday and to-day. Its object is the promotion of co-operative competition, which includes the open price and profit-sharing.

The open price is the most radical part of the plan, for profit-sharing is quite extensively practised and is generally understood.

The open price means "price publicity," and in those associations which are founded on this idea the members freely exchange the prices they make on different articles, the bids they submit on contracts and even the cost of production.

It is opposed to price maintenance, and yet it tends to reduce price cutting. The element of futurity is eliminated. No member tells what his price shall be, but instead tells what it HAS BEEN or IS NOW. This prevents unscrupulous buyers from playing one manufacturer against the other and beating down prices by false statements. But there is nothing to prevent any man making any price he wishes. He can sell below cost if he wants to. The big idea is that if all the prices are known to all there will be less tendency to cut ruinously than if all work in the dark and slash dangerously low to make sure of getting the business.

The open-price plan is operated through associations, which exchange the information through a bureau. There are about twenty associations to-day and the plans vary in detail. In some all the data connected with a sale are given—price, customer's name and cost. In others less is given, running down to the price alone.

Were the open-price idea applied to the retailing of motor cars it might work out like this:

If Smith went to the Jeffery dealer to get a price on a used car the Jeffery dealer would quote a price and would pass the information along to the trade association, which would in turn notify all the other members. This would check Smith in his dickering.

At meetings of the association members would freely state what they have been charging for repair work, whether by the hour or by the job. This would by no means be price-fixing, for any man would be permitted to charge what he wished. The association would, however, recommend the installation of cost systems so each man could know his hour costs as opposed to his hour charges.

Carried to a logical conclusion, the plan would include the exchange between association members of any cuts made in the price of cars. There would be no rule against price-cutting, but each member would be expected to tell of any cuts he made. As the trade stands to-day, most dealers believe that most of the other dealers cut—but nobody knows; and this condition alone is responsible for much of the uncertainty in price among dealers.

The open-price part of the conference was devoted principally to an explanation of plans now in effect. The speakers were: D. B. Doremus, Salt Producers' Association; Ernest H. Gaunt, Optical Manufacturers' Association; W. V. Spaulding, Leather Belting Exchange, and H. S. Wales, Pressed Metal Association.

Another phase of the work of these associations is that of cost finding. Efforts are made to have manufacturers install systems that will tell them the exact cost of the product, which information will be of assistance in making prices. The speakers stated that cost systems disclosed some startling facts to manufacturers.

In the employees' profit-sharing part of the conference three plans were described:

1. Simple share in company's profits. Described by Everett Morss, president Simplex Wire & Cable Co., Cambridge, Mass.

2. Share in profits and stock interest in business. Plan used by Dennison Mfg. Co.; described by Mr. Dennison.

3. Share in profits under fraternal interest of company without interest in company. Plan of Ford Motor Co.; described by Dean S. S. Marquis, head of the educational department of the Ford Motor Co.

Most of the conference was quite informal, and facts and figures pertaining to corporate internals were passed back and forth in a truly "open-price" way.

Keating Wins Contest

BROOKLYN, Sept. 18—Joseph Keating, of the Studebaker branch in this city, has won the 1000-point contest for the branch and is spending the week at the Studebaker factory at the expense of the company.

Hudson Building Service Station

NEW YORK, Sept. 18—The Hudson Motor Car Co. of New York, Inc., has let the contract for a service station, 203 x 239, four stories, between West Sixty-eighth and Sixty-ninth Streets and the North River.

Banner Selling Season Assured for Kentucky

Corn, Tobacco and Hay Crops All Strike New High Levels—Prices Are High

LOUISVILLE, KY., Sept. 16—Kentucky dealers will have a banner selling during the next 12 months. Dealers and factory representatives are elated over the latest report of the United States Department of Agriculture, forecasting for the State a corn crop of more than 114,000,000 bu., which is equal to the crop of 1915, which, in turn, was the largest crop ever raised in the State; a tobacco crop of 472,000,000 lb., which is 115,000,000 lb. larger than the crop of last year, and is a new high record, and a hay crop of 1,240,000 tons, an increase of 15,000 tons over 1915, and also a new high record.

Crops falling short of 1915 include wheat, with an estimated production of 8,190,000 bus., as compared with 9,900,000 bu. in 1915; oats, with a yield of 4,540,000 bu., a decrease of 920,000 bu. from 1915, and apples, with a yield of 2,470,000 bbl., as compared with 4,170,000 bbl. in 1915.

The large crops of corn, tobacco and hay more than offset the decreases in the other crops, and the sharply advanced prices for all farm products give the crops of the State a substantially higher value than the crops of 1915.

This means prosperity in the Blue Grass State, and there is no question but what big corn, tobacco and hay crops will result in a greater demand for cars. Farmers and people out in the State are buying more machines than ever before.

It is pointed out by local automobile men that in a crop year marked by extreme fickleness of weather, from which the country as a whole has suffered severe losses in the principal crops, Kentucky has been conspicuously fortunate.

Kentucky farmers are assured of remunerative prices for their corn, whether they sell it or feed it to livestock, and prospects are favorable for the realization of good prices for tobacco in view of the exceptionable quality of the crop and the general prosperity of the country. Domestic consumption of tobacco is at the highest point ever reached, and it is not unlikely that considerable tobacco will be exported, notwithstanding the many obstacles in the way.

2000 Motor Trucks in Wisconsin

MILWAUKEE, Sept. 15—The State of Wisconsin now has upward of 2000 motor trucks. Less than 7 years ago there were only 122 trucks in the State. International trucks head the list, with Buick second, Stegeman third, Kissel fourth and Chase fifth.

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Sales Representatives of Willard Storage Battery Co. in Convention



1. *T. A. Willard.*
2. *R. C. Norberg, Gen. Sales Mgr., Cleveland.*
3. *H. S. Gardner, Mgr. Chicago Dist.*
4. *T. R. Cook, Chief Engineer, Cleveland.*
5. *W. W. Wyneken, Asst. Gen. Sales Mgr., Cleveland.*
6. *F. L. Kulow, Mgr. of Purchases, Cleveland.*
7. *F. S. Gassaway, Mgr. N. Y. Dist.*
8. *S. E. Baldwin, Advertising Mgr., Cleveland.*
9. *S. S. Jenkins, Mgr. Detroit Dist.*
10. *H. S. Bentley, Mgr. Retail Sales, Cleveland.*
11. *I. K. Schnatter, Credit Mgr., Cleveland.*
12. *S. W. Rolph, Los Angeles.*
13. *J. P. Schiller, Seattle.*
14. *G. L. Barrett, Mgr. Dallas Dist.*
15. *L. S. Hoffman, Indianapolis.*
16. *R. L. Brown, Chicago.*
17. *J. W. Sebenthall, Milwaukee.*
18. *A. W. Sayer, New York.*
19. *E. M. Coe, Detroit.*
20. *G. R. Smith, Atlanta.*
21. *E. M. Reeser, Mgr. Ind. Dist.*
22. *J. R. Shannon, Cleveland.*
23. *R. J. Nightingale, Mgr. Automobile Dept., Cleveland.*
24. *W. C. Denison, Cleveland.*
25. *F. J. Du Mont, Mgr. Atlanta Dist.*
26. *A. C. Hyser, Cleveland.*
27. *R. N. Cameron, Cleveland.*
28. *C. T. Klug, New York.*
29. *P. S. Moyer, New York.*
30. *C. S. Harper, Mgr. San Francisco Dist.*
31. *S. H. Smith, New York.*
32. *G. C. Deffrane, Cleveland.*
33. *J. T. Foster, Kansas City.*
34. *L. W. Enos, Detroit.*
35. *C. P. Lord, Chicago.*
36. *C. E. Middleton, Cleveland.*
37. *H. R. Jenkins, Atlanta.*
38. *C. E. Murray, Detroit.*
39. *R. F. Meggee, San Francisco.*
40. *D. E. Drucker, Indianapolis.*
41. *H. E. Witwer, Cleveland.*
42. *C. F. Thompson, Philadelphia.*
43. *G. B. White, Chicago.*
44. *H. H. Hime, Omaha.*
45. *D. I. Drucker, Indianapolis.*
46. *D. C. Gould, Cleveland.*
47. *Walter Rowan, Chicago.*
48. *C. H. Frizell, Mgr. Cleveland Dist.*
49. *P. H. Gribbon, Chicago.*
50. *M. O. Jamieson, Minneapolis.*
51. *F. G. Teufel, Chicago.*
52. *C. S. Whitney, Chicago.*
53. *F. R. Somers, Cleveland.*
54. *H. O. Rich, Chicago.*
55. *H. Sutter, Cleveland.*
56. *John L. Hart, New York.*
57. *N. G. Wolf, Mgr. Minneapolis Dist.*
58. *F. K. Prentice, Minneapolis.*
59. *A. E. Harrold, Cleveland.*
60. *W. W. Blauvelt, New York.*
61. *J. J. Henderson, Cleveland.*
62. *J. B. Emmons, Cleveland.*
63. *Max Groff, Cleveland.*

Car Show Building at Brockton

BROCKTON, MASS., Sept. 18—A $25,000 motor car exhibition hall is to be erected on the Brockton Fair Grounds. It will have display space for 108 cars and will be completed the latter part of September. It will be 200 x 125 ft., with only two rows of posts, and will be electrically lighted.

Texas Fair Show Oct. 14-29

DALLAS, Sept. 15—With the completion of the large annex to the already big automobile building on the Texas State Fair grounds, drawings will be made for the annual Texas Automobile Show, Oct. 14 to 29, in connection with the Texas State Fair. It is expected that more than one million people will witness the automobile show. It has not yet been determined whether the admission fee of 10 cents will be charged. It is very probable this will not be done, as it is pointed out that many more people will witness the exhibition than would otherwise. The rules and regulations adopted by the Dallas Automobile Dealers' and Accessories Association were drawn by W. G. Langley, Texas representative of the Franklin Automobile Co., and M. F. Sterrett, manager of the Electrical Appliance Co.

Speedway Men to Confer

NEW YORK, Sept. 18—Representatives of speedways in Tacoma, Indianapolis, Chicago, New York, Cincinnati, Providence, Des Moines, Omaha, Kansas City and Sioux City will meet in this city Sept. 29 to fix the speedway racing dates for 1917. Some of these tracks are represented by three or four men, which brings the gathering up to twenty-five or thirty.

New Goodyear Fire Truck Tire

AKRON, Sept. 16—The Goodyear Tire & Rubber Co. has just brought out a new hand attachable cushion fire truck tire which supersedes the cushion demountable type largely used in commercial and fire service. This tire is designed for motor truck and fire apparatus use also, but is stated by the Goodyear company to be tougher, more resilient, and able to resist road punishment better than the previous design.

Ford Distributes $860,000

DETROIT, Sept. 18—The Ford Motor Co. has distributed $860,000 as bonuses among 1600 heads of departments, superintendents, foremen and other employees in sums of $100 and up. This is $125,000 greater than the 1915 bonus and it is distinct in the profit-sharing plan.

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J.W. Packard Purchases Packard Buffalo Agency

Maker of First Packard Car in 1899 Re-enters Trade—Will Also Handle Liberty

BUFFALO, Sept. 18—J. W. Packard, who founded the Packard Motor Car Co. of Detroit, and who gave his name to the car, has re-entered the motor car industry and with the same company. He has purchased the Buffalo interests of the Packard Motor Car Co. of New York and will conduct the Buffalo branch as an agency.

Mr. Packard is president of the new business, which is called the Packard Buffalo Motor Co., Inc. B. C. Day, former manager of the branch, is vice-president, and the other directors are: W. D. Packard, capitalist, a brother of the president; E. C. Sutton, president of the Wheat's Ice Cream Co., and L. R. Davidson of the Davidson Ore Mining Co.

The first Packard car was built in Warren, Ohio, by J. W. Packard in 1899, and the present business has grown from that beginning. While it was still in its infancy, J. W. Packard sold his interest to the group which now controls it and has not been actively connected with the motor car industry since.

In addition to the Packard the new company will handle the Liberty.

Dodge Bros. Dealer Stages Parade

PROVIDENCE, R. I., Sept. 16—Fred E. Howard, manager of the Broadway Sales Co., Dodge dealer, staged a motor parade here last week, when the annual convention of fire chiefs was held in the city. When it was planned to give the feminine members of the convention a motor ride about the city, Howard promised to take care of the matter. He went to owners of Dodge cars and about thirty of them responded. These, with the twenty that he secured from his service station, made a line of fifty machines, which attracted a great deal of attention.

Newman Out of Harry Newman, Inc.

CHICAGO, Sept. 19—Harry Newman, president of Harry Newman, Inc., Chalmers dealer in Chicago, Milwaukee and Springfield, has resigned. He is succeeded in the Chicago branch by S. E. Comstock, who has been made general manager. Joseph B. Diebler will control the Milwaukee branch and J. D. Sullivan, Springfield.

Newman secured the Chalmers agency some months ago, and since then has had a spectacular career. He contracted for a $30,000 electric sign on Michigan Avenue, the sign being one of the largest in the city. It is reported that he had theater advertising contracts extending over several years. Newman has further been reported as living lavishly, and has created more talk along automobile row, Chicago, than any other dealer. Harry Newman, Inc., was backed by S. T. Jacobs, a Chicago business man, and the business will be continued as formerly.

Fisk May Increase to $12,500,000

CHICOPEE FALLS, Sept. 19—The stock of the Fisk Rubber Co. probably will be increased to $12,500,000. Stockholders will meet Oct. 2 to act on the proposed increase. Of the new stock, $7,500,000 or less is to be first preferred convertible and the remainder of the total increase second preferred.

Locomobile Stages Fourth Exchange Car Exhibition

NEW YORK, Sept. 18—The Locomobile Co. of America, at its New York branch, is this week holding its fourth semi-annual Exchange Car Show and Sale. The first was held in April, 1915. The branch salesroom on West Sixty-first Street is devoted entirely to exchanged and rebuilt Locomobiles. Invitations are sent to a selected prospect list and good results have been secured. The show this week is of somewhat greater proportions than its predecessors in that the company now advertises that the New York branch is the exchange car clearing-house for the branches in Boston, Philadelphia, Chicago, St. Louis, Kansas City and the factory in Bridgeport. Advertising of conservative layout with good space and Locomobile atmosphere is being used in several New York papers.

Chalmers Opens Sales Contest

DETROIT, Sept. 16—A sales contest for distributers, dealers and salesmen was inaugurated on Sept. 5 by the Chalmers Motor Car Co. The contest will run until Oct. 31. Entries closed Sept. 15. There will be many prizes, ranging from an automobile down. The rating of any particular individual is based on the territory he is working in.

Closed-Car Week for Chalmers Dealers

DETROIT, Sept. 16—The week beginning Monday, Oct. 2, will be closed-car week among Chalmers dealers. Closed cars will be displayed in showrooms all over the country, and in most cases special decorations will be employed. Many dealers are planning to give small souvenirs to prospects calling during this week. A number of dealers also are sending out engraved or attractively printed invitations calling attention to the closed-car week.

Sales Promotion Plan Adopted by Chalmers

Will Study Conditions in Dealer's Territories and Help Dealer Boost Sales

DETROIT, Sept. 16—To aid Chalmers dealers in selling cars is the purpose of the new sales-promotion department which has been inaugurated, with C. H. King as manager and W. L. Agnew as assistant. The new department has nothing to do with allotments or shipments, but is designed solely to help dealers and salesmen sell cars.

One of the most important features will be a school for salesmen, but in addition aid will be given directly by this department. For example, suppose the dealer is not selling as many cars as he should. The department studies the condition and finds out why. The purpose is to distribute as many cars in each territory as the wealth of that territory will allow.

Methods and plans which have been found good by any one dealer will be passed on to the other. One dealer may work out a successful method of analyzing the buying power of his territory. Another may have made a success of handling prospect letters. A third has built up a successful business by giving remarkable service. These dealers will be ferreted out and the features of their businesses described so that other dealers may copy them.

The first session of the school opens Oct. 2. Thereafter sessions will be held three nights a week for four weeks. The fisst session will be for local students, but after that it will be conducted as a day school for dealers and salesmen throughout the country.

C. H. King was sales manager for H. L. Keates, Chalmers distributer for 7 years, and after that was general director of sales for the Coign Machine Co. W. L. Agnew was in charge of advertising and sales promotion departments of the Hudson Motor Car Co. previous to accepting this position.

DeCou Out of Jeffery

MILWAUKEE, Sept. 16—Jerry W. DeCou, factory manager of the Nash Motors Co., Kenosha, Wis., resigned Sept. 15. DeCou became associated with the late Thomas B. Jeffery in 1896, first in bicycle manufacture and later assisting Jeffery and his sons in developing the present Jeffery car.

KENOSHA, WIS., Sept. 19—John Bjorn, formerly superintendent of the Nash Motors Co., has been appointed to succeed Jerry DeCou.

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Boston Overland Dealer Opens a New Building

Connell & McKone Hold Housewarming, Receive 600 Visitors and Book 25 Orders

BOSTON, Sept. 16—On Tuesday, Wednesday and Thursday of this week the Connell & McKone Co., Overland distributer, had open house in the new building just finished for them. An orchestra played from 10 in the morning until 10 at night. In response to invitations sent out, more than 1500 people visited the salesrooms during the 3 days. On the opening day there were some 600 visitors. More than twenty-five orders for new cars, twenty used cars and ten truck sales were booked. The new salesrooms differ from the ordinary motor building in that it is practically a two-story structure, but made as a one-story place, this giving a space of 28 ft. between the floor and the ceiling in the salesrooms. It is possible to place fifteen vehicles in the salesrooms for new cars without crowding, and if it were necessary to place machines in tiers, three could be placed one above the other, with plenty of space between them. In the rear, divided off by double doors, is a large room for used cars capable of holding fifteen cars. The offices are on a floor above the dividing wall between the two rooms and so arranged that one may look down from either side into the rooms.

MOTOR CAR TYPE ENGINE ULTIMATE FOR TRACTOR

(*Continued from page* 23)

the ground. It is possible to observe tractors to-day in which the radiator top swings an inch from side to side with each explosion.

Further, as regards the punch applied to the gears in the transmission by large individual explosions, this is greater than might at first be imagined, greater than it would be on any other type of vehicle, because the tractor is positively driven by the explosions. A tractor has not an eighth of an inch of "coast"; throw off the switch and it stops dead with a bump. Practically it is impossible to supply enough flywheel to do more than carry the crank from one explosion to the next.

It is therefore safe to say that the automobile type of engine is going to be the ultimate type for tractors, just as it has become the conventional type for trucks. If this be admitted, consideration of what a tractor engine ought to be can be narrowed down considerably. In brief, it needs to be a large truck motor which will withstand usage a trifle rougher and more arduous than that given the average truck power plant. There are some truck engines which are perfectly suitable for tractor work, but others which are not, so one might say that the very best of truck motors is what the average of tractor engines ought to be.

One thing cannot be stated too strongly, and this is the need for protection against dust, mud and water. The tractor engine ought to be capable of being buried in slime at the bottom of a pond for a month and then dug up and put straight to work without any overhaul.

A side issue suggested by this consideration brings up a point where the tractor should not follow automobile practice. The engine should be under a hood, of course, but the radiator should *not* be the front end of the hood. The radiator should be separate, standing out somewhere in front so that it will be exposed to all the winds that blow, and the fan can be outside with the radiator. The engine should be boxed in so that the only communications it has with the outside are the carbureter air intake and the exhaust pipe. There might just as well be no hood at all as a hood with a fan to blow dust into it.

As regards details, any engine that is running at full power 100 per cent of the time is placing a severe stress upon the valves and the ignition, particularly upon the spark plugs. Spark-plug trouble is the main difficulty against which tractor engineers are contending at present, and it is intensified by the high temperatures produced by using kerosene as fuel. The answer seems to be to use the small plug now adopted for racing engines and likely to be standardized for aeroplane use. Several tractor engines are already fitted with the small plug, and it is probable that more will follow.

Valve areas have to be fairly large, though not very large in proportion to the cylinder size, since there is no need for high speed. Since valve trouble is always due directly or indirectly to valve temperature with an "all the time full power" engine, it is manifestly important to cool the valves as thoroughly as may be, and this suggests that it may be found advisable to use four valves per cylinder rather than two large ones. For the bigger sizes, where 60 hp. or more is wanted, a T-head cylinder with a pair of valves each side seems better engineering than any form of cylinder with two very big valves. This has not yet been tried out in practice, but Diesel engines, which have the severest temperature conditions of all to combat, most commonly employ multiple valves.

Blevins Heads Merger of Blevins and Davis

To Distribute Studebakers in Ohio and Parts of Five Adjoining States

CLEVELAND, Sept. 16—The Blevins Auto Sales Co., Toledo and Cincinnati, and the A. R. Davis Motor Co., Cleveland, both Studebaker dealers, have been merged into a new $500,000 company headed by Harry W. Blevins. The company has contracted for $12,000,000 of Studebaker cars and will have the distribution of Studebakers in Ohio and portions of five adjoining States. The company starts with three of the largest and best equipped buildings in the State, in Cleveland, Cincinnati and Toledo. Associated with Blevins, who is president of the new company, are: Vice-president, A. R. Davis, Cleveland; treasurer, J. O. Hahn, and secretary, H. G. Rossiter, Toledo. Davis was at one time branch manager for the Studebaker corporation and up to this time Hahn has been Cleveland branch manager.

Jeffery Dealers Get Standard Service Policy

KENOSHA, Sept. 16—The Nash Motors Co. is sending out to its dealers a printed copy of the standard service policy recently approved by the National Automobile Chamber of Commerce. The policy is printed in 14-point and 12-point type on a sheet 18 x 11 in., with blank spaces for the name of the dealer. The Nash company is supplying four of these to dealers who ask for them with the dealer's name printed in the blank spaces. It is proposed that dealers frame the policy for salesroom display.

Firestone Opens K. C. Branch Building

KANSAS CITY, Sept. 14—The new eight-story branch building of the Firestone Tire & Rubber Co. was opened today with a dealers' convention attended by 500 dealers from various points in the branch territory. The dealers spent part of the morning inspecting the new building and the day's program included a group photograph, luncheon, motor parade and a business session in which sales and distribution problems were discussed. There was a banquet in the evening.

Packard Branch in White Plains

NEW YORK, Sept. 18—The Packard Motor Car Co. has opened a branch in White Plains.

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St. Louis Car Dealers Take in Their Rivals

But Only for "Open Week" in October and to Help Make the Show a Real One

ST. LOUIS, Sept. 16—The Automobile Manufacturers and Dealers Asociation of St. Louis announces that the automobile show will be given the third week in February, place yet to be announced.

Plans for housing all of the members of the association on Locust Street for "Open Week," the first week in October, have been completed, and this week the directors and show committee will accept designs for signs to be placed over the showrooms. The signs will be uniform. A band will supply the entertainment from 7.30 to 10.30 each evening. There will be a parade of 1917 cars on Tuesday and all cars will proceed to the St. Louis Agricultural Fair Grounds and be parked together for the day.

The housing of all firms on Locust Street is accomplished by putting the non-Locust Street firms with those having showrooms on the street, non-conflicting lines being merged.

Following are the mergers for the week:

Cadillac Automobile Co. of St. Louis, 3918 Olive Street, Cadillac distributer, with Tate-Gillham Motor Car Co., Dodge Bros. distributer, Twenty-third and Locust Streets.

J. I. Case T. M. Co., 700 South Seventeenth Street, Case branch, with Trenton Motor Car Co., National and Regal distributer, 2646 Locust Street.

Ebbeler Motor Car Co., Garrison and Olive, Mitchell and Partin-Palmer distributer, with Chevrolet Motor Co. of St. Louis, Inc., Chevrolet retail branch, Locust-Lindell cut-off.

Ideal Motor Sales Co., 1312 South Grand Avenue, Pullman distributer, with Velie Automobile Co. of St. Louis, Velie distributer, 3021 Locust Street.

Johnson Automobile Co., 3667 Olive Street, Ford distributer, to provide its own space, location unannounced.

Lewis Automobile Co., Walton and Washington Avenues, Chandler distributer, with Packard Missouri Motor Co., Packard distributer, 2201 Locust Street.

Park Automobile Co., Delmar and Clarendon Avenues, Chalmers, Peerless and H. A. L. distributer, to provide its own space, location unannounced.

Stevens Motor Car Co., 4432 Olive Street, Lexington and Milburn distributer, with Weber Implement & Automobile Co., Hupmobile and Grant distributer, 1900 Locust Street.

Von Arx Automobile Co., 3916 Washington Avenue, Winton distributer, with Vesper-Buick Auto Co., Buick distributer, 3205 Locust Street.

Westcott Motor Sales Co., 3331 South Grand Avenue, Westcott distributer, with More Automobile Co., Marmon distributer, 3005 Locust Street.

Western Automobile Co., Euclid and Washington, Pierce-Arrow distributer, with Hudson-Phillips Motor Car Co., Hudson distributer, 3301 Locust Street.

Woods Electric Vehicle Co., 437 North Euclid Avenue; Woods dual-power car branch, with Mound City Buggy and Auto Co., Allen, Jackson and Halladay distributer, 2017 Locust Street.

Accessory Dealers in "Open Week"

ST. LOUIS, Sept. 18—The Motor Accessory Trade Association of St. Louis decided at the September meeting last week to participate in the "Open Week" the first week in October, as planned by the Automobile Manufacturers' and Dealers' Association. Dealers not on Locust Street will be provided with show space in the stores of the Locust Street dealers, as the car dealers are doing. All stores will be decorated, keep open until 10.30 p. m. and display uniform signs. Local managers of tire companies said that, while their companies did not enter automobile shows, they anticipated no trouble in getting permission for decorations and late hours. The Monarch Auto Repair Co., 5255 North Market Street, and W. L. Patterson, "automobile doctor," 5233 Cabanne Avenue, were elected to membership. H. H. Swenson, local manager for the Fiske Rubber Co., was made chairman of the athletic committee, and George Taylor of the Polack Tyre & Rubber Co. was added to the entertainment committee. An address on "Salesmanship" by A. R. Furnish of Brown's Business College and "Memory Training," by J. B. Dishman and W. R. Buckner, made up the serious program.

Alameda Stages "Safety First" Week

OAKLAND, CAL., Sept. 16—The Alameda County Automobile Trade Association sponsored a "Safety First" week held here Aug. 28 to Sept. 2. The first day the association distributed safety first pennants. Next day local preachers told how to practise safety first; Monday tags and puzzles were distributed to pedestrians; Tuesday was "Watch Your Step" day; Wednesday was "Hand Out" day, all motorists being instructed on how to indicate their intentions of stopping and turning; Thursday was "Courtesy, Caution and Corners" day; Friday was "Brake" day, and all motorists were urged to look to the conditions of their brakes; Saturday a great parade was held. The annual banquet of the association will be held Oct. 5.

Genesee County Organizes

FLINT, MICH., Sept. 11—The Genesee County Automobile Trade Dealers' Association has been formed and includes all of the automobile dealers in that county excepting one. The aim of the organization is to bring about a closer cooperation between the dealers relative to service, sales and other matters concerning the dealers' businesses.

Prominent Tradesmen Assume New Duties

Resignations and Promotions Put Workers in New Places

Paul J. Barnard has been appointed sales manager of the Harvey Spring & Forging Co., Racine Junction, Wis.

R. F. Russell has resigned as production engineer of the Bessemer Motor Truck Co., Grove City, Pa., to become identified with the Air Reduction Co., New York.

W. E. Finney, St. Louis, recently manager of the Goodyear Tire & Rubber branch in that city, has been assigned to the mechanical goods department at the Goodyear factory, Akron, Ohio.

O. E. Hoerger, St. Louis, recently assistant to Wilson C. Dodd, manager of the Goodyear branch, has been promoted to operating manager of the Goodyear branch in Boston.

Clarence Albach, St. Louis, who has been selling truck tires in that territory for the Firestone and Gibney companies, has joined the White Co. force to sell trucks.

Earl B. Taylor, St. Louis, recently with the Kardell Motor Car Co. as a Reo salesman, has joined the Johnson Automobile Co. to sell Fords.

John W. Gardner, sales manager of the Kisselkar Co. of New England, Boston, for some time, has resigned to accept a position with the Oldsmobile Co. of Boston.

Joseph Porter, who has been manager of the King Car Corp., New York, has been appointed assistant sales manager by the King Motor Car Co., Detroit.

F. D. Tobin, assistant district manager of the Willard Storage Battery Co., Detroit, has resigned to become affiliated with the Cutting, Armstrong & Smith Sales Co.

Guy W. Morgan, of the Mitchell Motor Car Co., Racine, has been appointed president and general manager of the Consolidated Car Co., Detroit. He takes up his new duties Oct. 1.

Louis H. Bill, general manager of the Nash Motors Co., Kenosha, will leave that organization Oct. 1 and retire to his San Francisco home.

J. Preston Penfield has been chosen president of the Luxurious Light Car Co., 1849 Euclid Avenue, Cleveland, to succeed J. M. Smith, who has gone to the Cole Sales Co. of Indiana.

E. D. Endsley has been appointed sales manager of the Alter Motor Car Co., distributers of the Scripps-Booth and Liberty cars, Cleveland.

Kenneth Skinner has resigned as secretary of the Micro Piston Ring Co., New York, having sold his interest. He has gone into business as a manufacturers' representative under the firm name Auto Appliance Co., 1960 Broadway, where he represents the G. H. Dyer Co., Cambridge, Mass., and the Asbestos & Rubber Works of New Jersey, Camden, N. J.

Franklin G. Hubbard has resigned as chief engineer of the mechanical department of the Western Electric Co. plant at Hawthorne, Ill., to become vice-president, a stockholder and director of the H. E. Harris Engineering Co., Bridgeport, Conn.

T. V. Buckwalter has been appointed chief engineer of the Timken Roller Bearing Co., Canton, Ohio.

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A. A. Woodruff has been appointed assistant sales manager of the Simplex Automobile Co., New Brunswick, N. J. His headquarters will be at 60 Broadway, New York. He will have charge of office routine and system and spare and repair parts business and will remain manager of the body department.

Kirk Taylor has been appointed sales and advertising manager of the Evapco Mfg. Co., Detroit, succeeding W. O. Seelye. Taylor was formerly assistant manager for the New Era Spring & Specialty Co. The Evapco company hereafter will sell only to jobbers.

M. D. Kidder, manager of the wholesale sales of Reo cars in New England with headquarters in Boston for the past 2 years, and before that Eastern sales manager for the factory, has gone into business for himself and will handle the Reo line in Maine, with headquarters at Portland. He took over the business from A. E. Darling a few days ago.

George M. Wetherbee, who handled the Cartercar and Metz agencies in Boston for some years until recently, has joined the Cambridge Motor Co., one of the new Ford agencies.

H. W. Spalding, St. Louis, general manager of the Packard Missouri Motor Car Co., has been elected vice-president of the company and placed in charge of the sales department. He is succeeded as general manager by Gilbert S. Loomis, who has been in charge of the Packard interests at Louisville, Ky., and previous to that assignment was connected with the Packard factory.

Wallace C. Capen, St. Louis, whose transfer from the White branch in that city to a factory position was announced recently, will instead become manager of the Chicago branch of the White company. He will take with him C. F. Feltz, manager of the service department in St. Louis.

George P. Lutz, for the past 5 years with the Blevins Auto Sales Co., Toledo, has resigned as assistant manager and disposed of his stock holdings.

W. L. Landreth, formerly with the Indianapolis branch of the Buick Motor Co., is now associated with C. G. Sanders, of the Hoosier Haynes Co., Kokomo, Howard County Haynes distributer.

Don L. Watson, for the last year sales manager of the Haynes Automobile Co., Kokomo, has been promoted to the office of assistant general manager, a newly created position.

John C. Monteith has been made general manager of the Phelps Mfg. Co., Columbus, Ohio, manufacturer of F. & H. wire wheels.

Leak-proof Men Move Up

ST. LOUIS, Sept. 18—The McQuay-Norris Mfg. Co. has made these promotions: Frank J. Stanley of the traveling force is made manager of the Cincinnati branch and Howard W. Sweeney is made manager of the Denver branch.

J. W. Ruse, Production Expert, Dies

KENOSHA, Sept. 16—John W. Ruse, production expert, died here last week of acute dilation of the heart after a brief illness. Mr. Ruse was for 8 years with the Buick Motor Co., Flint, Mich., for the last 6 years as general superintendent. Several weeks ago he came here to become associated with the Nash Motors Co. Mr. Ruse was born 43 years ago in Virginia.

Self-Charging Electric Is Coming From Boston

Will Recharge Itself Running on the Level, Weigh 1500 lbs. and Sell for $500

BOSTON, MASS., Sept. 16—Plans are now under way to build here an electric motor car that will be unusual. It will have a battery that will recharge itself when the car is running on level ground, and it will be possible to run around 2 or 3 days without having to get a boost. It will weigh less than 1500 lb. and will sell in the neighborhood of $500. Plans are under way to place the stock on the market, and the men behind it are all big enough so that their names mean something. The man who has devised the machine has a national reputation in the electrical world and he is connected with the biggest company in the country making electrical apparatus.

Overland to Erect Service Building

BROOKLYN, Sept. 18—The Willys-Overland Co. has leased a site 150 x 130 at St. Marks and Underhill Avenues, 120 ft. west of Underhill, on which it will erect a service station. The rental for a period of years is $100,000.

Stutz and Saxon Earnings

NEW YORK, Sept. 19—The Stutz Motor Car Co. during the 5 months ending May 31 earned $1,319,107.

During the same period the Saxon Motor Car Co. made a profit of $707,907. Its sales were $6,680,008.

Imperial Brass to Double Plant

CHICAGO., Sept. 18—The Imperial Brass Mfg. Co. will begin next week construction of an addition to its factory which will double its floor space. The present building contains 75,000 sq. ft.

Miller Is Found

Motor World wishes to thank the several people who promptly forwarded information as to the whereabouts of W. Miller. He is now representing the Pullman Motor Car Co. in New England. The mail from the trenches in Europe has been forwarded to him through that channel.

Bosch Adds Another Building

SPRINGFIELD, MASS., Sept. 16—The recent addition to the extensive works of the Bosch Magneto Co. is to be further augmented by a large addition providing more than 60,000 additional square feet. Ground has been broken for the building and its completion will be rushed. The addition is to be a single-story building. When this second addition has been completed there will have been more than 130,000 sq ft. of manufacturing space added to the Bosch works during 1916.

Rub-On Becomes Ellis-Smith

BUFFALO, N. Y., Sept. 16—The Ellis-Smith Mfg. Co., Inc., is the new name of the Rub-On Mfg. Co., Inc. The change became effective Sept. 1. The management and sales policy of the company remains the same.

Bound Brook Oil-less Bearing Co. Adds

BOUND BROOK, N. J., Sept. 16—The Bound Brook Oil-less Bearing Co. is erecting a reinforced concrete addition 50 x 100 to its plant No. 2, to take care of the increased business in Nigrum impregnated wood bearings.

Maxwell Doubled Earnings

DETROIT, Sept. 18—The Maxwell Motor Co. earned more than twice as much in 1916 as in 1915. The fiscal year ended July 31 and the incomes compare as follows: Net earnings, 1916, $5,531,034; 1915, $2,337,950.

Touring Hupmobile Reaches Detroit

DETROIT, Sept. 16—The Capital to Capital touring Hupmobile reached this city to-day, to pay its respects to the originator of the tour, President J. Walter Drake of the Hupp concern. The party left Lansing, the capital of Michigan, and the sixteenth visited so far by the car, early in the day, and was met just outside of Detroit by a large party of good roads enthusiasts, who formed a guard of honor, and escorted by a band, brought the touring car through the downtown streets of the automobile metropolis and out to the Hupp factory.

Detroit marks the end of the first division of the long hike. It means that the car has now traveled 3050 miles of the 20,000-mile trip it has undertaken, with the intention of visiting every State capital in the interests of good roads. The car left Washington, D. C., the starting point, on Aug. 28.

Carris to Distribute Franklins

CLEVELAND, Sept. 16—Clayton S. Carris, formerly Central West territorial representative for the Franklin Automobile Co., Syracuse, with headquarters in Chicago, has formed a new company in Cleveland to distribute Franklin cars. The company is incorporated for $40,000 and will begin construction of a salesroom early in 1917. Headquarters are at present 1831 East Thirteenth Street. Associated with Carris are R. H. Frank and J. A. Bott.

Abandon Narragansett Park Race

PROVIDENCE, Sept. 16—The race-meet which was scheduled to be held at the track here to-day has been abandoned.

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8,750 Studebakers in 8 Months, New Record

his is 1710 More Than for Whole of 1915—To Build 73,125 Cars in Year

DETROIT, Sept. 16—The Studebaker orp., for the first 8 months of 1916, nding Aug. 31, has sold more cars than or the entire 1915 year. In number of ars, 48,750 Studebakers were sold from an. 1 to Aug. 31 of this year, as compared with 47,040 for the whole of last ear, a gain of 1710.

At the present rate, 1916 sales will be 5.4 per cent greater than 1915, or about 3,125 cars, meaning an aggregate gain or 1916 over the previous year of 6,085 cars, if the present rate is maintained. As a matter of fact, however, is practically certain that the balance n favor of 1916 over 1915 will be greater han the estimate just given, for the utput is being steadily increased and he factory reports sales for the last 4 onths of this year larger in proportion han for the whole 8 months of this year.

It is believed that Studebaker will sell bout 80,000 cars, and with recently auhorized factory extensions, including additional buildings and equipment, will nable the production of 100,000 cars, hat being the mark set for 1917.

Studebaker South Bend Expansion

INDIANAPOLIS, Sept. 14 — The Studebaker Corp., South Bend, Ind., will uild additions to its plant to cost 1,500,000. Contracts for constructing ew machine shops and foundries have een let. The corporation announces hat with the completion of its present lans the plant will be augmented furher by the addition of other buildings o cost approximately $1,000,000. By anuary, 1918, it is expected that the umber of men on the payroll will be inreased from about 5000 to 7000. The um of $500,000 will be spent in building dditions to the corporation's Detroit, Mich., plant during the year.

Vulcan Trucks Discontinued

SHARON, PA., Sept. 14—The line of ulcan motor trucks, made by the riggs-Seabury Ordnance Co., has been iscontinued. The Vulcan truck up until 915 was made in 2-, 3-, 5-, 6- and 7½- on capacities, and was this year offered n all except the two larger sizes.

Mais Stops Manufacture

INDIANAPOLIS, IND., Sept. 14—he manufacture of the Mais truck by he Mais Motor Truck Co. has been discontinued. The Mais plant has been purhased by the Premier Motor Corp. and s now being used for other purposes. he Mais organization has not been disosed of, however, and the Premier comany is carrying a full stock of repair arts for Mais trucks now in service.

Saxon and Stutz on 'Change

NEW YORK, Sept. 16—Stocks of the axon Motor Car Co., Detroit, and the tutz Motor Car Co., Indianapolis, have een listed on the New York stock exhange and will be traded in in a few ays or as soon as the permanent cerificates are ready. The new stock of the eneral Motors Co. is being actively traded in on the Broad Street curb "when, as and if issued." Since Monday last the stock has advanced some 35 points.

Hench & Drongold to Make Bodies

YORK, PA., Sept. 16—The Hench & Drongold Co., manufacturer of garden implements, has entered the automobile field as maker of wood work of all kinds for automobiles and trucks, including bodies and parts of both wood and metal. The company will also build special machinery and do machine and forge work.

New Gasoline Pump from Kentucky

LOUISVILLE, KY., Sept. 16—The Visible Measure Gasoline Dispenser Co. has been incorporated to manufacture, sell, install, rent and lease the visible measure gasoline dispenser. The capital stock of the company is $40,000. The incorporators are J. Henry Brady, William A. Earl and William A. Pell.

Kelly-Springfield May Move

AKRON, Sept. 18—The Kelly-Springfield Tire Co. is considering the removal of its plant from this city to Cumberland, Md. If moved, the plant will be tripled in capacity. The Akron plant will be sold for, it is expected, $750,000, and negotiations are under way for the donation by Cumberland of $750,000 and a 75-acre site. The company now employs 1500 men, but in Cumberland would have 3000. Kelly-Springfield is paying $4 a share and earning about $12.

Hydraulic Pressed Steel Expanding

CLEVELAND, Sept. 16—The Hydraulic Pressed Steel Co., this city, has issued $1,000,000 7 per cent cumulative preferred stock, which has been purchased by Borton & Borton. J. H. Foster, vice-president and general manager of the company, states that the new capital will be used in extending and developing the company's business, it being proposed to retire the present preferred issue of $200,000, which is callable at 102½. A sinking fund will be established Jan. 1, 1917, and each year thereafter $50,000 worth of the new stock will be retired. The stock will be callable at 107½.

Adler Opens New York Office

NEW YORK, Sept. 18—M. M. Adler, manufacturers' representative, with branches in Amsterdam, Holland; Birmingham, England, and Soerabaya, Java, has opened a New York office at 32 Union Square East. The concern is now representing Studebaker cars, Goodyear tires, the Automobile Supply Mfg. Co., Brooklyn, N. Y., and the Merkel motorcycle and proposes to take on a few more American accessories.

Waukesha Increases to $1,000,000

WAUKESHA, Sept. 16—The Waukesha Motor Co. has increased its capital stock from $200,000 to $1,000,000 to provide for extensions of the plant. Work on a new office building is now under way, and plans are being prepared for large extensions of the machine shop, assembly department and testing shop.

Buick Drops Trucks

FLINT, MICH., Sept. 14—The Buick Motor Co. has discontinued the manufacture of its 1500-lb. delivery vehicle.

Will Produce 50,000 Touring Cars at $450

Victor Company, Recently Organized, Starts Work—Making Cars Now 5 Years

PHILADELPHIA, Sept. 9—The Victor Motor Co., incorporated in August, has started work on a large plant at Grubb's Landing, near Wilmington, Del., which when completed will have an annual capacity of 50,000 cars. The company was recently organized by well-known men to take over the Victor Car Co. of Philadelphia, which has been making cars for 5 years without standardized plans. The capital stock is $2,000,000, with $500,000 outstanding. Offices are at 1530 Chestnut Street, this city.

The car will be made as near perfect as possible for $450. It will be five-passenger, four-cylinder, weight 1750 lb., fitted with electric starting and lighting, will have a 110-in. wheelbase and sell for $450.

The motor, invented by C. Victor Stahl, has four bloc cylinders, 3¾ x 4 in., has removable cylinder-head, overhead valve and direct fan drive. Other features are three-speed transmission, Atwater-Kent ignition, multiple-disk clutch, center control, syphon cooling radiator, floating rear axles, Hyatt roller bearings, tires 30 x 3½ in., pressed steel frame, slanting clear-vision windshield and one-man top.

The officers and directors are: Hon. Chas. P. Grandfield, president, former first assistant Postmaster General; C. Victor Stahl, vice-president; H. H. Skerrett, treasurer, president Adams Woolen Mills, Adams, Mass.; Regnault Johnson, secretary; William H. Bischoff, superintendent Bethlehem Steel Co.

To Take Over Standard Roller Bearing

PHILADELPHIA, Sept. 16—The General Bearings Corp. is being organized to take over the business of the Standard Roller Bearing Co., which has been in receivers' hands for 3 years. The new company will be capitalized at about $5,000,000. Plans for reorganizing the company will allow the present stockholders to participate by paying assessments of $7.50 and $15 on common and preferred stocks, respectively. An application has also been made to the U. S. District Court here for a renewal of the license granted by the Hess-Bright Corp., holders of the Conrad patents for ball bearings. This is for the protection of the new company.

Standard Tire Ready Soon

CLEVELAND, Sept. 15—The Standard Tire & Rubber Mfg. Co., Willoughby, Ohio, has now practically completed the first unit of its factory enlargement, consisting of a power plant sufficient for the manufacture of 1500 tires per day. Other equipment, such as machines, cores, molds, etc., has been ordered and is expected soon.

Stockbridge Is Winton Boston Manager

BOSTON, Sept. 18—The Winton Motor Car Co., Cleveland, has sent Frank W. Stockbridge to Boston to become manager of the New England branch on Commonwealth Avenue. He succeeds F. A. Hinchcliffe, who has taken the agency for the Jordan car.

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Canadian Studebaker Men Gather

TORONTO, CANADA, Sept. 15—The first annual Studebaker's Good Fellowship gathering was held recently in Toronto. Of the 100 dealers of the Province of Ontario, over 70 were in attendance. It was primarily a "get-together" good-fellowship gathering of the Ontario Studebaker dealers. Among the prominent Studebaker men present were: L. J. Ollier, vice-president and director of sales; J. E. Grady, sales manager for Canada; G. Bell, assistant sales manager for Canada; A. J. Pattison, president York Motors, Ltd., Toronto; J. O. Linteau, general manager Le Gare Gadbois Co., Montreal; C. C. Hayward, general manager Launsbury Co., New Castle, New Brunswick; J. H. Fortier, vice-president and general manager P. T. Legare, Ltd., Quebec; J. R. Dixon, Dixon Motor Sales, Ottawa; G. A. Stant, Geo. A. Stant, Ltd., Hamilton, etc.

Findlay to Oust All "Leagues"

FINDLAY, OHIO, Sept. 18—Frank Taggart, State Superintendent of Insurance, has announced that he will begin at once to drive out of this State all of the motorists' leagues and organizations which sell with their membership pseudo insurance policies which provide monetary compensation in case of accidents, free legal advice, free legal defense, and many other attractive features. A court has ruled that these organizations are doing an insurance business without complying with the laws of the State.

From Everywhere

Detroit.—Maxwell earnings have increased 135 per cent over last year and 250 per cent in the last two years. The annual statement shows the surplus earned in the last year to be equivalent to 30 per cent on the common stock after allowing 7 per cent on the first preferred and 6 per cent on the second preferred. The net work assets are $11,176,783.26 and cash on hand is $3,269,552.50.

Toledo.—By the end of this year the Willys Overland Co. will have completed additions making possible the production of 300,000 cars a year.

Wilmington, Del. — The Harroun Motor Corp. has been formed by Ray Harroun with $10,000,000 capital. The company will produce a car to sell at $595; it probably will be a four with 107-inch wheelbase and a high efficiency motor of the overhead valve type. It is planned to produce 25,000 cars between May 1, 1917, and May 1, 1918. Sample cars will be shown at the National shows and production will be started March 1, 1917. John Guy Monihan is president of the organization, Ward Macey will be in charge of sales and Paul Hale Bruske of advertising. The Pronty & Glass Carriage Co. plant, Wayne, Mich., has been purchased.

Don L. Watson, sales manager of the Haynes Automobile Co., Kokomo, has been made assistant general manager.

William J. Davidson has resigned from the engineering department of the Cadillac Motor Car Co., Detroit. He will take up other activities in the industry.

W. H. Kirkpatrick, for nine years head of the sales department of the Peerless Motor Car Co., has been elected vice-president of the Wallace C. Hood Service Bureau, Detroit.

Coming Events

General Events

Sept. 25-26.....Indianapolis, Convention for the formation of Indiana Automobile Trade Association, under auspices of National Automobile Trade Association, Hotel Claypool.

Oct. 2-3-4-5.....St. Louis, Fall Meeting National Association of Automobile Accessory Jobbers.

Oct. 12..... Flint, Mich., annual convention of the Michigan Automobile Trade Association.

Oct. 16-17.....Rockford, Ill., Semi-annual Convention Garage Owners' Assn. of Ill.

Feb. .....Convention Minnesota Retail Automobile Dealers Association.

Races, Contests and Tours

Sept. 29.....Trenton, N. J., track racemeet, Inter-State Fair. Horace P. Murphy, Racing Secy.

Sept. 30.....New York, N. Y., speedway racemeet, Sheepshead Bay Speedway Corp.

Oct. 7.....Omaha, Neb., Speedway racemeet, Omaha Auto Speedway.

Oct. 7.....Philadelphia Speedway race.

Oct. 9-14..... Annual Trade and Good Roads Tour of the Kansas City Motor Car Dealers Assn.

Oct. 14.....Chicago; speedway races, Speedway Park Assn.

Oct. 19.....Indianapolis, Ind.; speedway races, Indianapolis Motor Speedway.

Oct. 21.....Kalamazoo, Mich.; track races, Kalamazoo Motor Speedway.

Oct. 22-23.....Los Angeles, Cal. Commercial Car Reliability Run.

Nov. 16-18.....Santa Monica; Vanderbilt Cup and Grand Prix races.

Nov. 30.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Dec. 25.....Los Angeles, Cal.; speedway races, Ascot Speedway Assn.

Shows

Sept. 11-16.....Milwaukee, Wis., Second Annual Fall Show, State Fair, Machinery Hall, Milwaukee Automobile Dealers, Inc.

Sept. 11-16..... Topeka, Kan., Show; State Fair; Topeka Motor Car Dealers Assn.

Sept. 18-22..... Grand Rapids, Mich., First Annual Fall Show, West Michigan State Fair, Automobile Business Assn. of Grand Rapids.

Sept. 18-23..... Sioux City, Ia., Show, State Fair, Sioux City Automobile Dealers Trade Assn.

Sept. 23-30..... Oklahoma City, Okla., Show, State Fair.

Sept. 25-30.....Salem, Ore., Show, State Fair.

Sept. 26-29..... La Crosse, Wis., Show, Inter-State Fair Grounds.

Oct. 7-14.....Cincinnati, Show, Music Hall, Cincinnati Automobile Dealers' Assn.

Oct. 11-21.....New York, Electrical Exposition, Grand Central Palace.

Oct. 14-21.....Dallas, Tex., Show, State Fair, Dallas Automobile Dealers and Accessories Assn.

Oct. 14-21..... Atlanta, Ga., Show, Southeastern Fair, Atlanta Automobile and Accessory Assn.

Oct. 14-21.....Chattanooga, Tenn., Show, Chattanooga Automobile Dealers Assn.

Oct. 14-29.....Dallas, Tex., Show, State Fair, Dallas Auto and Accessories Dealers.

Oct. 14-31.....Dallas, Tex. Show, State Fair.

Jan. 6-13.....New York, seventeenth annual show, National Automobile Chamber of Commerce, Grand Central Palace.

Jan. 9-10.....Fort Dodge, Iowa, Iowa Automobile Dealers Association.

Jan. 20-27.....Montreal, Can. Montreal Automobile Trade Assn.

Jan. 27-Feb. 3....Chicago, seventeenth annual show, Coliseum and First Regiment Armory.

Feb .....Newark, N. J. Show, First Regiment Armory.

Feb.....St. Louis, Mo., Show, Automobile Manufacturers Dealers Assn.

Feb. 3-10.....Minneapolis, Minn., Annual Show, Minneapolis Automobile Trade Assn.

Feb. 11-16.....Kansas City, Mo., Show, Kansas City Motor Car Dealers Assn.

Feb. 12-17.....Kansas City, Mo., Show, Kansas City Motor Car Dealers Assn.

Feb. 19-24..... Duluth, Minn., Show, New Armory Bldg., Duluth Automobile Dealers Assn.

Feb. 19-24.....Des Moines, Iowa, Eighth Annual Show, Des Moines Auto. Dealers' Assn. C. G. Van Vliet, manager.

Feb. 26-Mar. 3....Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn., Clark G. Powell, manager.

Mar. 3-10.....Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers Assn. C. I. Campbell, Gen. Mgr.

Mar. 6-10.....Fort Dodge, Iowa, Sixth Annual Show, New Terminal Warehouse.

*Indicates sanction by A. A. A.

Motor Car Securities Quotations

	Sept. 15, 1916 Bid	Asked	Sept. 16, 1915 Bid	Asked
Ajax Rubber Co	..	..	6	6
J. I. Case T. M. Co., pfd	78	86	83½	84
Chalmers Motor Co., com	109	111	105	106
Chalmers Motor Co., pfd	96	99	97	98
*Chandler Motor Car Co	..	..	105½	107
Chevrolet Motor Co	..	..	105	110
Fisher Body Corp	..	..	95½	96
Fisk Rubber Co., com	..	..	55	56
Fisk Rubber Co., 1st pfd	..	..	110	112
Fisk Rubber Co., 2nd pfd	..	..	100	102
Firestone Tire & Rubber Co., com	525	535	500	505
Firestone Tire & Rubber Co., pfd	111	113	110	112
*General Motors Co., com	395	400	370	375
*General Motors Co., pfd	114	115	125	127
*B. F. Goodrich Co., com	65½	66	72½	73
*B. F. Goodrich Co., pfd	108	110	113	115
Goodyear Tire & Rubber Co., com	225	230	205	210
Goodyear Tire & Rubber Co., pfd	104½	105½	100	101
Grant Motor Car Corp	..	..	7	8
Hupp Motor Car Corp., com	..	..	64	65
Hupp Motor Car Corp., pfd	..	..	98	99
International Motor Co., com	10	11	8	9
International Motor Co., pfd	61	65	13	15
*Kelly-Springfield Tire Co., com	210	213	100	102
*Kelly-Springfield Tire Co., 1st pfd	88	90	96	98
*Lee Rubber & Tire Corp	..	..	6	7
*Maxwell Motor Co., com	45½	47	9½	10
*Maxwell Motor Co., 1st pfd	89	90	86	87
*Maxwell Motor Co., 2nd pfd	37	38½	35	36
Miller Rubber Co., com	190	195	233	235
Miller Rubber Co., pfd	167	169	164	165
Packard Motor Car Co., com	120	130	152	154
Packard Motor Car Co., pfd	93	94	98	99
Paige-Detroit Motor Car Co	..	..	98	99
Peerless Truck & Motor Corp	..	..	39½	40
Portage Rubber Co., com	55	59	16	18
Portage Rubber Co., pfd	93	96	16	18
Regal Motor Car Co., pfd	..	..	17	20
†Reo Motor Truck Co	..	17½	45½	46
†Reo Motor Car Co	33	34	44½	45
Saxon Motor Car Corp	..	..	2	3
Springfield Body Corp., com	..	..	12	13
Springfield Bodp Corp., pfd	..	..	8	9
Standard Motor Construction Co	..	..	1	2
Stewart-Warner Speed. Corp., com	66½	67½	112	114
Stewart-Warner Speed. Corp., pfd	105	107	..	..
*Studebaker Corp., com	128½	130	125½	127
*Studebaker Corp., pfd	106	107	106	107
Swinehart Tire & Rubber Co	86	90	8	9
United Motors Corp	..	..	67½	68
*U. S. Rubber Co., com	51½	53	58½	59
*U. S. Rubber Co., pfd	104	105	114	115
White Motor Co	110	..	55	56
*Willys-Overland Co., com	192	194	6	6
*Willys-Overland Co., pfd	165½	168	104½	105

*At close Sept. 16, 1916—Listed N. Y. Stock Exchange
†Par value $10; others $100.

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National

HIGHWAY

Six and Twelve Cylinder Cars

America's Best Looking Car

DO "good looks" pay? They *do* in the automobile business. The dealer with the best looking car —with the National—has the advantage over all others.

Once the National's good looks attract buyers, you have no trouble in then showing them how superior the National performs. And remember, with the National line you get both the buyers who favor the Six and those who insist upon a Twelve.

Get the facts from National about their wonderful multi-cylinder motors; about their increase of 300 per cent in sales.

NOW IS THE TIME TO BECOME A NATIONAL DEALER

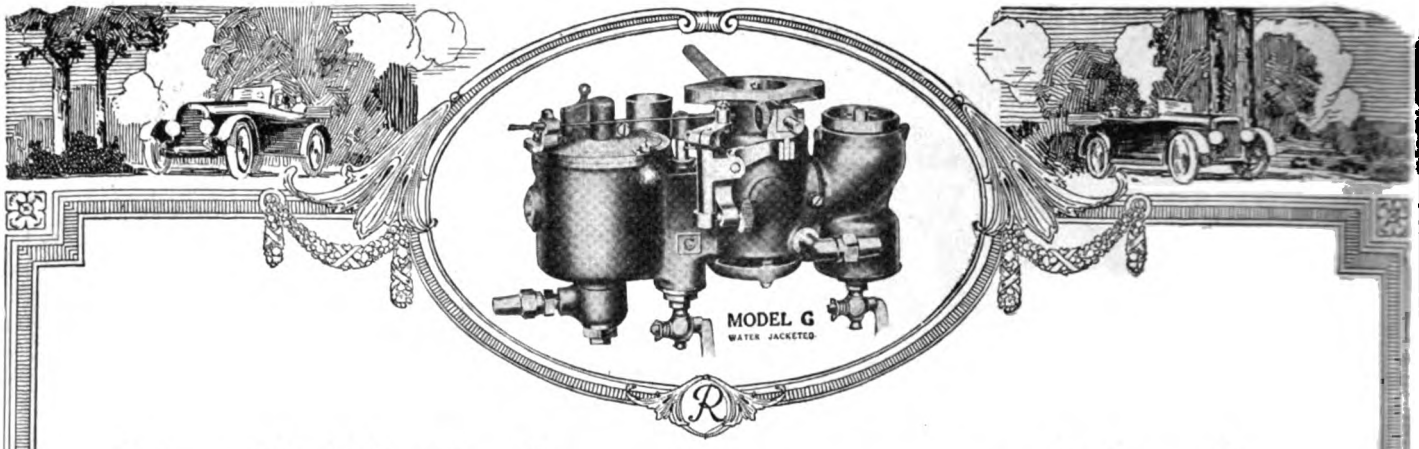
National Motor Vehicle Co., Indianapolis

Sixteenth Successful Year



When writing advertisers please mention Motor World

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Rayfield Carburetors are positive in Economy, Acceleration and Power with a Standard Adjustment.

If your carburetor is a Rayfield, you *know* these facts. If your carburetor is *not* a Rayfield, you have it adjusted either for (1) *economy,* or (2) for acceleration and power. If it is tuned up for economy, it is weak in acceleration and power.

If adjusted for standard *power* with a richer mixture, you are wasting gasoline through the entire range.

RAYFIELD CARBURETORS

automatically furnish the additional supply of gasoline when needed for acceleration and extra power—*entirely independent* of the running mixture. Let it be adjusted for economy—it will give full power and will respond instantaneously to any extraordinary demand for acceleration.

Rayfield Bulletin

* * *

JEFFERY
(The Nash Motors Co.)

This splendid car is the latest addition to the Honor Roll of leading automobiles equipped with

RAYFIELD CARBURETORS

Garage men — dealers — know the Rayfield. Hundreds of leading dealers are handling Rayfield Carburetors. Our proposition is interesting. Write us about it.

Findeisen & Kropf Mfg. Company
2101 Rockwell Street, Chicago

BRANCHES:
1140 Michigan Avenue, CHICAGO
1902 Broadway, NEW YORK
1191 Woodward Avenue, DETROIT

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The man who buys a car today realizes the need of a reliable timepiece on an automobile. He expects it as a matter of course in the car of exceptional merit. And he is disappointed if *his* car is without it.



There is only one reliable clock for automobiles—the Waltham. The best proof of this is the fact that the Waltham is used exclusively on practically every high-grade car made in America.

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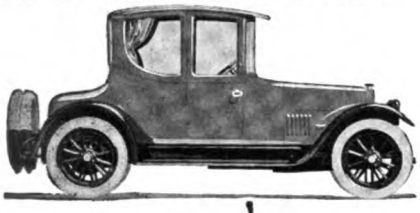
KisselKar

The ALL-YEAR Car



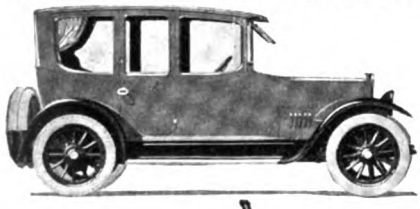


The ALL-YEAR Car—Detachable Town Car Top mounted on HUNDRED POINT SIX five-passenger Gibraltar Victoria Body and same car with Victoria Top. Price complete, $1,850.





The ALL-YEAR Car—Detachable Coupe Top mounted on HUNDRED POINT SIX four-passenger Gibraltar Roadster Body and same car with top detached. Price complete, $1,520.





The ALL-YEAR Car—Detachable Sedan Top mounted on HUNDRED POINT SIX five-passenger Gibraltar Touring Body and same car with top detached. Price complete, $1,520.

This show is enabling thousands of people to see how Kissel maintains beyond question the established superiority of the ALL-YEAR Car over other so-called convertible types.

Show

Dealers!

Here's Kissel's original idea that changed the motoring habits of a nation and revolutionized the construction of automobiles—the big innovation that has forever cut out the dead selling seasons and insures all-year business for KisselKar dealers.

Drop into the nearest KisselKar dealer's display room and inspect the new ALL-YEAR Cars. You will then see how effectively Kissel answers a host of imitators. Note the exclusive selling advantages which the ALL-YEAR Car gives to those dealers who saw the hand-writing on the wall and acted accordingly.

As we still have some territory unoccupied, we will be glad to hear from you.

The Hundred Point Six

And after inspecting the ALL-YEAR Cars, study the HUNDRED POINT SIX—Kissel's ultimatum to the automobile world. The car of a Hundred Quality Features, that created a new standard of automobile value.

Send for ALL-YEAR Car booklet just issued

Kissel Motor Car Company

HARTFORD, WISCONSIN, U. S. A.

The popular prices that are causing a stampede everywhere to the ALL-YEAR Car and the HUNDRED POINT SIX:

Hundred Point Six, Touring or Roadster	$1,095
Hundred Point Six, Gibraltar Body	1,195
ALL-YEAR Touring-Sedan	1,520
ALL-YEAR Roadster-Coupe	1,520
ALL-YEAR Victoria-Town Car	1,850
De Luxe SIX-42	1,650
ALL-YEAR De Luxe SIX-42 Touring Sedan	2,000

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The entire top—roof and all—is removable, insuring the obvious advantage of a wide open roofless car in summer. The top ***fits in*** —not on. No crude overlap at the joining point—no projecting fastenings inside or out to mar its appearence.

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Motor Triumphs Made with AC Spark Plugs

60 Cars Now AC Equipped



Extract from Cadillac Advertisement Which Appeared in the June 17th Issue of the Saturday Evening Post:

"Consider, now, the almost miraculous endurance of the car, handicapped a hundred times over in the matter of road-bed, yet it traveled its distance *without so much attention to its motor as the cleaning of a spark plug.*"

WHEN Baker in a Cadillac Stock Roadster made that thrilling dash from Los Angeles to New York in May last—covering the 3371 miles in the remarkable time of 7 days, 11 hours and 52 minutes—his car was equipped, as are all stock Cadillacs, with AC Titan Spark Plugs. In the Hudson performances in the 24-hour race and in the one-mile dash, AC plugs played an important part. The Cadillac flight from coast to coast stands out as a most remarkable test of endurance and dependability for the car and for the AC Plugs, the standard Cadillac equipment.

The list of AC users is growing.

These cars name AC Spark Plugs as standard equipment—

Packard	Buick	Enger	Knox
Pierce-Arrow	Oakland	Lexington-Howard	McLaughlin (Canada)
Cadillac	Oldsmobile	Brockway Truck	Neteo Trucks
Marmon	Jeffery	Chase Truck	Moreland Trucks
Hudson	Stearns-Knight	Daniels	Monroe
Chalmers	Saxon	Empire	Pilot
Hupmobile	Stutz	Federal	Sayers-Scovill
Chandler	National	G. M. C.	Crane-Simplex
Haynes	Velie	Gramm Trucks	Singer
Chevrolet	Jackson	Kissel Kar	Stephens
Dort	Apperson	Palmer-Moore	United Truck
Cole	Davis	Murray	Wilcox Trux
Reo	Detroiter	Bour-Davis	Jordan
Paige	Paterson	Premier	Liberty
Peerless	McFarlan		
Dodge Brothers	Westcott		

Champion Ignition Co., Flint, Mich.


NEW YORK




LOS ANGELES

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Specifications one Ox power, rawhide brake.

Even when the solid-wheeled cart bumped along the rough country road 25 years ago, Johns-Manville made Asbestos Brake Lining.

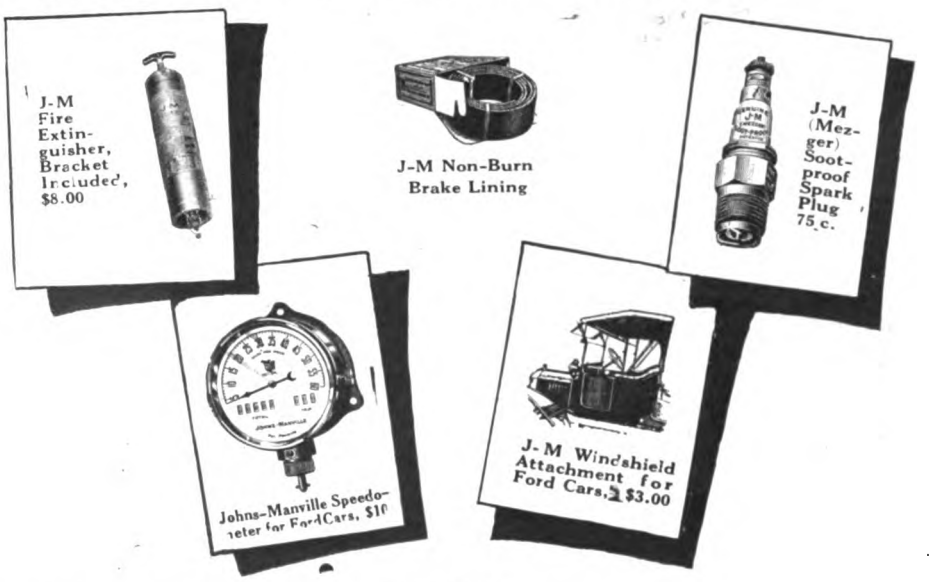
In those days, vehicle brakes were crude—home-made like the ox cart with a strip of rawhide wrapped around the axle as a brake.

Then the big problem was a brake material for cranes, derricks and hoists—where loads were heavy and danger lurked—hard service far more severe than on the modern motor car. A material was called for that could be instantly applied with a throw of the lever, relentlessly gripping, even in the presence of water, oil or grease.

The powerful resistance of J-M Asbestos Brake Lining easily met these conditions, guarding the safety of workers then, as it protects the thousands of motorists today. Its brake efficiency is not affected by extreme heat and retains its original gripping power even when worn to extreme thinness.

"J-M NON-BURN" on a strip of brake lining is an assurance of Safety, Satisfaction and Wear—a profit-getting and business-keeping asset to every dealer who knows the value of a name as firmly established in the automobile field as

J-M NON-BURN ASBESTOS BRAKE LINING



H. W. Johns-Manville Co.

EXECUTIVE OFFICES
296 Madison Ave., New York City

Akron	El Paso	Philadelphia
Albany	Galveston	Pittsburgh
Atlanta	Havana	Portland
Baltimore	Houghton	Rochester
Birmingham	Houston	St. Louis
Boston	Indianapolis	St. Paul
Buffalo	Kansas City	Sacramento
Chicago	Los Angeles	Salt Lake City
Cincinnati	Louisville	San Diego
Cleveland	Memphis	San Francisco
Columbus	Milwaukee	Seattle
Dallas	Minneapolis	Syracuse
Dayton	Nashville	Toledo
Denver	Newark	Tulsa
Detroit	New Orleans	Washington
Duluth	New York	Wilkes-Barre
	Omaha	Youngstown

THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED.
Toronto Montreal Winnipeg Vancouver

JOHNS-MANVILLE SERVICE COVERS THE CONTINENT

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The New Idea on Motorcycles

This year saw a big change in motorcycle tendencies. Most of it was produced by the realization of a new idea in the Cleveland Motorcycle. The idea has spread around the world and is here to stay.

The motorcycle has had the same defects of immaturity as the automobile—clumsy design, overweight, excess power, the mania for speed and an astonishing ignorance of where it was going to land.

Just as the automobile became sensible, quit racing, refined itself in design, lost its surplus weight and came within the price-range of millions, so has the motorcycle.

The first one that did it successfully was the Cleveland.

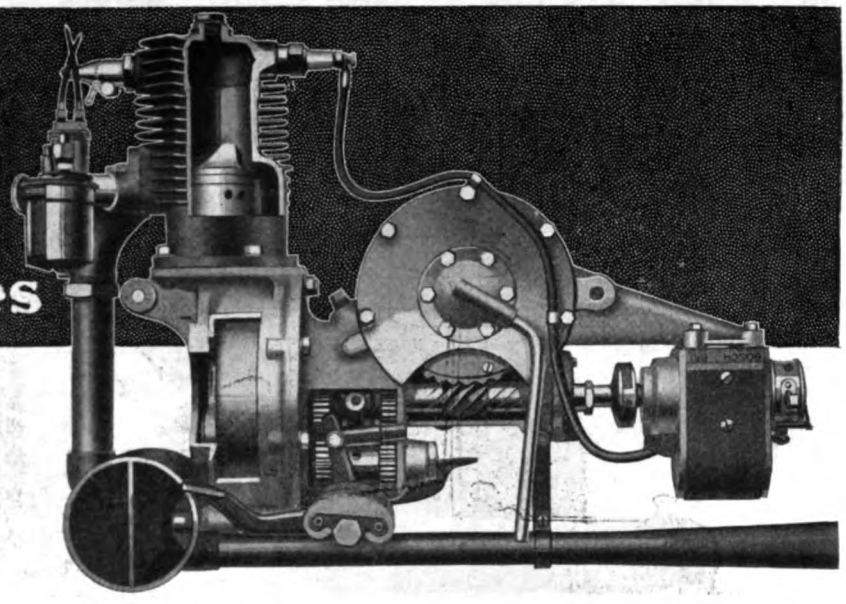
Just as the automobile was a bad proposition for dealers while it was raw, but a fortune maker when it came to its senses, so with the motorcycle.

The dealer proposition on motorcycles is going to change for the better in the next few months. Prompt action, with a view into the future, will enable the right dealers to turn profits they never got before.

The Cleveland Motorcycle for Men and Women

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Make it Pay on Motorcycles



Why waste time trying to sell mething that has to be forced n the market when you can sily hand over exactly what e market is asking for?

The Cleveland Motorcycle is ne coming car—for men and omen—for boys and girls, for l ages, all services, all condi-ons.

Dealers who take up the Cleve-nd will end their doubts about ne future of their business—will ave something of permanence -backbone for future growth.

Quantity is the thing. One of ur dealers sold 500 Clevelands n less than six months. We ave orders from Holland, Spain, outh America, Australia, every-vhere.

We need a few serious dealers who re sensible enough to see that the notorcycle that sells for $160.00 will ractically sell itself—by hundreds nd thousands—establishing a busi-ess that will grow from year to year -bigger and better.

The Cleveland is the only motor-ycle that is built—in miniature—to utomobile specifications—the only ne with worm drive and every part f absolutely highest quality. Fewest umber of parts, unique design, S.K.F. ball bearings, Bosch magneto, Brown & Barlow carburetor, Fire-tone non-skid tires, drop forged rame fittings, aluminum castings, nultiple disc clutch, two-speed trans-nission—all time tried and fool proof. Runs 75 miles on a gallon of gasoline, limbs any travelled road and has all he power and speed any reasonable erson wants—35 miles per hour.

The Cleveland Demountable Power Unit

Note the absence of clumsy mechanism. The entire unit can be removed from the frame by taking off two nuts. All units interchangeable. Power stroke at every revolution. Ideal compression chamber in crank case. No valves. Absolutely precise port action. Simplest and most compact motor on the market. Weight 150 pounds.

Important

This model is here to stay—it can't be improved. The only thing we have added to the 1916 model is a kick-starter at $10.00 additional if wanted.

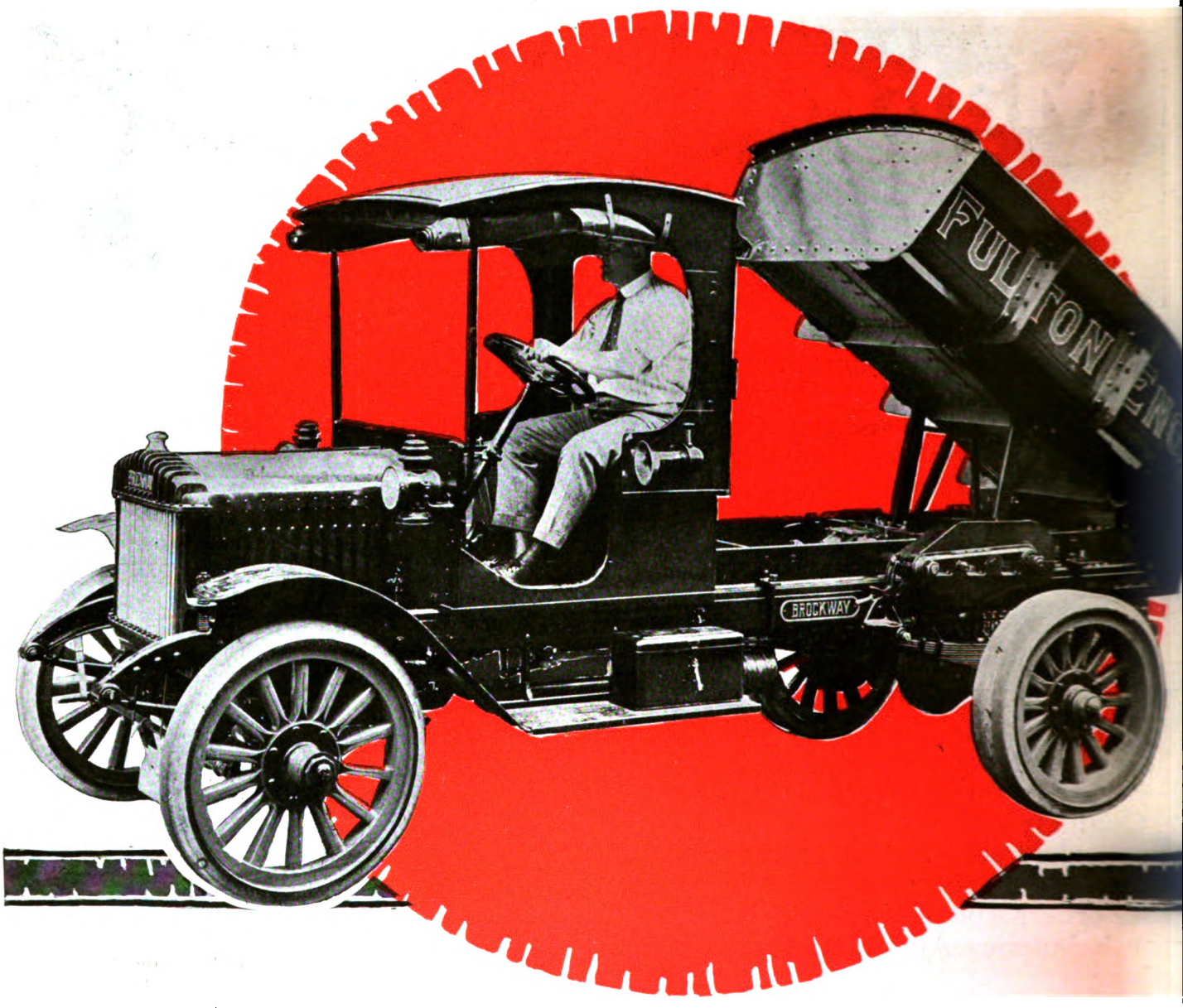
For available territories, more complete information about the machine and the outline of our advertising and sales helps for dealers, write at once to

The Cleveland Motorcycle Mfg. Co.

7209 Platt Ave., Cleveland, Ohio

The Cleveland Motorcycle the Universal Vehicle

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Sheldon worm gear axles for motor trucks mean longer service and better service. Longer service because Sheldon worm gear units grow better and more efficient with use. Instead of wearing and becoming noisy and less efficient, a worm gear unit up to the point of absolute destruction improves in efficiency with use. And a worm gear such as is used by Sheldon will outlast any other type of final drive by thousands of miles.

So that truck makers who furnish Sheldon worm gear axles for final drive are supplying the most efficient type of final drive obtainable—a type that plays a prominent part in reducing the ton mile haulage cost.

It is because of this super-efficiency of worm drive as a type that the worm gear has risen since 1913 from a minor consideration in truck production to the dominant position both as to models and numbers. Today almost half the actual truck models produced are worm driven, and more than half the actual trucks produced are worm driven. And the percentage of users of worm gear for final drive is materially on the increase.

Sheldon worm driven rear axles combine in their construction the semi-floating principle with the taking of all driving strains through the rear springs, thus doing away with radius rods and torsion tubes. All worm strains both radial and thrust are taken by ball bearings and both brakes are located upon the axle itself, rather than having one on the propeller shaft.

Illustrated herewith are a few models of Brockway trucks which use Sheldon equipment.

The Sheldon Axle and Spring Company

Makers of Springs and Axles for More Than 50 Years

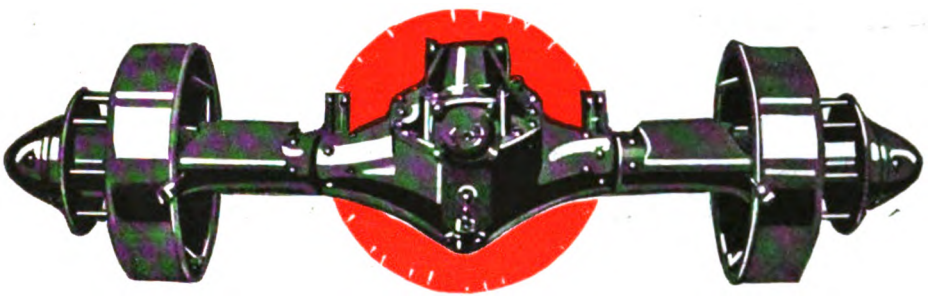
WILKES-BARRE · PENNSYLVANIA

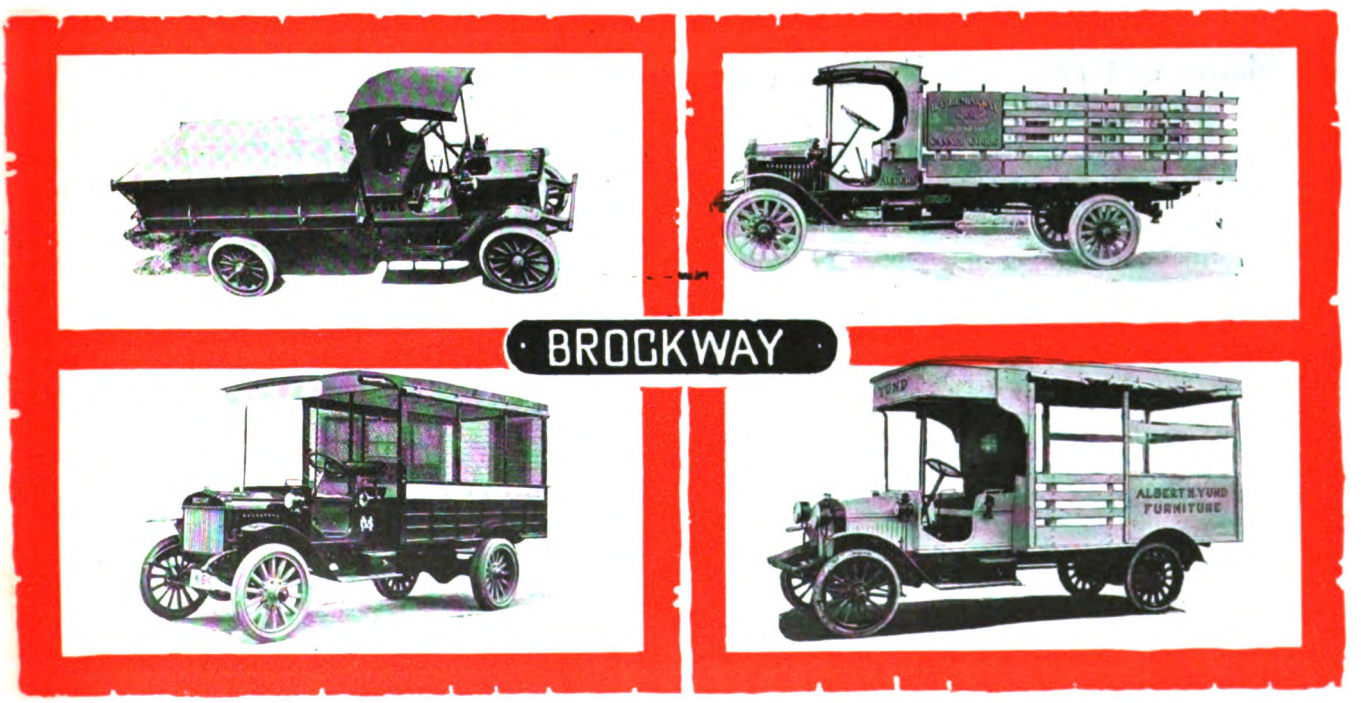
Chicago: 122 S. Michigan Blvd. Detroit: 1215 Woodward Avenue San Francisco: 444 Market Street

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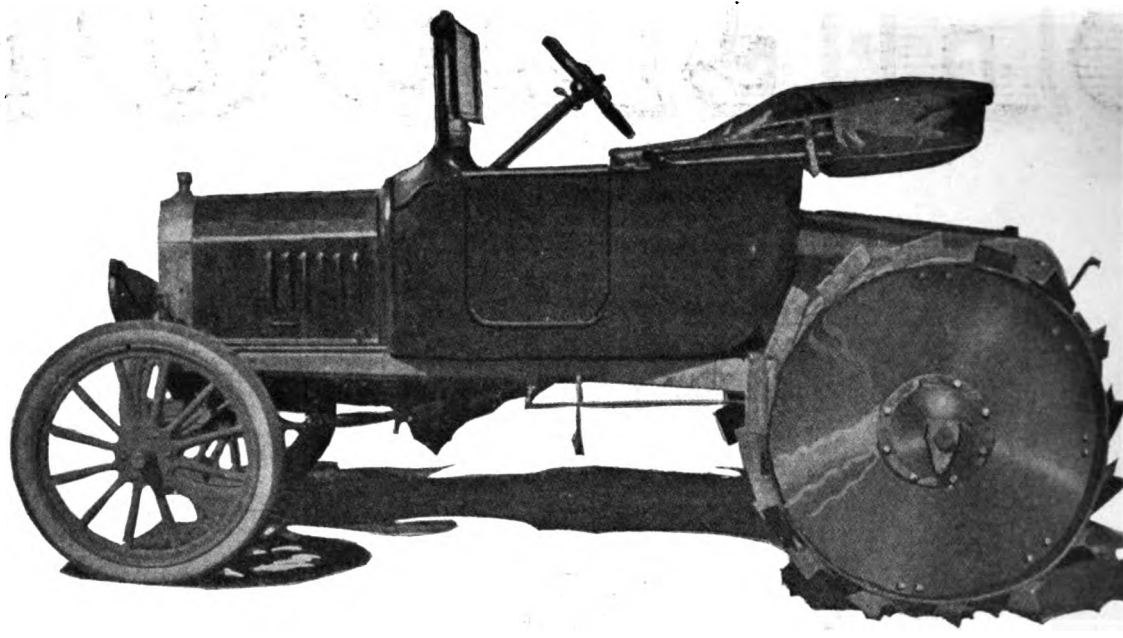
SHELDON

FOR SERVICE





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TRACFORD

Will Pull
- Plows
- Spring Tooth Harrow
- Manure Spreader
- Drill or Roller
- Mower or Binder

$125.00
F. O. B. DETROIT
and
A FORD
Gives You

Will Pull
- Corn Harvester
- Potato Digger
- Hay Loader
- Road Grader

A REAL TRACTOR

Only necessary to drill two one-half-inch holes in the frame to make the attachment.

We guarantee to pull any three-horse load, in the field or on the road.

The TRACFORD can be attached in an hour's time, and it takes only an hour to change back to the Ford car again.

Exhibited at the Michigan State Fair, Detroit, September 4-13, the TRACFORD created the sensation of the fair by its performance and pulling abilities, with the result that we are sold ahead of our present production and are already in receipt of scores of applications for territory.

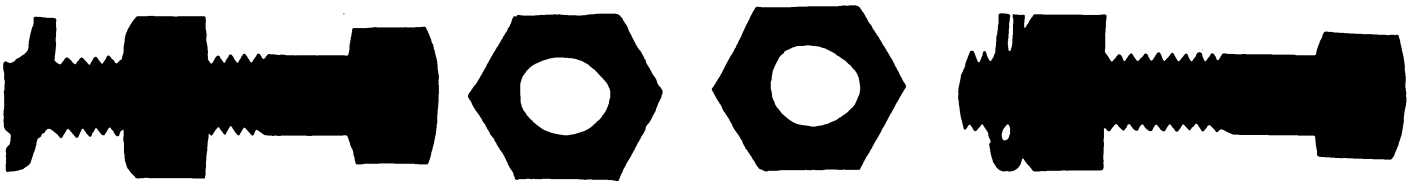
MR. DEALER—

Here is the cleanest-cut selling proposition ever offered wide-awake dealers. No service to render; no experts to hire; almost an unlimited market that has hardly been scratched, and that is impatiently waiting for the light, cheap, efficient and practical tractor. And the TRACFORD fills the need. Territory is going fast, and will go faster during the next month. BETTER GET YOURS WHILE YOU ARE ABLE.

Send for our booklet, "THE TRACFORD CATECHISM." It answers the questions you want to ask.

STANDARD-DETROIT TRACTOR COMPANY, 1506 Fort St., West, Detroit

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ring Nut Lock, loose, applied on bolt before being set in place to hold until taken off

Front view

Rear view

Spring Nut Lock tightened against nut. Prevents shaking off—follows nut tightening against material

Will Firmly Lock All Nuts in Place on the Cars or Parts You Manufacture

SPRING NUT LOCKS

save the *countless* losses that are constantly occurring wherever machines are run and part is fastened to part by nuts and bolts

Better Be Safe Than Sorry

Whether you manufacture or sell any part of an automobile from the radiator to the rear axle *see to it* that every nut is ***safely,*** **SECURELY, PERMANENTLY** locked in place on its bolt with a *Spring Nut Lock*

*crease the **reliability,*** **DURABILITY, STABILITY** of ur motor, tractor battery or what not by slipping on r *every* nut that engages a thread this simple, light, cheap and positively *cient* device that holds any nut permanently in place and yet may be eased at will—when lock, nut and bolt are as good as ever and can be ed over again as often as desired.

ou cannot afford to be without *Spring Nut Locks.* You nnot afford the loss of prestige, the mental worry, the k of serious losses in life, limb and pocket-book that are liable to occur *any moment* where vibration can start nuts loosening that are not properly cked in place, but are yet expected to hold vital parts. *The Spring Nut ck is your safety insurance.*

n anticipation of the great volume of advance orders nat have already begun to pour in on us as the merits f this great little device is becoming known to the mechanical world, we ave let contracts for the manufacture of *Spring Nut Locks* to The Stowell ompany of South Milwaukee, Wis., who have one of the largest plants in he country adapted to turning out this safety necessity in the enormous uantities it will be needed.

The Lock slips on the bolt like a washer and as easily —*economy of time in application.*

Its cost to the user is a mere trifle more than a washer —*the initial economy.*

It will not cut the thread of the bolt—*enduring economy.*

Its cost will be little more than that of the simple washer, cheapest of all devices.

Price lists will be issued soon. Write us for your probable needs NOW. Get in line to get *your share of this first output.* Send us your name and business and get our *first price lists* when issued.

Spring Nut Locks for Standard Threads for the following sizes are scheduled for delivery on or before October 1st: ⅜ in., ½ in., ⅝ in., ¾ in., ⅞ in. and 1 in. By November 1st we will try to supply all standard and special sizes and by January 1st we are in hopes to be able to fill all orders promptly, however large. In the meantime look out for your own needs by getting in touch with us immediately. Allotments will be made from first output in proportion to the size of the advance filled with us. Orders filled in rotation as received.

Spring Nut Locks for S. A. E. Standard Thread for automobile use have been thoroughly tested out and have aroused the enthusiasm of automobile men wherever tried. Locks for S. A. E. Standard Threads for 5/16 in., ⅜ in., 7/16 in., ½ in. and 9/16 in. are also in preparation and will be ready about the same time. Get in your orders at once.

Jobbers, Dealers, Garage Men—all Dealers—should take steps to supply the early demand of their customers for Spring Nut Locks. **Manufacturers** who take pride in their product should be prepared to adopt them. Railroads where economy and safety are first must have them. Write us your needs today and let us help you.

SPRING NUT LOCK COMPANY

648 Transportation Bldg. :: :: :: :: :: Chicago, Illinois

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Immediate Delivery Is But One of the Points That Give DENMO DEALERS the Big Advantage

The Dealers who swing in on the strong demand for DENMO Trucks **right now** are grasping the biggest opportunity in the commercial car-field today. **Immediate Delivery** is a deciding argument with many of your customers. But when you back this up with the **proved points** of superior construction found only in the DENMO, sales come easier than you ever thought possible with any truck.

DENMO Advertising has brought instant response. From hundreds of different parts of the country the best dealers have wired or written for the DENMO Agency. We want to tell **you** more about our sales policy—how we help our dealers sell DENMO Trucks and provide a big margin of profit on every sale.

Whether you are now selling other pleasure cars or trucks need not make any difference. Read these brief specifications below—think of the dozens of business concerns right in your own neighborhood who need DENMO Trucks today—then write, wire or clip the coupon here and send it back. **Do it today.**

DENMO TRUCKS

WISCONSIN MOTOR—Denmo Design, four cylinders cast enbloc; 14 miles to the gallon of gasoline average. LUBRICATION, forced feed non-splash, positive and dependable. SPLITDORF-APPLE two-unit starting and lighting system, and Model 44 special truck type high tension Dixie Magneto. SPRING cradled battery suspension—a DENMO invention. STRAIGHT LINE DRIVE—prevailing European practice. Grant-Lees Transmission—Highest grade, three speeds. PIERCE GOVERNOR, with Denmo Transmission Drive. CORRECT LOAD DISTRIBUTION—only 85% on rear wheels. CUSHIONED radiator carrier. TORBENSEN DRIVE AXLE—backed by Gold Bond Guarantee.

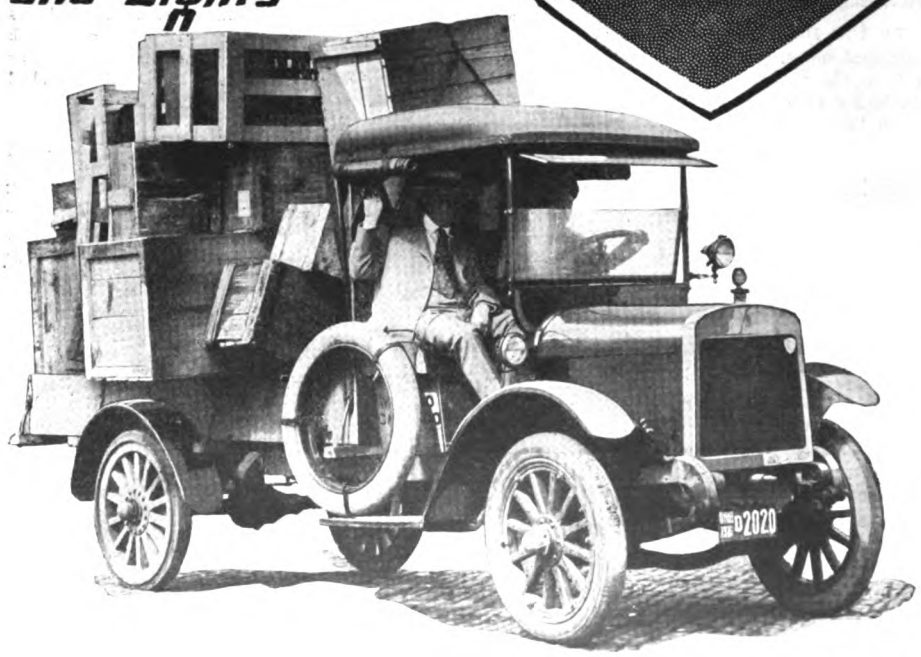
COMPLETE CHASSIS EQUIPMENT—Splitdorf-Apple, two unit starting and lighting system, wind shield, driver's seat, dash and instrument board assembly, tool kit, Stewart Speedometer, Motometer, License bracket, front fenders, bumper, spare rim, tire pump, governor, mechanical horn, spot light, electric front and tail lights.

Platform, stake or express bodies can be furnished at extra cost.

THE DENNEEN MOTOR CO.
Cleveland. Ohio

1¼ TON TRUCK
Electric Starter and Lights—

PRICE $1385
Complete Chassis Equipment—



DENMO DEALERS' COUPON

Send me complete explanation of your sales policy on DENMO Trucks and full information regarding the truck itself.

NAME .....

ADDRESS .....

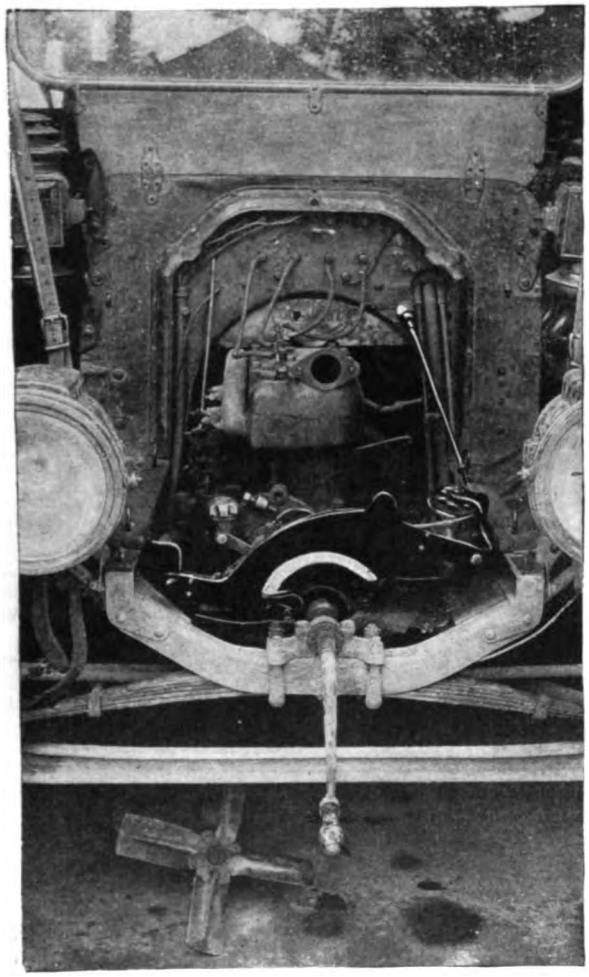
I (am / am not) representing a truck at the present time.

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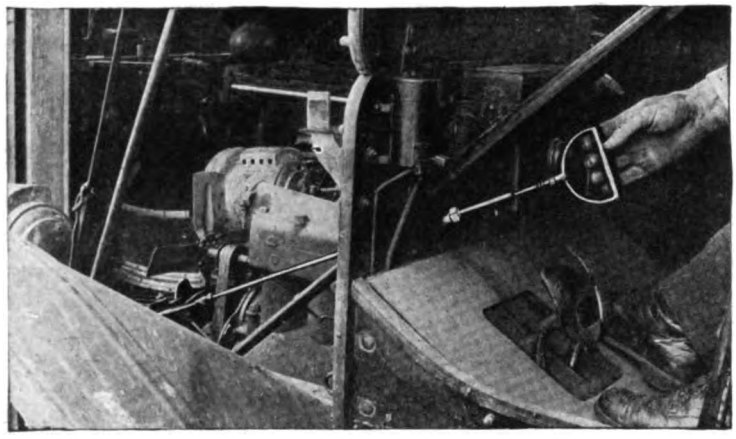
Denver Starter for Fords

IS JUST THE THING TO PUT ON YOUR FORD AND METZ AUTOS

Price $7.50 And You Can't Beat It!



Warranted to turn your engine over. Light, simple, positive in action. Easy to install. No danger in case of engine back-firing. No ratchets, no cogs, no slipping or friction. Primer attachment operates from seat. Completely concealed. Does not disfigure your car in any way. Neither the crank nor any other working part of your machine is interfered with. Weight only 8 pounds.



Dealers and Jobbers. The Denver Starter is a big money maker for live dealers. Write us at once about territorial rights and get your liberal proposition.

Single Order Shipped Complete for $7.50; in lots of five or more, $5.00 each f. o. b. Denver.

Denver Ford Starter Company

Suite 327, Century Building, Denver, Colo.

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Forget the Price!

We acknowledge that these are the lowest priced of all really high-class covers on the market. We concede that our terms to the trade are most liberal. But, after all, it's the quality that is in them and the perfect fit of them that has won first place for

WARNER AUTO UPHOLSTERY COVERS

FIT LIKE A GLOVE
DUST-PROOF WEAR-PROOF

Judge these covers for what they are and not for what they cost. Compare them with any or all others. Fit, style, materials, workmanship, manner of re-enforcing the places that get the hardest service, the ease with which they are put on and taken off—these are the elements that have made 100 per cent satisfaction for owners of Warner Auto Upholstery Covers.

To the dealer the advantages of handling Warner Covers are especially great. We have the manufacturing capacity that enables us to fill orders for covers for practically all makes and models of cars without delay.

Write today for samples and prices.

The Warner Auto Top Company
1640-1644 Central Avenue Cincinnati, Ohio

Warner Radiator and Engine Hood Covers



Save money by preventing Old Man Winter from bursting your radiator or cracking the water jackets. Make starting easier. **Dealers**—Our new line of 1917 Radiator and Hood Covers and prices are now ready—get your order in early.

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"$5,000 for Five Minutes With You, Mr. Merchant"



I'm Paying it Here and in other Publications to Tell You about My Big Special Offer On O-So-Ezy Cedar Oil Polish

I make O-So-Ezy.

For more than two years I made it—in a small way.

Now I am making it on a great scale of production—a scale that is growing greater every month.

My business became a big business when thirty automobile manufacturers, the builders of a million cars annually, decided that O-So-Ezy is the one polish they can consistently recommend to the buyers of their cars.

When such industrial giants as Overland, Buick, Maxwell, Chevrolet, Reo, Hupmobile, Oakland, Saxon, Chalmers, Paige, Scripps-Booth, Haynes, Briscoe, Stutz, Willys-Knight, Winton, Oldsmobile, King, Inter-State, Jeffery, Abbott, National, Detroiter, Empire, Grant, H. A. Lozier, Ross, Bour-Davis, Dixie and Detroit Electric made a can of O-So-Ezy standard equipment of every new car they ship, their stamp of approval enlisted for me immediately an army of a million new boosters a year for

O-SO-EZY

The Perfect cedar oil Polish

My Big Standard Assortment

	Each	Total	
Two 1 gallon cans	$2.50	$5.00	ALL FOR
Four ½ gallon cans	1.50	6.00	$12.00
Six quart cans	1.00	6.00	
Six pint cans	.50	3.00	
Retail Value		$20.00	f. o. b. Detroit

Mahogany Finished "Silent Salesman" FREE

These 12 Cans—$3.00 Value—Are FREE Until Nov. 1



A Total of $23.00 Worth of O-So-Ezy for $12.00

Your Profit $11.00—Nearly 100% on Your Investment

These new buyers tell their friends about O-So-Ezy. And their wives find out that a polish as supreme as O-So-Ezy for brightening motor cars is equally adaptable to their pianos, furniture and fine floors.

Your Stock Is Ready

I want you to cash in on O-So-Ezy to the absolute limit, so I have carefully selected an inexpensive but complete assortment of various sizes—your ideal polish stock.

At retail this assortment inventories $20. *My price to you is $12.*

I have mounted this stock on a handsome mahogany-finished display stand. *The stand comes free.*

A Dozen Cans *Free*

On top of this, until November 1st, I'm adding one dozen half-pint cans of O-So-Ezy—our regular twenty-five cent size. *These cans won't cost you a cent.*

Twenty-three dollars' worth of O-So-Ezy and a Silent Salesman for $12.

It's nearly 100 per cent profit on your investment!

Just Watch Them Buy!

Just stand your O-So-Ezy Silent Salesman where your trade can see it. Results will come so fast you will be amazed.

And don't forget that I'm with you all the time with a powerful advertising campaign that makes more friends for O-So-Ezy every week.

F. J. Craig

Vice-President and General Manager

O-SO-EZY PRODUCTS CO.

Dodge Building Detroit, Mich.

ORDER BLANK

O-So-Ezy Products Co.,
Dodge Bldg., Detroit, Mich.

Send us the Ideal Stock of O-So-Ezy, as shown and described in your Motor World Advertisement of Sept. 20th.

.....

.....

Our Jobber is.....

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AUTOMATIC IGNITION CONNECTICUT



Identification!

FROM now on this device will appear on the ignition control button of the Connecticut Automatic Switch and identify Connecticut Automatic Ignition.

The device is well worth remembering for it marks an ignition system whose unqualified efficiency in less than three years has upset the prestige of the magneto and established a new standard of ignition efficiency.

Incidentally more cars of the 1917 production will be equipped with Connecticut Automatic Ignition than with any other make.

Look for this device on the cars you come in contact with.

The Device of Efficiency

CONNECTICUT TELEPHONE & ELECTRIC COMPANY
Meriden Conn.

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FREE INTRODUCTORY OFFER ON JOHNSON'S CARBON REMOVER

OUR new preparation — Johnson's Carbon Remover—is ready for the market. We have made exhaustive tests under all conditions and pronounce it "Perfect"—which it must be before it can go out under the name of "Johnson".

If you will sign and mail us the coupon—we will send you a **pint free by prepaid express**—this is enough for thoroughly cleaning the carbon from a six cylinder car.

UNCONDITIONALLY GUARANTEED

We guarantee the article and sale of Johnson's Carbon Remover without equivocation. It is absolutely fool-proof—no matter how much you use and how you use it—Johnson's Carbon Remover cannot injure any part of the motor. You could soak an engine in it for days without the slightest injury.

NO EQUIPMENT EXPENSE

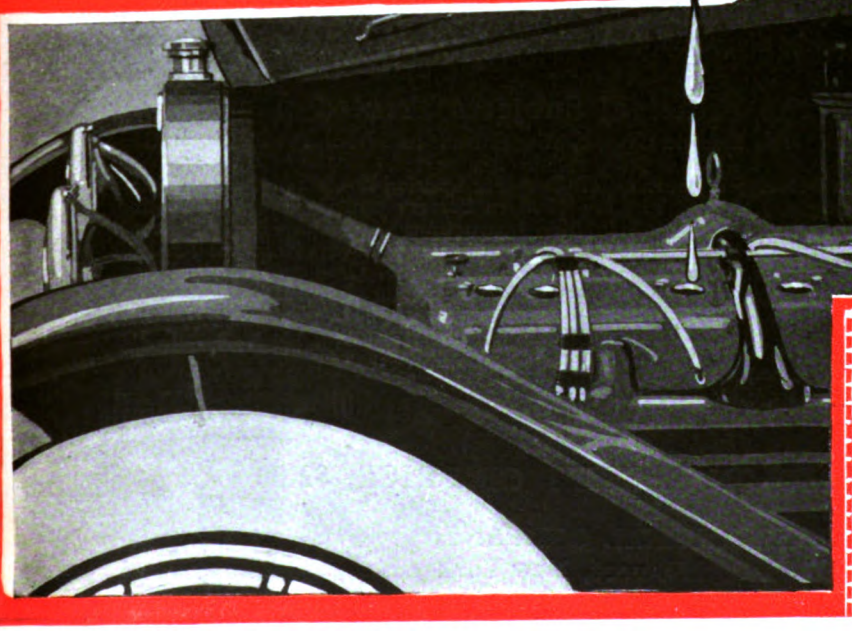
You don't have to buy anything except Johnson's Carbon Remover to remove carbon—not even an oil pump is necessary—so why pay from $5.00 to $25.00 for carbon removing equipment.

No matter how choked up a motor may be—Johnson's Carbon Remover penetrates, and softens the carbon so that it blows out as the car is operated. It isn't necessary to lay up your customers' cars for removing the carbon—simply pour in Johnson's Carbon Remover and blow it out at your convenience—any time after 2 hours—you may leave it in all night if more convenient.

WILL BE NATIONALLY ADVERTISED

Johnson's Carbon Remover will be very extensively advertised in the leading motor papers, magazines and weeklies. There is bound to be a large demand for it. We want you to know about this wonderful new product so you can recommend it to your customers—either doing it for them or selling them the material to use themselves—either way there is money in it for you.





S. C. JOHNSON & SON, Racine, Wis. MW10

Please send me a pint of Johnson's Carbon Remover free by prepaid express. I agree to try it and report results just as I find them. If your Carbon Remover gives as good results as you claim I shall consider the matter of stocking.

Name.....

Address.....

City and State.....

My Jobber is.....

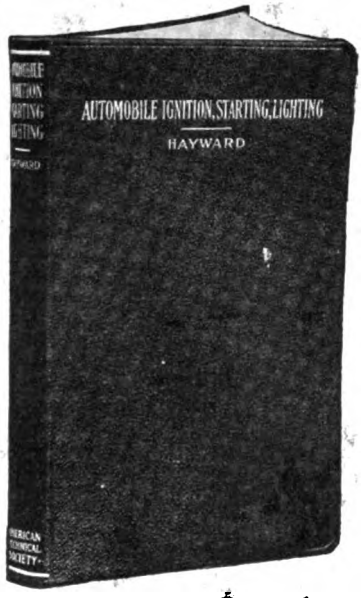
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EVERY OWNER, REPAIRMAN OR GARAGEMAN
Should Secure a Copy of This Wonderful Book

Automobile Ignition Starting and Lighting

WITH QUESTIONS AND ANSWERS

By CHARLES B. HAYWARD



381 pages, 325 illustrations. Flexible leather, gold stamped

Partial List of Contents

The Electric circuit
Magnetism
Induction principles in generators and motors
Fundamental ignition principles
Sources of current
Ignition Systems: Dual, Duplex Double Spark Ignition
Ford Magnetos
Spark Timing
Modern Battery Ignition systems
Testing, adjustment and maintenance
Ignition Instructions
Electric starting and lighting systems.
Electric Horns
Electric Brake
Lighting Equipment

Practical Analysis of Following Types:

Buick-Delco type
Auburn-Delco type
Chevrolet-Auto-Lite type
Overland Auto-Lite type
Jeffery-Bijur type
Circuit breaker type

Tracing for grounds
Fuses
Auto-Lite System
Bosch-Rushmore System
Delco System
Disco System
Dyneto System
Ford Starters
Gray & Davis System
Heinze-Springfield System
Leece-Neville System
Northeast System
Remy system
Simms-Huff System
Splitdorf System
Wagner System
Westinghouse System

Instructions on Starting and Lighting Systems

Battery
Generator
Starting Motor
Wiring Systems
Protective and Operative Devices
Lighting and Indicators

A comprehensive analysis of the complete electrical equipment of the modern automobile, including many wiring diagrams and details of all the important starting-lighting systems.

Some of the Principal Subjects Treated

Elementary Electrical Principles. The Electric Circuit, Magnetism, Induction Principles in Generators and Motors.

Ignition. Fundamental Ignition Principles, Sources of Current, Ignition Systems (Dual, Duplex, Double Spark, Ford Magnets), Spark Timing, Modern Battery Ignition Systems, Testing, Adjustment and Maintenance; Summary of Ignition Instructions (Questions and Answers).

Electric Starting and Lighting Systems. General Features, Lighting Equipment, Practical Analysis of Types with Wiring Diagrams, including Auto-Lite, Bijur, Delco, Gray and Davis, Remy, U. S. L. Wagner, etc.; Summary of Instruction on Electric Starting and Lighting (Questions and Answers).

It is the most illuminating and instructive work of its kind ever published. Indispensable to the novice and the expert.

Pocket size, 5½ by 8¾—381 pages—325 wiring diagrams and illustrations. Flexible leather, gold stamped.

SENT PREPAID ON RECEIPT OF PRICE, $2.00

CLASS JOURNAL COMPANY,
239 W. 39th Street, New York

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GORDON Convertible Winter and Summer Top

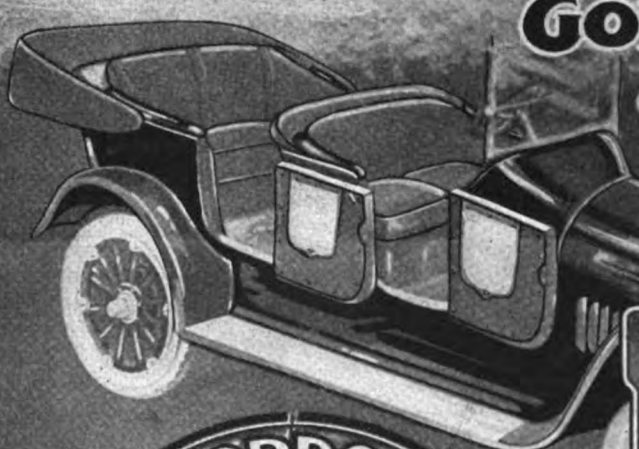
ABSOLUTELY COLD AND RAIN PROOF

Easily Changeable



GORDON Seat Coverings

"Tailored to Fit."



GORDON TIRE COVERS

GORDON RADIATOR AND ENGINE ROBE.

"Makes Starting Easy."

The 1917 Gordon Catalog is now ready for distribution.

It is replete with illustrations and prices on fabric specialties which are essential to the fullest enjoyment of motoring at low cost.

NEW PRICES apply to ALL Gordon Specialties for 1917.

Many new items are shown, among which are the Gordon Convertible One-Man Winter and Summer Top for Fords; the Gordon Convertible Top Attachment for Fords, and Top Recoverings for ALL cars. Also, prices on Gordon Specialties for ALL the latest car models.

Write TODAY for your copy.

THE J. P. GORDON CO.

316 N. Fourth St. Columbus, Ohio

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U. S.

BALL BEARINGS

The Supreme Unit

In the U. S. Ball Bearing plant, the Inspection Department works independently of the Production Department. By that we mean that while each workman holds his work to certain specified limits, after he has completed his labors, the part is sent to the Inspection Department where it is carefully inspected independently of any inspection previously made.

As in all good manufacturing practice, this rigid inspection is made after each and every operation, upon each and every part which goes into the completed bearing and then the completed bearing is thoroughly inspected as an assembled unit before being shipped.

It is important to note that not only is our Inspection Department complete in every detail, but being of recent date, it is thoroughly equipped with the very latest devices known to manufacturing practice.

U. S. Ball Bearings are now manufactured in a plant capable of producing 10,000 high quality bearings daily.

U. S. Ball Bearing Manufacturing Co.
(Conrad Patent Licensee)
Palmer St. and Kolmar Avenue, Chicago

Photographs show new U. S. Ball Bearing factory and various stages of inspection

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INDIANAPOLIS
STUTZ
INDIANA.U.S.A.

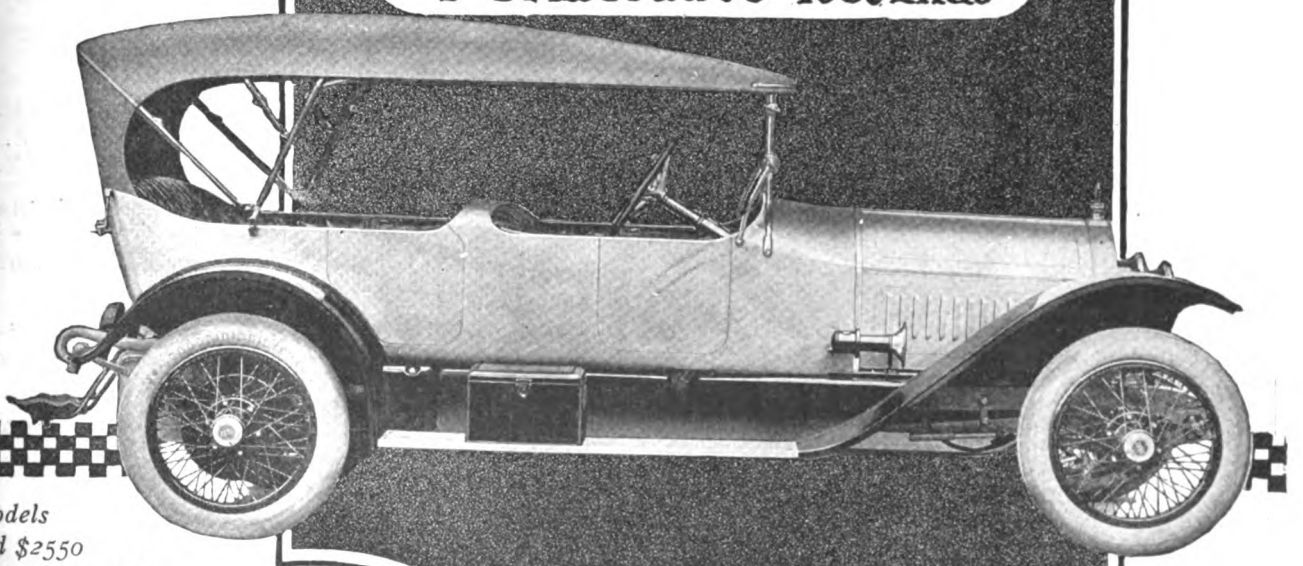
World's Champion

WORLD'S
Speedway Champion

WORLD'S
Road Race Champion

World's Long Distance
Records 250;300;350 mi.

World's Record for Consistency
4 Consecutive 1st&2nds



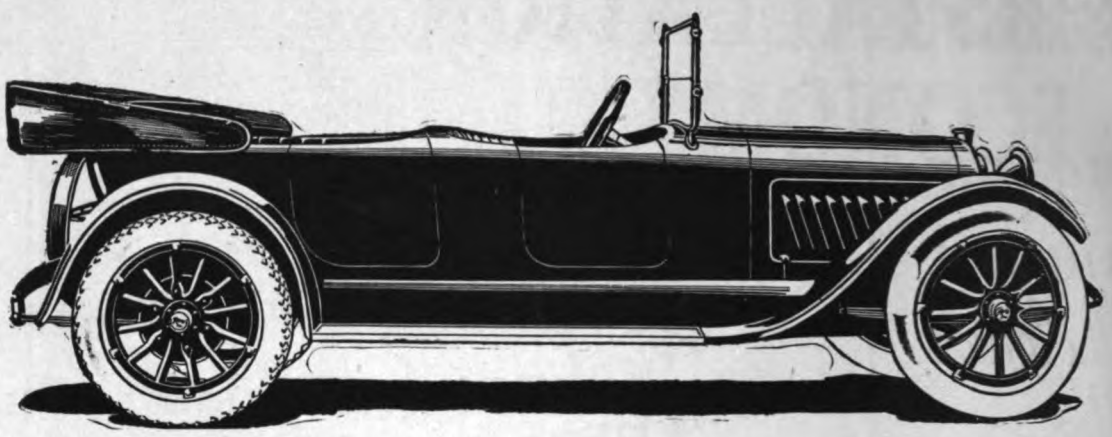
This Same
Stamina
n All Models
f the
STURDY
STUTZ

hree Models
2275 and $2550
iterature on request.

STUTZ MOTOR CAR CO.
ndianapolis Indiana

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The Price of the Ross Eight Is Now $1550 f.o.b. Factory



The Ross Eight has always been sold on a very close margin of profit, and now, with the addition of many refinements and improvements and the general advance in price on all raw materials, it has become absolutely necessary to advance the selling price.

The latest Ross Eight exhibits many detailed refinements including such items as the use of real hand-buffed leather for the upholstering throughout; the increase in the size of the tires to 35 x 4½"; the use of still higher quality material; in fact, the addition of many seemingly slight but highly important ***quality features*** which all contribute to greater completeness and higher efficiency.

The Ross Eight is essentially a quality car.

We believe that after examining it you will enthusiastically give your assent to the statement that the present Ross model is not only one of the handsomest, but one of the best built cars in America.

We are likewise confident that as you examine into every detail of its construction, inside and outside, you will agree with us, that, even at the advanced price, it is still the greatest automobile value in the world.

You will be pleased at the many fresh evidences of thoroughness and refinement, all of which mean greater beauty, longer life, greater satisfaction in use, and intensified pride of ownership, because this latest Ross Eight so plainly shows unswerving fidelity to highest ideals of automobile manufacture.

Recall that the Ross Eight Herschell-Spillman motor, developing 80 H.P., is one of the finest motors ever built.

The Wheelbase of the car is 130 inches; the weight is but 3250 lbs.

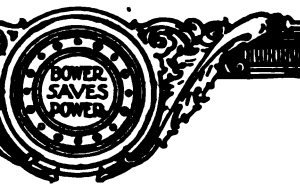
There is generous seating capacity for seven passengers.

The price is now $1550 complete, f.o.b. factory.

ROSS EIGHT

Ross Automobile Company, Detroit, Michigan

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INSTALLATION ECONOMY

A Pointer to Manufacturers

The assembly of a motor car is greatly simplified where Bower Bearings are used. These bearings are accurately adjusted in our factory, and they slip into place so easily that the very minimum of time is consumed. The time thus saved is a considerable item in factory economy.

BOWER
ROLLER BEARING CO.
Detroit Michigan

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—And Back of this Battery Stands Prest-O-Lite Service

The Prest-O-Lite Storage Battery has a double-headed appeal to every automobile owner. There are two dominant factors that make it greatly superior and desirable. And these two factors are the very points that determine real storage battery value.

First: Because of the unlimited facilities back of its manufacturers, a better designed or more carefully built battery, size for size, cannot be produced.

Second: Because back of the battery itself stands the Prest-O-Lite Service organization filling the long-felt need for universal battery service of expert character.

The Prest-O-Lite Co., Inc., maintains more Direct Factory Branches than all other battery makers combined. These form the nucleus for the largest amount of actual service obtainable in the storage battery field.

There is a Prest-O-Lite Battery of correct shape, size, voltage and capacity for every make and model of car, and for every starting and lighting system which is now or which has been in general use.

The Prest-O-Lite Battery offers an excellent opportunity for all automobile dealers—whether you charge and repair batteries or not, you should write for full details of this proposition.

The Prest-O-Lite Co., Inc.
902 Speedway, Indianapolis, Ind.

FACTORY BRANCHES—Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Davenport, Denver, Des Moines, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, St. Louis, St. Paul, San Antonio, San Francisco, Seattle, Syracuse.

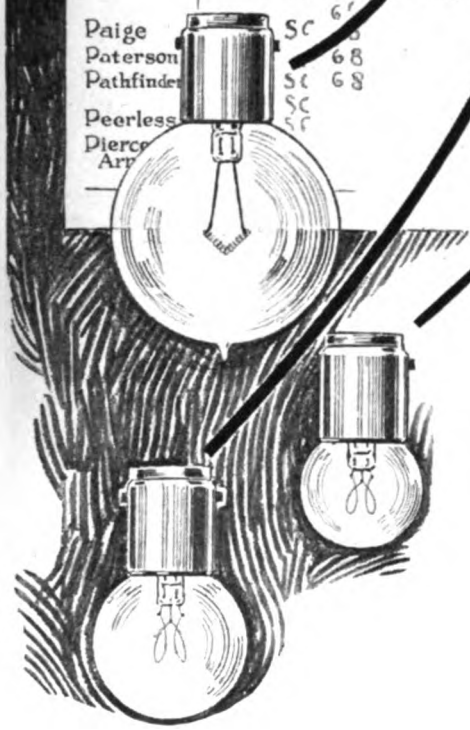
Each of these Factory Branches is fully equipped for Battery Repairs and Service

Not only a better battery but backed by Prest-O-Lite Service

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1916 MODELS—Continued

Car	Model	Contact	HEAD V.	HEAD C-P.	HEAD Bulb	SIDE V.	SIDE C-P.	SIDE Bulb	REAR V.	REAR C-P.	REAR Bulb	INSTRUMENT V.	INSTRUMENT C-P.	INSTRUMENT Bulb	OTHER LAMPS V.	OTHER LAMPS C-P.	OTHER LAMPS Bulb
Oakland	32 & 38	S.C.	6-8	12C-12					6-8	2C-6		6-8	2C-6				
Oldsmobile	43-44 83-T&R	S.C.	6-8	15C-16½					6-8	2C-6		6-8	2C-6				
Overland	84-T&R 86	S.C.	6-8	15C-16½					3-4	2C-6		3-4	2C-6				
Overland	84-C	S.C.	6-8	15C-16½		6-8	4C-8		3-4	2C-6		3-4	2C-6		6-8	4C-8	
Packard	Twin Six																
	A-125		6-8	6-10													
	A-135	D.C.	6-8	C-16½													
Paige		SC															
Paterson			6 8														
Pathfinder		SC	6 8														
Peerless		SC															
Pierce Arr		SC															



The Right Lamp in the Right Place

You simply can't make a mistake. All you need to know is the name and model of the car. Our little booklet tells exactly the lamps to use for all 1916, 1915 and 1914 models. Then you select the right lamp or lamps from our Automobile Lamp Assortment. Moreover, that little assortment stock is complete enough to supply the right lamps for practically every electrically lighted car.

EDISON MAZDA

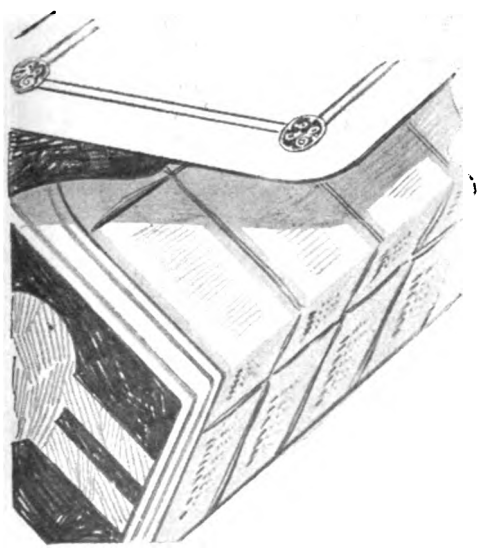
Automobile Lamp Assortment

If you, Mr. Dealer, are making the mistake of letting someone else in your territory market these fast selling automobile lamps, begin now to get your share of the business. Write for our attractive agency proposition. The cost of a tire or two puts this complete Lamp Assortment on your counter. Renewing stock is so simple as to be almost automatic.

Our assortment stock plan makes automobile lamps one of the fastest selling accessories

Another aid to bigger sales is the Auto Lamp Chest, carrying a set of six spare lamps for any car. This chest you pack from the assortment stock—and your customer, the car owner, is insured against all delays and troubles due to burn-outs. Besides *you* sell six lamps at a time.

Write today for full particulars.

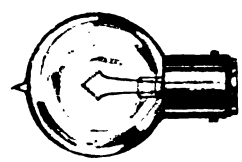


EDISON LAMP WORKS

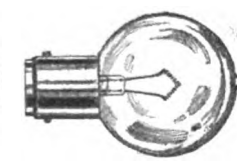
OF GENERAL ELECTRIC COMPANY

Harrison, N. J.

6021







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Mitchell

MID-YEAR MODEL

26 Extra Features
73 New Conceptions

7 New-Type Bodies
127-in. Wheelbase
48 Horsepower

$1325 f. o. b. Racine
For Touring Car

What Mr. Bate Has Done

Mark what John W. Bate—the efficiency engineer—has done for the Mitchell car. Then judge for yourself the place Mitchell will hold from this time on in Motordom.

He has built this factory—covering 45 acres—which stands as the model efficiency plant for building a car of this class.

He has equipped it with 2000 up-to-date machines. In these ways he cut our factory cost in two.

As a result, the Mitchell includes 26 extra features which other cars omit. And it gives at least 20 per cent greater value than any rival car.

700 Improvements

In the Mitchell car he has worked out about 700 improvements. He has given every part at least 50 per cent over-strength. He has worn out fifty cars in proving strength requirements on the road.

He has almost wiped out castings. In 440 parts he uses drop forgings or steel stampings. In all the parts which meet major strains he uses Chrome-Vanadium steel.

The result is a lifetime car. Seven of these cars have averaged 175,000 miles apiece—over 30 years of ordinary service.

Efficiency in Art

He has applied the same efficiency to Mitchell luxury bodies. This year he has brought out seven new types.

Before designing these bodies he had his experts and artists examine 257 late models. They reviewed all the finest cars in existence, European and American. So all the existing attractions are found in these new models. And each one embodies at least twenty conceptions which no other one car has.

Thousands of Mitchell cars are going out to demonstrate the facts.

Over $500,000 is spent this season in advertising, to make them better known.

Men who are interested—as dealers or buyers—should go to the bottom of this Bate-built car.

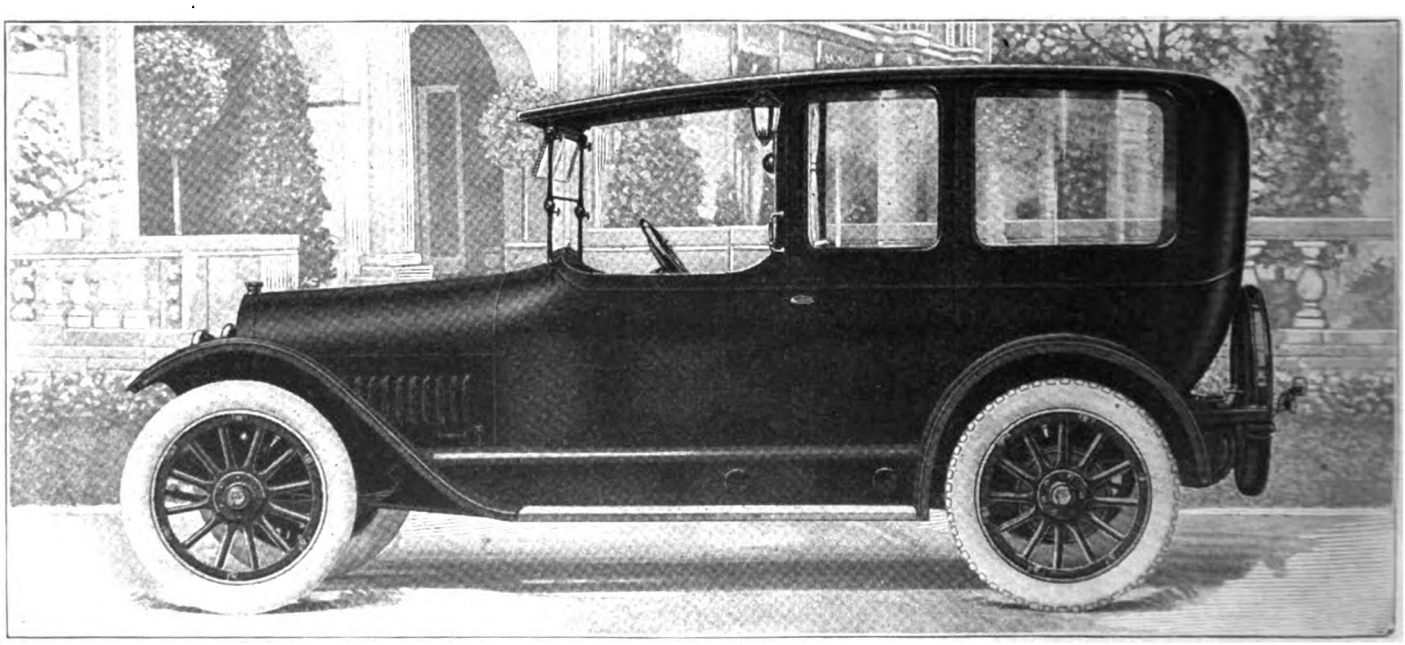
If any car can excel it—any car in its class give an equal value—then Bate efficiency is wrong. But it isn't.

Mitchell Models

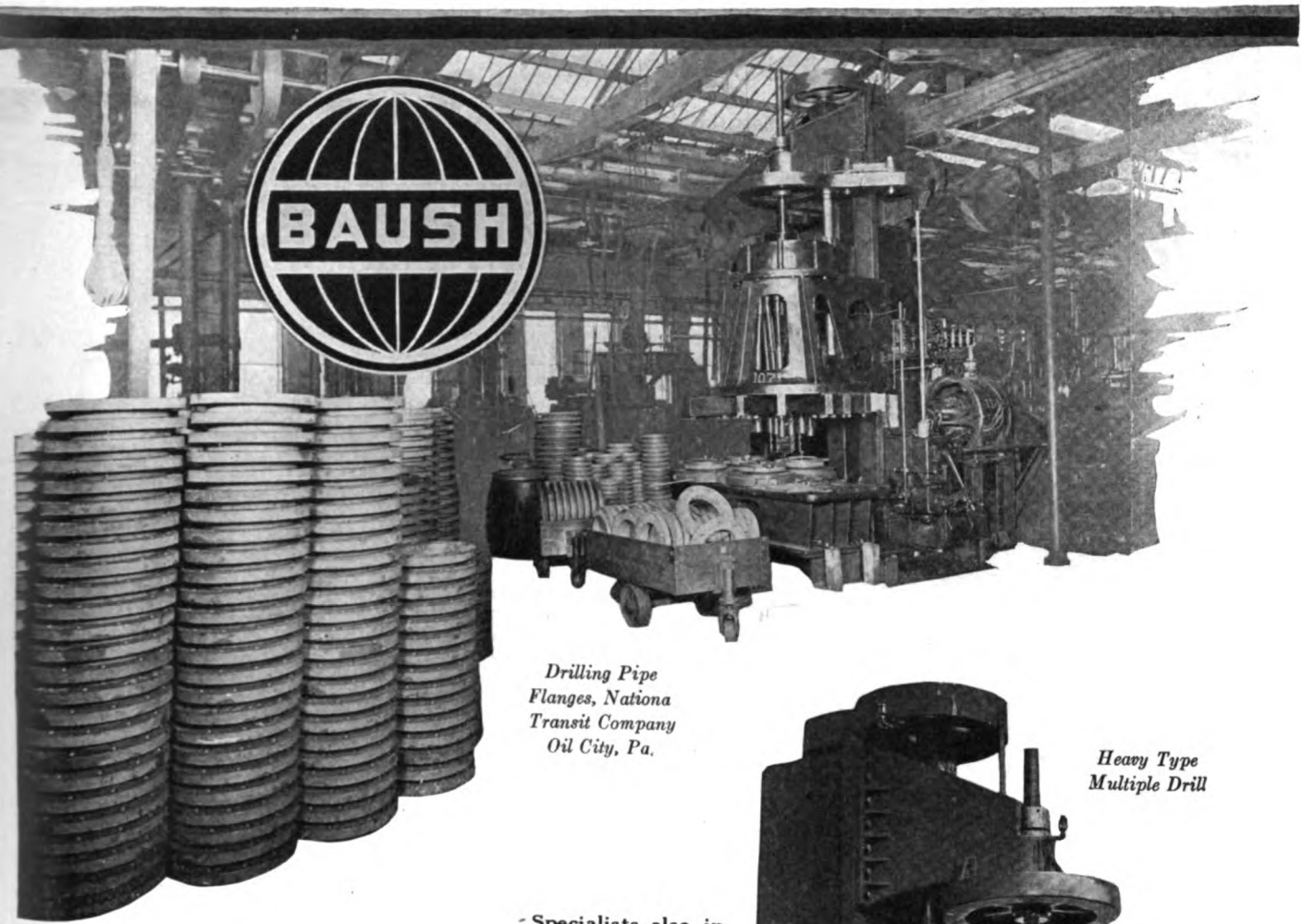
3-passenger Roadster,	$1325
5-passenger Touring Car,	$1325
7-passenger Touring Car,	$1360
Equipped with Demountable Top Only, $300 Extra	
3-passenger Cabriolet,	$1775
4-passenger Coupe,	$1850
7-pass. Springfield Sedan,	$1985
7-passenger Limousine,	$2650

All prices f. o. b. Racine

MITCHELL MOTORS COMPANY, Inc., Racine, Wis., U. S. A. (136)



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Drilling Pipe Flanges, Nationa Transit Company Oil City, Pa.

Heavy Type Multiple Drill

Specialists, also, in the Production of Worm Gear Units for Motor Cars and Trucks

THE illustration herewith shows one of the latest heavy type multiple drills and an installation in the plant of the National Transit Company, of Oil City, Pa.

This particular set-up is used for drilling pipe flanges and is equipped with sixteen spindles capable of handling 1½" drills in steel at a feed equal to .01" per revolution.

The head is handled entirely by power and therefore has a quick approach, regular drilling feed and quick return.

The feeds are dropped at automatic dogs, which can be placed for any depth, or for any length of quick approach and drilling feed. The feed is accomplished by a screw which thrusts against the center of the head, thereby relieving the gibs of any strain.

The arms are of new type without lugs or projections on the inner end, which permits of their being the same diameter as the spindle nose. Each spindle is provided with a vertical adjustment controlled by a screw at the extreme outer end of the arm.

Baush Machine Tool Company

Spring field Mass.

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For Motoring Tours The Best "Round Trip Ticket"

THE motoring party that is Firestone Equipped gets the double enjoyment in the ride that comes with confidence of getting there and back, on schedule.

Firestone Cementless Tube Patches, for example, cost little and serve big. Easy to apply, stick tight and stay put. The exclusive tab feature permits quick removal of muslin.

A Firestone Hook-On or Lace-On Boot, a Blow-Out Patch, a can of Cure-Cut, these and other Firestone Accessories are your best insurance against trouble and delay.

Firestone Cementless Tube Patch Free. To prove the success of Firestone Patches, we will send you one free. Ask also for Book No. 00, "Mileage Talks."

FIRESTONE TIRE AND RUBBER COMPANY
"America's Largest Exclusive Tire and Rim Makers"
AKRON, OHIO—BRANCHES AND DEALERS EVERYWHERE

Firestone Accessories

When writing advertisers please mention **Motor World**

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Everything Easy to Reach

It is plain from the accompanying photograph that the accessibility of Ferro V-Type Motors is not merely a claim but an actual fact.

It must be equally plain, too, to those who have had experience with other automobile engines that to call Ferro accessibility remarkable puts no strain upon the actual truth.

In Ferro V-Type Motors practically every part that ordinarily may need attention or adjustment is within quick and easy reach. The cylinder heads are detachable. Valves are located right in the head and are without cages. The valve-tappet adjustment is where it can be most conveniently manipulated—right in the top of the cylinder-head.

The feature of accessible valve-adjustment is one of great advantage to the car-buyer. Because of it, he is enabled to take up valve clearance himself in about 15 minutes instead of being compelled to run his car into a garage and leave it there for a day or two.

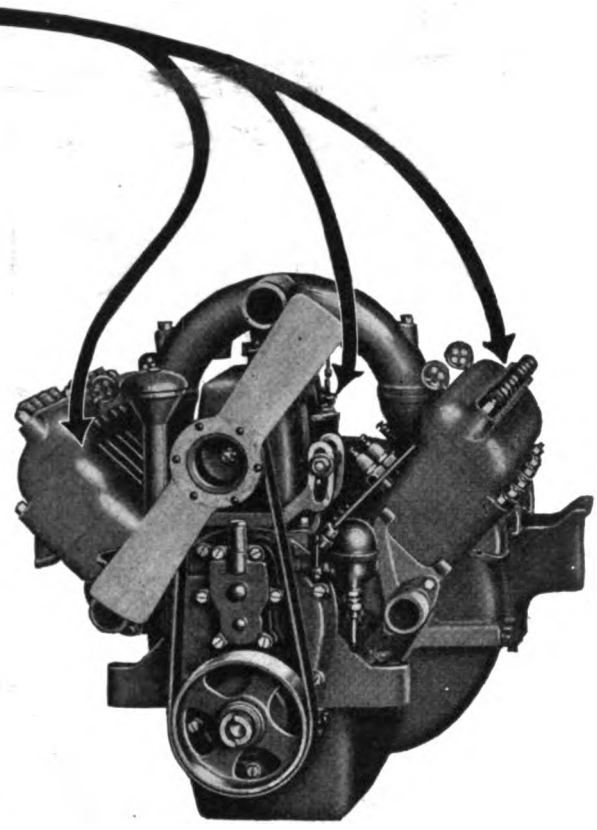
Exhaust manifolds are on the outside of the motor and out of the way, enabling the carburetor to be conveniently placed. There is not a single thing in the bottom of the "V" that ordinarily needs attention.

As with accessibility, Ferro claims for power, acceleration, flexibility and fuel-economy are all quickly demonstrated to be actual facts whenever the opportunity is given.

While the line of Ferro V-Type Motors consists of three Eights and a Twelve, we shall confine our production efforts for some time to come entirely to the 8-35 and the 8-48. The 8-35 has a bore and stroke of 2⅝ x 3¾, with h.p. per cubic inch of piston-displacement of .218. The 8-48 has 3-inch bore, 3½-inch stroke, .242 h.p. per cubic inch of piston-displacement.

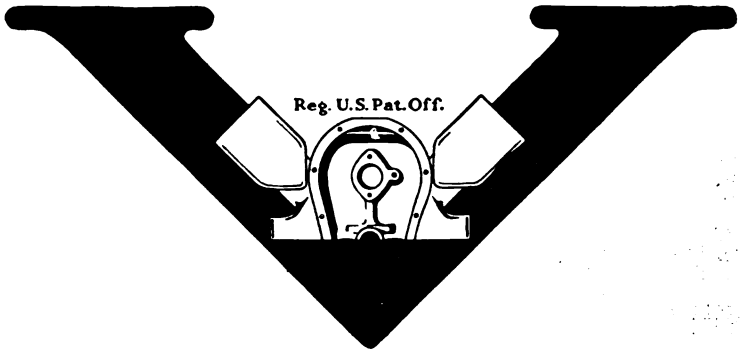
Write or wire for further information.

The Ferro Machine & Foundry Company
998 Hubbard Avenue **Cleveland, Ohio**



The Ferro "Eight"
Arrow at left points to detachable cylinder-head; in center, to carburetor; at right, to valve-tappet adjustment.

FERRO MOTORS



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HESS-BRIGHT'S CONRAD PATENTS ARE THOROUGHLY ADJUDICATED

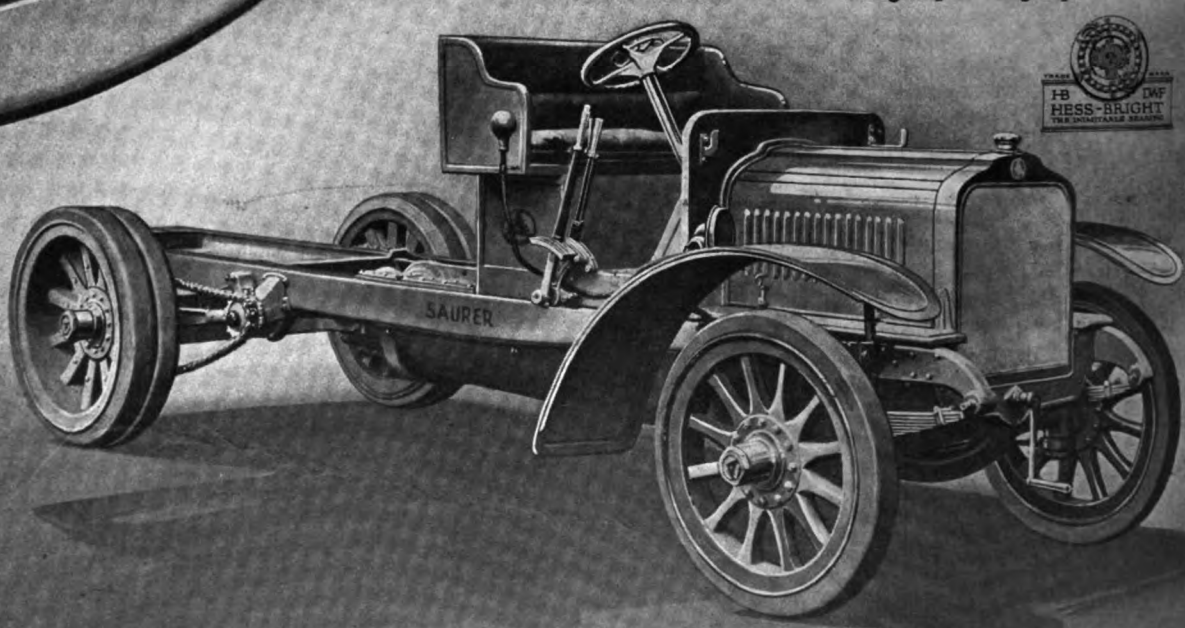
HESS-BRIGHT BALL BEARINGS

HAS IT EVER OCCURRED TO YOU that if the makers of a motor-truck choose HESS-BRIGHT BALL BEARINGS in preference to all other makes of bearings, it is done with the single purpose of giving the customer the best to be had, even though it increases the cost? The first cost of HESS-BRIGHTS is necessarily high.

The manufacturers of the SAURER TRUCK could easily substitute cheaper and inferior bearings, *but they won't if they can avoid it.* Their preference is HESS-BRIGHT BALL BEARINGS.

There have been instances since the beginning of the European conflict when we have not been able to supply our customers' requirements, but we are overcoming these difficulties by our rapidly increasing production.

The selection of HESS-BRIGHTS by the manufacturers of any motor vehicle is positive indication of earnest endeavor to build a purely quality product.



THE HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PA.

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Every Motorist Needs a Vulcanizer to Stop Tire Troubles and Increase Mileage



Every Shaler Vulcanizer You Sell Sells Others—Increasing Sales and Profits

Every Shaler user boosts the use of a vulcanizer and makes more business for the dealer. Vulcanizing is more or less of a mystery to one who has never tried it, and when he finds that it is a success he brags about it to his friends, and many of them buy, too.

SHALER Vulcanizer

They are made in a great variety of sizes and types—Electric, Gasoline, Alcohol and Steam, for every requirement of public and private garages. Shaler Tube-Kit (for vulcanizing tubes), $2. Ford-Kit (for Ford owners), $2.75. Vul-Kit (to carry in tool box for roadside repairs to tubes and casings), $3.50. Electric equipment for private garages, $12.50. Public Garages and Repair Shops, Electric or Steam, $60.

They will repair any cut, rip, tear or hole in either casing or tube, in a few minutes, and make the repair the strongest part of the tire. The Shaler is the only vulcanizer that has Automatic Heat Control. Impossible to undercure or overcure a tire.

WRITE FOR CATALOG AND TERMS

Send today for complete catalog showing every Shaler model with complete descriptions—dealers' discounts, terms, etc.

C. A. Shaler Co.

432 Fourth St. Waupun, Wis.

Canadian Distributors—John Millen & Son, Limited, Toronto, Winnipeg, Montreal, Vancouver.

Mail Coupon for Catalog!

C. A. SHALER CO.
432 Fourth St., Waupun, Wis.

Please send me new Catalog Shaler Vulcanizers—Dealers' Prices, Terms, etc.

.....

.....

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The Sign of Service

EACH Ahlberg re-ground bearing carries a guarantee of perfect satisfaction, expert workmanship and flawless material.

Each ball is micrometer tested for its individual bearing. Every retainer is one of our invention. All rings have been tested in actual service—thus are flaws eliminated.

This is more than you are given by manufacturers of new bearings—no matter what make.

Yet the cost to you is about one-fifth of what the new bearings would be.

The Ball Bearing Exchanges

In eleven large cities we maintain our own direct factory branches, managed by ball bearing experts. These service stations are for you. Use them to the utmost. Let us exchange instantaneously Ahlberg re-ground bearings for your worn old bearings, no matter what size, type, or make.

Call or write our nearest branch for information or assistance. It assures you quickest service.

Ahlberg Bearing Company
2536 Michigan Avenue Chicago, Illinois

BRANCHES:

Los Angeles: 325 W. Pico St.
Detroit: 790 Woodward Ave.
San Francisco: 715 Turk St.
Boston: 93 Massachusetts Ave.
New York: 1709 Broadway
St. Louis: 2831 Locust St.
Portland: 525 Davis Street
Cleveland: 1836 Euclid Ave.
Minneapolis: 926 Marquette Ave.
Atlanta: 323 Peachtree St.

30,000 miles with 4 SPLITDORF SPARK PLUGS



Bloomfield, Neb.

I have a 1910 E. M. F. 30 that is equipped with one of your magnetos and coils. Same has run over 30,000 miles—never has had anything done to it.

I am still using the four original 1910 Splitdorf Spark Plugs. **W. B. FRYMIRE**

Splitdorf Spark Plugs will outlast *any* engine. The laterally wound mica core *positively* prevents leakage of gas and oil, giving you at all times the full power of your engine.

The price of all standard Splitdorf Plugs is one dollar. If your dealer can't supply you, write us for them stating make and year of engine.

Magnetos, electric starting and lighting outfits, ammeters and ignition service in its every detail, at your call at our branches in leading cities.

SPLITDORF ELECTRICAL CO., Newark, N. J.

A Size and Type for Every Engine

Splitdorf Plugs are made in all sizes and in types to suit every car, motor cycle, motor boat, tractor and aeroplane.

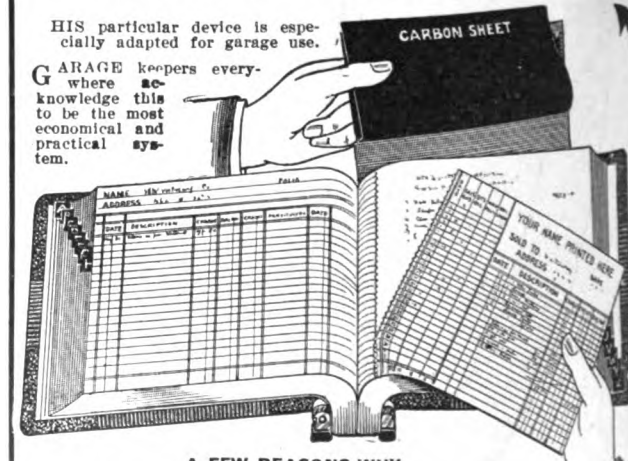


SAVE TIME AND MONEY

Our SPECIAL GARAGE Bookkeeping Plan Gives You the HIGHEST Possible EFFICIENCY

THIS particular device is especially adapted for garage use.

GARAGE keepers everywhere acknowledge this to be the most economical and practical system.



A FEW REASONS WHY

1—When you enter an account a bill for the customer is made at the same time.
2—Simplified method for recording and posting all items.
3—Avoids the necessity of posting each item.
4—Requires the minimum amount of labor.

THIS PAGE IS THE CUSTOMER'S BILL
THE ONE UNDERNEATH IS YOUR COPY

SEND FOR DESCRIPTIVE FOLDER AND FULL PARTICULARS

THOMAS J. HARTON & CO., Inc., 212a Church St. NEW YORK

Loose Leaf Specialists

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SIOUX
HIGH COMPRESSION
PISTON RINGS

Pay Dealers Well

The piston rings you sell your customers hold in their success or failure the good will or displeasure of their owners.

Quality and accuracy in piston rings, for all time, are essential to success and satisfied patrons.

SIOUX Rings are guaranteed against breakage from any cause. They will always hold compression and still lubricate the rings enough for any speed. Note the patent fastening. It is the secret of SIOUX success.

Dealers already making big sales and good profits from liberal discounts.

Dealers write for valuable booklet, giving size of piston rings for the different makes of cars.

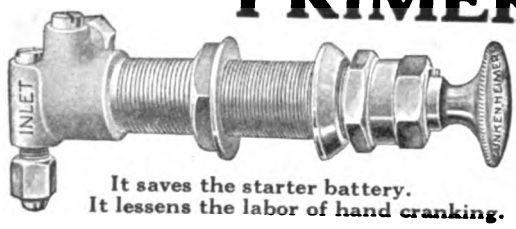
Write for free illustrated literature and details.

Albertson & Company
Sioux City Iowa

Sioux Rings Installed on Any Piston



LUNKENHEIMER
Gasoline Engine PRIMER



It saves the starter battery.
It lessens the labor of hand cranking.

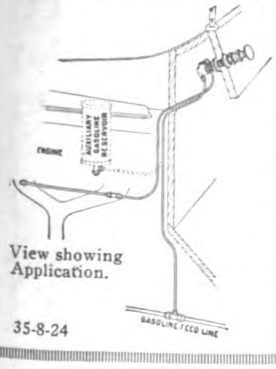
A stroke or two of the plunger forces a gasified charge to points which positively insure its entrance through the intake valves to give a power impulse on the first turnover.

The convenience of this device leads the operator to prime the engine before each start, resulting in a saving of battery energy, or time spent in cranking by hand.

All necessary fittings and tubing for attaching are furnished. No extra parts required.

A profitable accessory for dealers and garagemen.

Write for booklet No. 513.



View showing Application.

35-8-24

THE LUNKENHEIMER CO.
"QUALITY"
Largest Manufacturers of High Grade Engineering Specialties in the World
CINCINNATI
New York Chicago Boston London



"What do you mean by Guaranteed?"
"Hush! thirty-six inches to the yard"

A famous merchant always closed a sale with the statement, "Now remember, all these goods are guaranteed." That statement went unchallenged for many years, but once a customer "called him" by asking, "Just what do you mean by guaranteed?" "Hush," answered the merchant, "I mean 36 inches to the yard."

Kelly-Springfield
Automobile Tires—Hand Made

GUARANTEE makers are cautious people. They generally play safe. When a tire is guaranteed for 3,500 miles the manufacturer is not anticipating a loss.

Frankly, we do not think much of the guarantee incentive to a tire purchase.

In response to what seems to be custom or popular demand, Kelly-Springfield Tires are guaranteed too, for 5,000, 6,000 and 7,500 miles, according to type. We take no risk, and it means nothing to you, because the tires often run 8,000, 10,000 and frequently many more miles.

Our regular patrons have long since forgotten our so-called guarantee. Experience has taught them greater expectations, based on past realizations. They are buying built-in worth, built in by hand—hand-made tires. Before using Kelly-Springfield Tires they had tried out other tires, because Kellys are rarely found on new cars. Car manufacturers are accustomed to great concessions in price, on account of quantity orders. Kelly prices are not cut, and the demands on us are so great that we cannot supply quantity orders. We would not neglect our customers to do so even if we could make the price to suit.

Kelly-Springfield Tires get on a car after some other tires have worn out. Then they stay on.

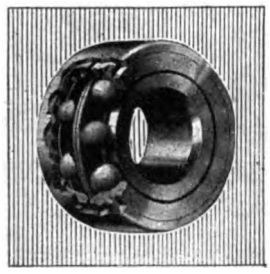


That is why the capacity of our factories has been passed, why we often have to delay deliveries—why we are building a new factory.

Kelly-Springfield Tire Co.
Factories in Akron and Wooster, Ohio
Executive Offices:
Broadway and 57th St., New York

Send ten cents for the new game, "Going to Market"

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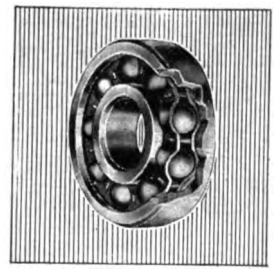


Double Row

Along the sandy trails of old Mexico

NEW DEPARTURE BALL BEARINGS

prove their trust-worthiness



Single Row

The many Dodge cars now in government service at the "Border" and in Mexico are equipped with New Departure Ball Bearings.

The use of New Departures in this connection exemplifies the implicit confidence, born of test and experience, reposed in these bearings by car builders and buyers everywhere.

A census of the motor cars and trucks in similar service would reveal the almost universal acceptance of New Departure trustworthiness.

Send for a copy of the "Brown Book"

THE NEW DEPARTURE MANUFACTURING CO.
Bristol, Conn., U. S. A.

Conrad Patent Licensee

Western Branch: 818-20 Ford Bldg., Detroit, Mich.
Distributors in Trade Centers Throughout the United States
Sole British Agents: Brown Bros., Ltd., London & Manchester
Continental Europe: Jacob Holst, Copenhagen, Denmark





THE MANLEY "EVERY WAY" ENGINE STAND

supports the motor perfectly, while allowing the workman to reach every portion of it with ease and accuracy.
The "Every Way" can be adjusted to every position in a circle—100 positions if desired—but the three most convenient are the Horizontal Position for working on valve mechanism and generally around the engine; the 45-degree Position (shown in cut) for cleaning carbon, grinding in valves, etc.; and the Inverted Position for taking up crank-shaft, connecting rod, bearings, etc.

In each position the engine is locked rigidly by two side braces. The "Every Way" supports the engine solidly. It will never become shaky, and should last a lifetime without repairs.

For the Factory motor assembly department no other stand has been brought out that can be compared to the "Every Way" for efficiency and convenience.

The United Engine & Mfg. Co.
"Pioneers in Garage Equipment"
Hanover, Penn.

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SITUATED in the most convenient location in town. Modern in every detail, absolutely fireproof, within ten minutes of the leading department stores, shops and theatres. Convenient to Pennsylvania and Grand Central Depots.

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Dealers—Send for illustrated catalog and order a stock from your jobber.

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LEWIS VALVES Toledo

To Your Specifications

High quality materials and accurate workmanship are the two factors that make Lewis Valves stand ahead of the rest.

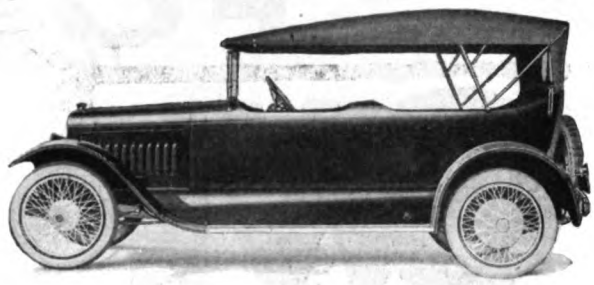
We make valves exclusively and can handle large or small orders. Lewis Valves will be made to your specifications if desired, but they will be heat treated by the Lewis method which means long wear and more power.

Lewis Electric Welding & Mfg. Co.
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The amazing value of the car, the ease of operation without shifting gears, the ready market for a good, common-sense twelve cylinder automobile. These, together with the strong syndicate of leading Cleveland manufacturers who are behind the "H.A.L. TWELVE" make our dealers' proposition worthy of investigation.



Brief Specifications

Twelve-cylinder, valve-in-head motor. 2⅞" bore, 5" stroke.

Complete electric lighting and starting system, Westinghouse.

Three speed selected transmission. Full floating rear axle.

40" semi-elliptical front springs, under-slung 57" rear springs, left-hand drive, center control, 135" wheelbase.

7 passenger Touring Car	**$2100**
3 passenger Roadster	**2100**
4 passenger Shamrock	**2300**
7 passenger Limousine	**4250**
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The H. A. Lozier Company
Cleveland, Ohio

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To the Trade—

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VULCANIZERS

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NOW ONLY $5



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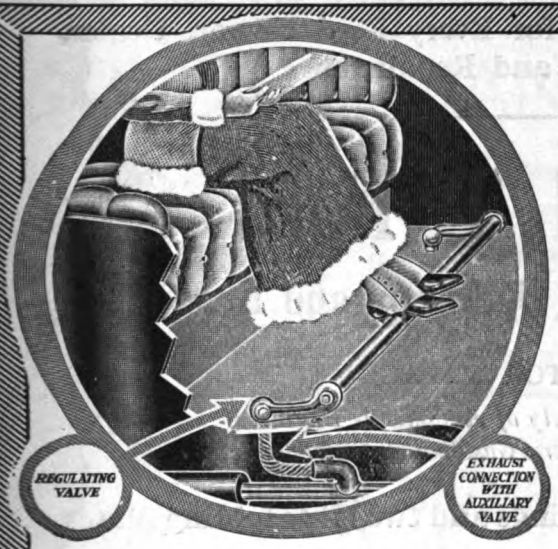
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Send for handsomely illustrated two-color booklet describing 50 different uses for the OWL Light. Dealers Wanted Everywhere.

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All brass, highly finished in white nickel. A heater de luxe.

Model "B" **17.50**
Malleable iron brackets, steel tubing. Brackets black enamel, rail and trimmings white nickel.

Model "C" **12.50**
Same as Model "B," but intended as a *stationary* foot-rest heater, therefore without extension brackets and swivel feature.

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when the motorist protects himself and his passengers against discomfort from cold. The

K. P. Foot Rest Heater

will help you Dealers keep your customers' cars in commission. It will keep them warm effectively at little expense and no trouble.

MANUFACTURERS making this

Standard Equipment

will find a much readier sale for their cars. For owners are using their cars longer each year, and its

Up to You Dealers

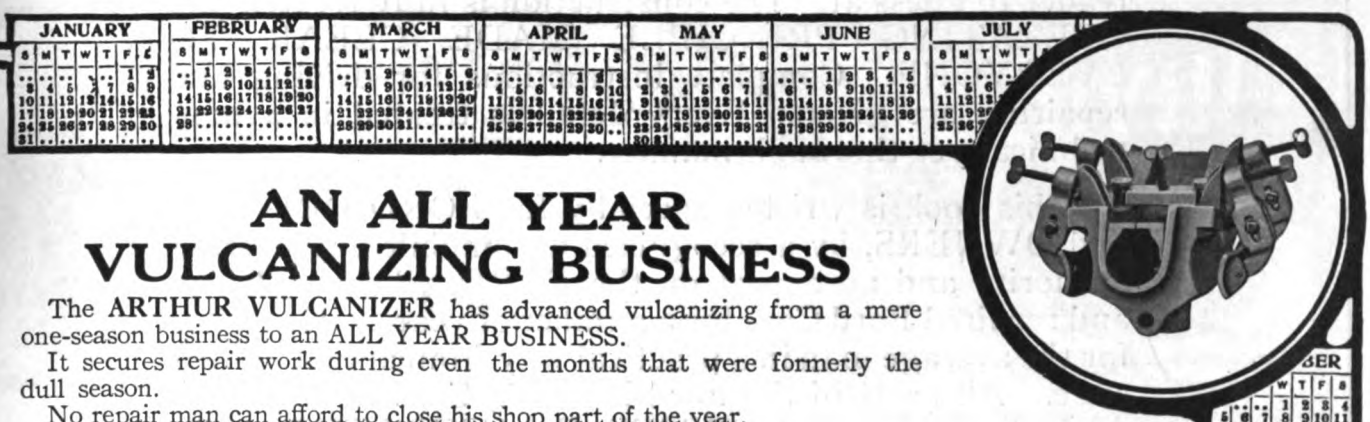
to educate your customers to keep their cars in commission all the year round.

This heater will insure this. It is the *simplest*, most *practical* and *ornamental* heating device that could possibly be conceived.

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and you can make *good money fast* selling this device. Write *today* for particulars.

K. P. Manufacturing Co., Inc.
254 W. 54th Street **New York**

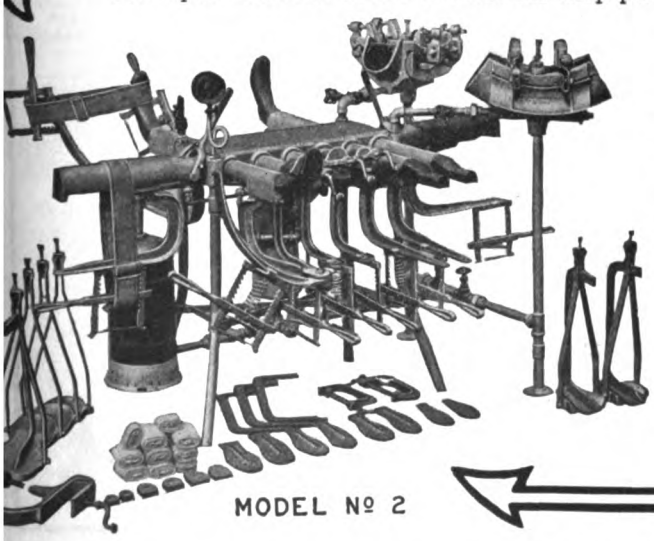


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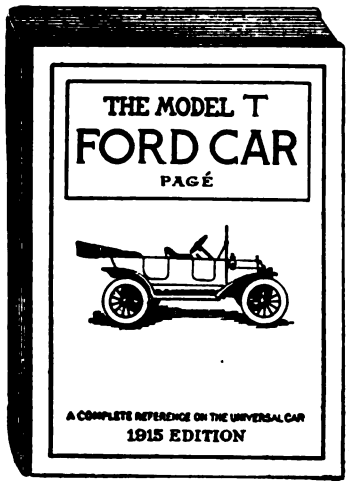
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is the outfit that has opened the way to success. It handles all kinds of repairs to rubber foot wear and repairs to inner tubes and casings.

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The Model T Ford Car

Its Construction, Operation and Repair

By VICTOR W. PAGE

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Author of "The Modern Gasoline Automobile," etc.

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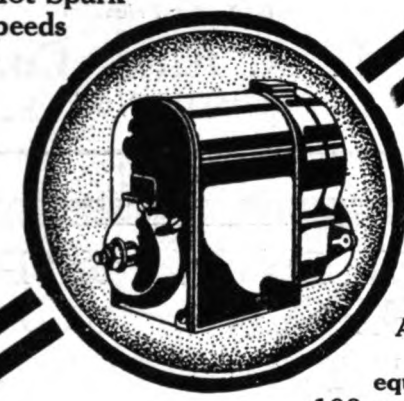


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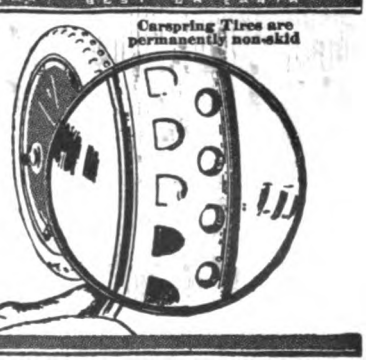
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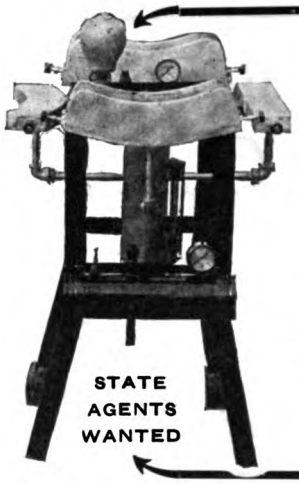
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Our steam vulcanizer takes care of sectional repairs on all tires ranging in size from 1½" bicycle tires to 37" x 5" Automobile Tires. Capacity 3 casings and four tubes. Complete, with set of tools and ready to operate. Send for prices and full particulars

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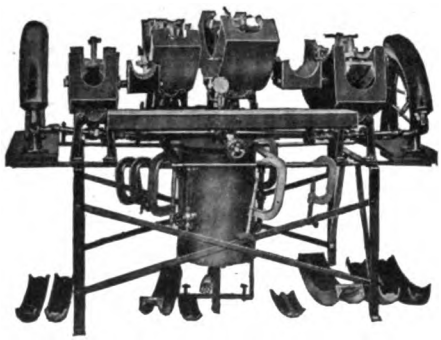
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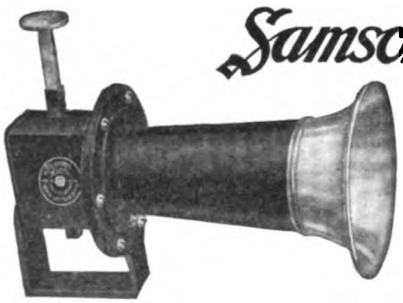
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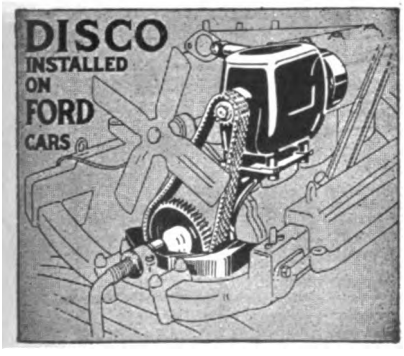


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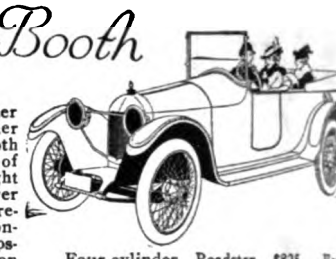
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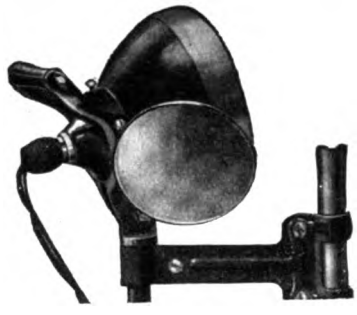


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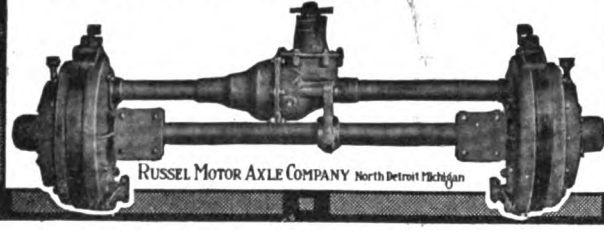
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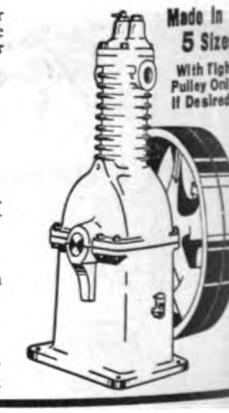
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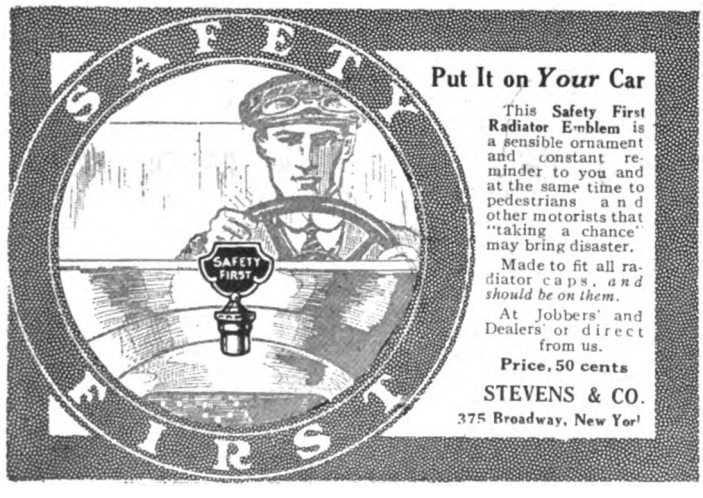
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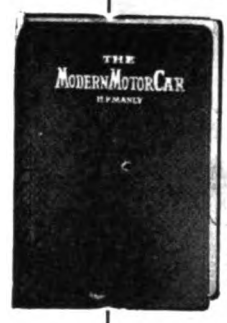
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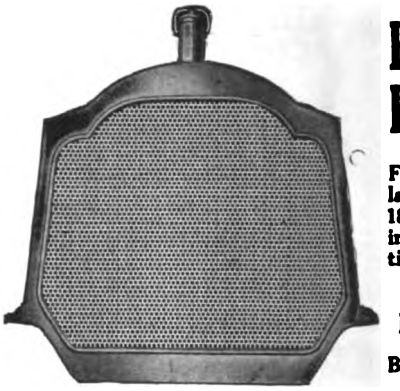
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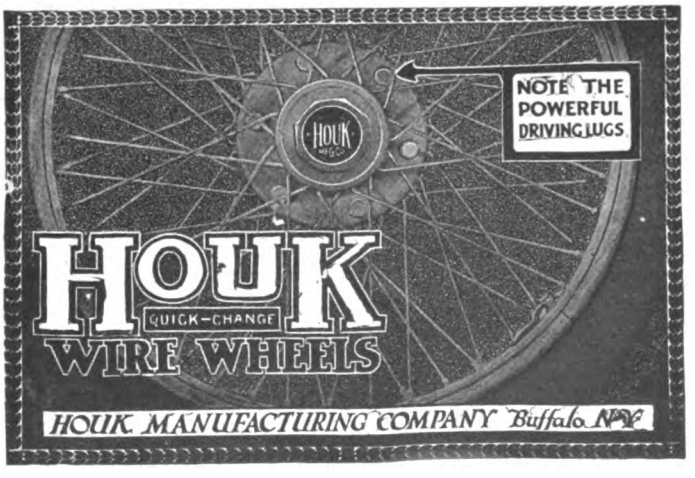
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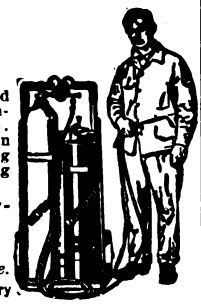
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30x3½	8.00	2.25	36x4	14.00	3.50
31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
31x4	11.75	2.90	35x5	17.50	5.00
32x4	12.50	3.20	36x5	18.50	5.00
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32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
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31x4	11.20	37x4½	17.95
32x4	11.55	35x5	19.35
33x4	12.10	36x5	19.50
34x4	12.60	37x5	20.25

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30x3½	7.95	8.65	36x4	14.10	15.30
32x3½	9.20	9.65	34x4½	17.19	18.75
32x4	12.55	13.40	35x4½	18.55	19.45
33x4	13.10	14.05	36x4½	18.80	19.90
34x4	13.30	14.25	37x4½	19.45	20.75
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Advertisers Index

A
Adamson Mfg. Co. ... 82
Albertson & Co. ... 79
Ahlberg Bearing Co. ... 78
Ajax Rubber Company ... 97
American Electric Co. ... 86
Ames Co., F. A. ... 96
Anderson Steam Vulcanizer Co. ... 86
Arthur Vulcanizing Machine Co. ... 83
Auto Pedal Pad Co. ... 97
Automobile, The ... 91

B
Backus Novelty Co. ... 89
Bales Distributing Co. ... 86
Bausch Machine Tool Co. ... 73
Benford Mfg. Co. ... 85
Blake Signal & Mfg. Co. ... 97
Bosch Magneto Co. ... 87
Bower Roller Bearing Co. ... 6?
Brown-Lipe-Chapin Co. ... 86

C
Cassidy, E. A. ... 90
Champion Ignition Co. ... 50
Chicago Auto Supply House ... 97
Chicago Solder Co. ... 87
Cleveland Motorcycle Mfg. Co. ... 52 and 53
Combination Rubber Mfg. Co. ... 89
Connecticut Tel. & Elec. Co. ... 62
Corbin-Brown Speedometer Co. ... 3
Curtis-Pneumatic Mchy. Co. ... 88

D
Denneen Motor Co. ... 58
Denver Ford Starter Co. ... 59
Disco Electric Starter Co. ... 87

E
Eisemann Magneto Co. ... 85

F
Fedders Mfg. Co. ... 90
Ferro Machine & Foundry Co. ... 75
Firestone Tire & Rubber Co. ... 74
Fisk Rubber Co. ... 2
Ford Motor Co. ... 89
Foster Accessories Co., C. H. ... 82
Fried & Stonier Co. ... 87
Fulton Company ... 88

G
Gardner Carburetor Agency ... 91
Gardner Governor Co. ... 85
General Electric Co. ... 71
Gibson-Hollister Mfg. Co. ... 87
Goodman Auto Body Co. ... 86
Gordon Co., J. P. ... 65
Grossman Co., Emil ... 91
Gulf Refining Co. ... 90

H
Hartford, E. V., Inc. ... 90
Harton & Co., Inc., Thos. J. ... 78
Hess-Bright Mfg. Co. ... 76
Hotel Marie Antoinette ... 80
Houk Mfg. Co. ... 90
Hyatt Roller Bearing Co. ... 91

I
Inter-State Motor Co. ... 90

J
Jenkins Vulcan Spring Co. ... 87
Johns-Manville Co. ... 51
Johnson & Sons, S. C. ... 63

K
Kelly-Springfield Tire Co. ... 79
K-P Manufacturing Co. ... 83
Kissel Motor Car Co. ... 48 and 49

Digitized by Google

Advertisers' Index

L

Laird & Lee 89
Leather Tire Goods Co 100
Lewis Electric Welding Mfg. Co 81
Liberty Motor Car Co 80
Longaker Co., V. A ..... Third Cover
Lozier Co., H. A 81
Lumkenheimer Co 79

M

Merchant & Evens Co 99
Michigan Auto Trailer Co 97
Michell Motor Co 72
Mosler & Co., A. R 85
Motor Age 85

N

National Motor Vehicle Co 45
National Rubber Co ..... Back Cover
N. J. Carspring & Rubber Co 85
New Departure Mfg. Co 80
New Era Spring & Specialty Co 97
New Process Gear Corp 88

O

Oakes Co., The 89
Oakes & Dow 86
O-So-Ezv Products Co 61

P

Parry Mfg. Co 98
Picard, Co., A. J ..... Front Cover
Pittsburgh Electric Spec. Co 88
Pouvailsmith Corp 91
Porcelain Products Co 99
Prest-O-Lite Co ..... 70 and 91
Pullman Motor Car Co 91

Q

Quaker City Rubber Co 90

R

Rayfield Carburetor 46
Rayford Co 90
Ross Automobile Co 68
Russell Motor Axle Co 88

S

Scripps-Booth Co 88
Shaler Co., C. A 77
Sheldon Axle & Spring Co ..... 54 and 55
Silvex Co 97
Sparks-Withington Co 85
Spiltdorf Electrical Co 78
Spring Lock Nut Company 57
Standard-Detroit Tractor Co 56
Standard Thermometer Co 91
Stevens & Co 88
Stewart-Warner Speedometer Corp ..... Second Cover
Studebaker Corp 1
Stutz Motor Car Co 67
Superior Mfg. Co 89
Swinehart Tire & Rubber Co 88

U

United Engine & Mfg. Co 80
U. S. Ball Bearing Co 66

V

Van Cleef Bros 81
Van Sicklen Co 98
Vanderpool Co 86

W

Waltham Watch Co 47
Warner Auto Top Co 60
Willys-Overland Co 4

Z

Zenith Carbureter Co 89

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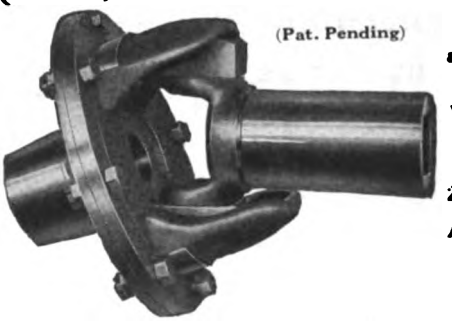
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New and Improved Design

Made in 4 Sizes up to 100 H. P.

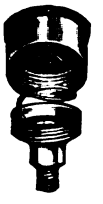
Shafts up to 2½" Diameter.

Angle of Drive Up to 15°.

Send for our Catalogue and Prices.

WORLD RENOWNED (Patented)
EVANS MODEL
"HELE-SHAW" CLUTCH





Unequalled for smoothness, durability and coftrol.
Send us your requirements.

"M. & E." GREASE CUPS
(Patented)

Admittedly the shortest, best, cleanest and most satisfactory grease cup on the market. Send for a sample and price. We can make prompt delivery.

TRADE MARK M & E REG. IN U.S. PAT. OFF.

1866—**MERCHANT & EVANS CO.**—1916
PHILADELPHIA

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5000 Miles of Service without Puncture or Blowout GUARANTEED



Here is the greatest opportunity ever offered to the automobile trade, insofar as a tire agency is concerned.

A fully guaranteed for 5,000 miles, high quality tire that is puncture-proof and blowout-proof, and which suffers no sacrifice of resiliency or riding qualities, by reason of its being puncture-proof. This Tire is guaranteed to be the equal or the superior of any tire on the market, from a standpoint of service alone, and in addition to that, is guaranteed against blowouts or punctures.

Surely the agency for such a proposition as this is a mighty valuable asset to any dealer in the industry. We want a dealer in every community, but our territory is going fast.

WOODWORTH TROUBLE-PROOF // TIRES //

Write us to-day for an option in your territory. We will give you all the details that will satisfy you as to the wonderful opportunity presented by the *WOODWORTH TROUBLE-PROOF TIRES.*

THE LEATHER TIRE GOODS COMPANY

NIAGARA FALLS, NEW YORK

Canadian Factory: Niagara Falls, Ontario. **New York Distributors: Rose Auto Supply Co., 1765 Broadway, New York**

When writing advertisers please mention Motor World

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Some Extremely Desirable Territory Open for Dealers With Push

Our Dealers' Proposition Never Fails to Get Across and Bring in Interesting Profits for Dealers

Dealers
Let's Get Together for the Big Drive on

"W'RIGHT" COMPRESSION TIGHT PISTON RINGS

"W'RIGHT" ALLOY ALUMINUM PISTONS

Dealers who formerly *carried* piston rings, and seldom sold them, are now disposing of 300 to 500 W'RIGHT Compression Tight Piston Rings a month at a profit they find altogether worth while.

That's the experience we have to offer a few more good dealers who want to duplicate the profits of the hundreds of dealers we already have established in the past 6 months.

W'RIGHT Piston Rings are alone in their class. They both *outlast and under-sell* competition, and insure lasting efficiency that others cannot give.

Backed up by advertising in leading motor car publications, W'RIGHT Compression Tight Piston Rings are selling fast—making good profits for dealers. Wire or use the coupon for full details.



Pat. Applied for

Motorists everywhere, with cars from seasons gone by, are putting new life into old motors with W'RIGHT Alloy Aluminum Pistons, equipped with W'RIGHT Compression Tight Piston Rings.

The sudden demand, and the rush to fill it, have made W'RIGHT Pistons the selling sensation of the year. Dealers have sent back re-order after re-order for the pistons that insure greater power, economy, quicker pick-up and all 'round motor efficiency at a nominal cost.

Record-breaking business—with profits in proportion—is what W'RIGHT dealers report. It is what awaits more W'RIGHT Dealers in good territory, still open, where there are Ford, Overland, Maxwell, Studebaker, Chevrolet, Hupmobile and other makes of cars.

If you want to reap the advantage of W'RIGHT popularity, class and advertising, get in now for the big drive. *Use the coupon today.*

THE V. A. LONGAKER CO.

448 N. Capitol Ave. **Indianapolis, Ind.**

The V. A. Longaker Company
448 N. Capitol Avenue, Indianapolis, Ind.

Kindly send me full details regarding W'right dealers' proposition.

Name .....

Address .....

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Tire Luxury—at a Popular Price



Non-Skid But Not Bumpy

This new NATIONAL REDWALL *"Speedway type"* tire sprang into popular favor almost over night because it had all the qualifications necessary to meet the overwhelming demand for a really good tire at a popular price.

It is both rich and distinctive in appearance.

It has a new type of *smooth riding* non-skid. This one feature alone is sufficient to distinguish it from all other tires selling at anywhere near the price.

There are no knobs, no depressions, no lumps nor bumps.

Consequently the tire *wears* out before the carcass *gives* out, for as you spin along the contact of the tread with the road is continuous and unbroken.

Inside fabric wear, such as develops in most non-skids, is impossible here.

Yet the big reason why *"Speedway Tires"* outstrip other tires in performance and all around satisfaction is simply this: ***"They are built well of excellent material."***

TO DEALERS

Dealers and Jobbers who are looking for a high quality tire to sell at a popular price, on an exclusive territorial basis, to be backed by a generous national advertising campaign, should investigate our proposition at once.

More complete details will be forwarded upon application.

NATIONAL RUBBER COMPANY, Pottstown, Penna.

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